

**THE ROLE OF INTER-ORGANISATIONAL KNOWLEDGE  
MANAGEMENT IN THE UAE'S PUBLIC POLICING SECTOR**

Saif ALGHAFLI

Thesis submitted in partial Fulfilment of the  
Requirements for the Degree of *Doctor of Philosophy*

Faculty of Management, Law & Social Sciences

University of Bradford

December 2020

## **Abstract**

Inter-organisational knowledge sharing between airport security organisations has become increasingly vital to maintain the highest standards of security and public safety. Social networks are considered a significant space for knowledge sharing within and across organisations. The purpose of this research is to investigate inter-organisational knowledge sharing in social media between key organisations in policing and airport security. A cross-sectional case study strategy combining qualitative and quantitative methods was employed to investigate the use of social media in inter-organisational knowledge sharing in the context of airport security in the UAE. Findings showed that the structural characteristics within knowledge sharing were highly centralised and polarised with low intensity in knowledge sharing. Social capital was constrained at a relational level due to cultural factors of trust, risk aversion and power distance that influenced a closed culture and reduced the scope for tacit knowledge sharing practices as well as low level cognitive capital. Analysis of dimensions of the SECI model for knowledge creation revealed that knowledge and the process of knowing was impacted by cultural distinctions that constrained socialisation, externalisation, combination and internalisation processes. The key barriers to knowledge sharing were identified and associated with trust, risk aversion, organisational culture, resource constraints and interoperability factors. This study makes a contribution to theory and practice in terms of the relationship between social capital dimensions and knowledge creation processes and the characteristics of knowledge-sharing within social media. The study further adds to knowledge on the antecedents of inter-organisational knowledge sharing, particularly in the Arabic context.

**Keywords:** Inter- organisational knowledge sharing, social capital, social media, knowledge creation, culture, UAE

## **Acknowledgements**

Firstly, I would like to express my gratitude and thanks to my advisor for the continuous support of my PhD study and related research, for their patience, commitment and always generous provision of knowledge. In addition, I would like to thank the rest of my supervision committee for their insightful feedback and comments, that have been invaluable to advance my research from various perspectives.

Also, I would like to thank the UAE Government and Ministry of Interior, who have sponsored me in this doctoral journey. My gratitude also extends to my current and former managers and colleagues who supported me and helped me by providing the right conditions for this study. I would like to thank His Excellency Major General Pilot Faris Al Mazrouei, Commander-in-Chief of Abu Dhabi Police Headquarter and His Excellency Major General Maktoum Al Sharifi, Director General of Abu Dhabi Police Headquarter for their continuous support and guidance during my Ph.D. journey.

I would also like to thank everyone who contributed, facilitated, and helped gather information for the benefit of this research.

Last but not least, I would also like to extend my deepest thanks and appreciation to my family for their support, encouragement and love throughout this research.

# Table of Contents

Abstract.....	ii
Acknowledgements .....	iii
Table of Contents.....	iv
List of Figures.....	xi
List of Tables .....	xii
1 INTRODUCTION .....	1
1.1 Introduction .....	1
1.2 Research Context.....	2
1.2.1 Overview of Police Sector .....	84
1.2.2 Inter-organisational Knowledge Management in Policing .....	84
1.2.3 Socio-Cultural Context .....	85
1.2.4 Knowledge Management Context.....	2
1.3 Research Problem .....	5
1.4 Justification for Airport Security as the Context of Study.....	9
1.5 Research Aims and Objectives .....	11
1.6 Structure of the Thesis .....	11
1.6.1 Background Theory .....	12
1.6.2 Focal Theory .....	12
1.6.3 Data Theory .....	13
1.6.4 Novel Contribution .....	13

1.7	Significance of the Study.....	13
1.8	Contribution to Knowledge .....	14
2	LITERATURE REVIEW.....	17
2.1	Introduction .....	17
2.2	Knowledge Management.....	19
2.2.1	Characteristics of Knowledge.....	21
2.2.1.1	Explicit Knowledge .....	22
2.2.1.2	Tacit Knowledge .....	23
2.2.2	Intellectual Capital.....	24
2.2.3	KM in the Public Sector.....	28
2.2.4	Knowledge Sharing.....	31
2.2.5	Knowledge Sharing Channels and Mechanisms.....	32
2.2.6	Modes of Inter-Organisational Knowledge Sharing .....	34
2.2.7	Coordination and Control Mechanisms in Knowledge Sharing .....	35
2.2.8	Knowledge Contextuality .....	37
2.3	Inter-organisational Networks .....	40
2.3.1	Benefits of Inter-organisational Networks .....	42
2.3.2	Formal-Informal Networks .....	42
2.3.3	Source, Recipient and Intermediary Actors .....	43
2.3.4	Forms of Inter-Organisational Relationship .....	45
2.4	Social Networks and Knowledge Management.....	47

2.5	Social Capital Theory .....	49
2.5.1	Structural.....	51
2.5.2	Relational .....	55
2.5.3	Cognitive.....	56
2.6	Antecedents of Inter-organisational Knowledge Management .....	57
2.6.1	Organisational Cultural Dimensions.....	58
2.6.2	National Culture and Knowledge Sharing .....	60
2.6.3	Openness of Culture.....	64
2.6.4	Knowledge Culture .....	66
2.6.5	Leadership.....	67
2.6.6	Social Relationships.....	68
2.6.6.1	Trust .....	69
2.6.6.2	Intensity .....	71
2.6.6.3	Distance .....	71
2.6.6.4	Motivation to Share .....	74
2.6.7	Knowledge Processes.....	77
2.6.8	Information and Technology Systems.....	78
2.6.9	Complementarity.....	79
2.7	KM Studies on Arab Public Policing.....	80
2.8	Research Gap .....	86
2.9	Conclusions .....	101

3	Conceptual Framework for the Study.....	104
3.1	Introduction .....	104
3.2	Risks of IO Knowledge Sharing in Social Networks .....	105
3.3	Benefits of IO Knowledge Sharing in Social Networks.....	106
3.4	Development of Conceptual Framework.... <b>Error! Bookmark not defined.</b>	
3.5	IO Knowledge Sharing in Social Networks .....	107
3.5.1	Knowledge Sharing: SECI Model .....	107
3.5.2	Social Capital .....	108
3.5.2.1	Importance of Structural Dimension.....	110
3.5.2.2	Importance of Relational Dimension.....	110
3.5.2.3	Importance of Cognitive Dimensions .....	110
3.5.3	Intellectual Capital .....	111
3.5.4	Socio-Organisational Factors.....	111
3.5.5	Conclusions.....	112
4	METHODOLOGY .....	114
4.1	Introduction .....	114
4.2	Research Philosophy.....	114
4.3	Knowledge Management Research .....	115
4.4	Rationale for Research Approach .....	116
4.5	Research Strategy .....	117
4.6	Research Methods.....	121

4.6.1	Semi-structured Interviews .....	121
4.6.2	Secondary Data Analysis .....	124
4.7	Instrument Design.....	126
4.8	Sampling Strategy.....	127
4.9	Data Collection Procedure.....	129
4.10	Data Analysis .....	132
4.11	Validity and Reliability .....	134
4.12	Ethics .....	135
4.13	Research Limitations .....	137
4.14	Conclusion .....	138
5	Results and Analysis .....	139
5.1	Introduction .....	139
5.2	Structural .....	139
5.2.1	Social Media Applications .....	140
5.2.2	Social Network Statistics .....	140
5.3	Relational.....	149
5.3.1	Differentiated Roles .....	157
5.3.2	Closed Culture .....	159
5.3.3	Communities of Practice.....	162
5.3.4	Informal Network.....	164
5.4	Cognitive .....	164



5.5	Knowledge Sharing .....	170
5.6	Knowledge Sharing – SECI.....	174
5.7	Benefits.....	179
5.8	Risks .....	184
5.9	Barriers .....	186
5.9.1	Interoperability.....	186
5.9.2	Resources .....	187
5.9.3	Trust .....	188
5.9.4	Organisational Culture .....	189
5.10	Conclusion.....	191
6	DISCUSSION AND ANALYSIS .....	192
6.1	Introduction .....	192
6.2	Structural Characteristics.....	192
6.3	Relational.....	197
6.4	Cognitive .....	203
6.5	Knowledge Sharing Practices.....	206
6.6	Risks .....	212
6.7	Barriers .....	214
6.7.1	Interoperability.....	214
6.7.2	Resources .....	215
6.7.3	Trust .....	216

6.7.4 Organisational Culture .....	218
6.8 Intellectual Capital.....	220
6.9 Conclusion.....	223
7 CONCLUSION.....	225
7.1 Introduction .....	225
7.2 Summary of Key Findings.....	226
7.2.1 Key Characteristics of Knowledge Sharing.....	226
7.2.2 Impact of Inter-organisational Knowledge Sharing.....	229
7.2.3 Inter-organisational Knowledge Sharing Framework.....	230
7.3 Recommendations and Framework .....	231
7.4 Research Contribution .....	238
7.5 Implications for Theory and Practice .....	240
7.6 Limitations.....	242
7.7 Future Research .....	243
References .....	246
Appendices .....	1
Appendix 1 – Summary of Research Approaches in Inter-Organisational KM.....	1
Appendix 2 – Summary of Research Approaches in Policing .....	5
Appendix 3 – Summary of Research Approaches in Knowledge Management in Arab Cultures .....	6
Appendix 4 - Summary of Inter-organisational Measures in Knowledge Management.....	7

## List of Figures

Figure 2-1 SECI Model.....	20
Figure 2-2 Intellectual Capital Classification Scheme.....	26
Figure 2-3 Inter-organisational Knowledge Sharing Configurations.....	37
Figure 2-4 Four typical forms of inter-organisational relationship.....	46
Figure 2-5 Dimensions of Social Capital based on Nahapiet and Ghoshal (1998)....	51
Figure 2-6 KMT Model for Policing.....	83
Figure 2-7 Mindmap of Literature for Knowledge Management Arab KM Policing	87
Figure 2-8 Research Gap.....	98
Figure 3-1 Theoretical Framework for Inter-organisational Knowledge Sharing....	109
Figure 4-1 Multiple Case Study Design.....	118
Figure 4-2 Research Process .....	122
Figure 4-3 Data Collection Steps .....	130
Figure 5-1 Abu Dhabi Interorganisational Network .....	144
Figure 5-2 Dubai Interorganisational Network .....	145
Figure 5-3 Network Relations .....	159

## List of Tables

Table 2-1 KM Mechanisms within the SECI Model.....	34
Table 2-2 Dimensions Analysis of Culture and KM .....	59
Table 2-3 Knowledge Management and Knowledge Sharing Research.....	91
Table 4-1 Overview of Research Design.....	120
Table 4-2 Semi-Structured Interview Questions .....	126
Table 4-3 Interview Participants .....	131
Table 5-1 Network Analysis.....	146
Table 5-2 Organisational Level Analysis .....	147
Table 5-3 Relational Themes.....	151
Table 5-4 Cognitive Themes .....	167
Table 5-5 Knowledge Creation in Social Media .....	177
Table 7-1 A framework for Enhancing Inter-organisational Knowledge Sharing in Social Media .....	232

# 1 INTRODUCTION

## 1.1 Introduction

Effective knowledge sharing between security organisations has become increasingly vital to maintain the highest standards of security and public safety (Sanders and Henderson, 2013; Griffiths et al., 2013). The security field has evolved significantly to rely increasingly on rich and diverse sources of knowledge in order to improve security practices. The advent of new technologies and mechanisms for knowledge management through social media networks has generated a greater imperative to understand the challenges and complexities of effective knowledge sharing within an inter-organisational context. With the rise of a knowledge economy and increasing competition from private organisations and pressure from the general public for public services to perform more effectively, the policing sector is subject to the same demand for effectiveness and efficiency as witnessed in other sectors. According to Hislop (2005) there is now a realisation by organisations that knowledge exists outside of organisational boundaries, and knowledge sharing with external stakeholders or collaborators is vital in ensuring a business can meet its information and knowledge needs. A knowledge strategy which is too internally focused does so at the detriment of the quality and level of information and knowledge. Within the proposed research context of inter-organisational knowledge sharing between United Arab Emirate (UAE) security agencies the achievement of security goals can only be secured through intensive and effective cross agency knowledge sharing, hereon in termed inter-organisational knowledge sharing (IOKS).

However, in the UAE the optimisation of knowledge strategies has proved to be challenging within an Arab context. A key issue identified by recent research is that the UAE significantly lacks formalised knowledge management strategies (Al-Esia and Skok, 2014). This has implications for inter-organisational knowledge sharing between security agencies which is exacerbated by emergent forms of knowledge sharing within social networks that blur the boundaries between external and internal practices and formal and informal systems. In addressing this focus needs to

be placed on understanding the implications of social networks and inter-organisational knowledge sharing. To do so the proposed research adopts a broader approach of a social network perspective and to explore emergent forms and characteristics of knowledge sharing between organisations. Such an investigation will provide insight into socio-organisational factors that impact on inter-organisational knowledge sharing and consideration of risk and benefits.

The research context is situated in policing and airport security and the significance of knowledge management between organisations to address the complexity and critical challenges faced by this sector. The focus is placed on investigating inter-organisational knowledge sharing in social media between key organisations involved in UAE border control: Abu Dhabi Airports Company (ADAC) and Dubai Airports Company (DAC), Abu Dhabi Police combined unit comprising police and immigration officers and Dubai Police unit responsible for airport security, and Abu Dhabi and Dubai Customs. The remainder of this chapter introduces the proposed research addressing the background context, research problem, research goal and structure of the thesis.

## **1.2 Research Context**

### **1.2.1 Knowledge Management Context**

Knowledge is a core aspect of today's global economy and can be a significant source of competitiveness and commercial advantage if managed effectively (de Stricker, 2014). Knowledge management captures, creates, codifies and shares knowledge within and between organisations (Boughzala and Dudezert, 2011). De Stricker (2014) maintains that knowledge management is now pervasive in all areas of personal and organisational life and is continuously evolving supported by rapid technological advances. Its value lies in its ability to facilitate decision-making capabilities, build learning organisations and stimulate change and innovation (Quast, 2012). Inter-organisational collaborations and strategic alliances are argued to enhance the innovative capabilities of organisations through facilitating increased knowledge flows (Capo et al., 2004).

For public police forces globally a core public service priority is delivering the best possible service to the public. This frequently means in many policing contexts delivering services effectively, efficiently, and providing value for money (Rogers et al., 2011). Effectiveness for the police service is principally perceived in terms of success in detecting and reducing crime (Rogers et al., 2011). In the course of their daily work police officers are routinely in contact with significant amounts of information and knowledge is asserted as the most important resource in police investigations (Gottschalk, 2006). Luen and Al-Hawamdeh (2001) note that successful investigation depends on knowledge availability and is knowledge-intensive and time-critical, emphasising the crucial significance of knowledge management to police effectiveness. Innes and Roberts (2011) note that increased police effectiveness and efficiency can be gained through re-organisation of information and intelligence policing dimensions. Several strategic approaches for detecting and reducing crime are dependent on effective management and use of knowledge including intelligence-led policing generating strategic information, community policing which draws on diverse local knowledge (Gottschalk, 2006) and problem-oriented policing requiring forces to analyse new knowledge to reveal problems (Scott, 2000). Current police service priorities towards efficiency and value for money driven by severe financial constraints emphasise the efficient use of resources to meet demand and the reduction of spending and costs. This is frequently being achieved through organisational change approaches (Karn, 2013) for which effective knowledge management is fundamental. Evidence points to the critical role of knowledge management in supporting organisational change, managing resources and driving learning processes (Harper and Harper, 2002).

As a result of the importance of knowledge in all aspects of organisational functioning and operations there is widespread acknowledgement that one of the key ways to achieve goals and priorities is by capitalising on knowledge and knowledge workers. **Rivera et al., (2020) generated additional insights into the relationship between knowledge sharing and Psychological safety (PS) in an international arrangement through the knowledge-based view and the PS theory.** Drucker (1993) earlier acknowledges the reorientation towards knowledge and asserts that organisations are no longer focusing on production factors, rather they are becoming more knowledge focused, leading to the emergence of a knowledge economy.

Driven by technological developments, knowledge-based economies are fundamentally based on the generation, dissemination and utilisation of knowledge and information (OECD, 1996) reflected in the trend towards growth in high-technology investment, high-technology industries, and skilled labour. Awareness of the need to systematically address the management of knowledge has grown in conjunction with the emergence of the knowledge economy (OECD, 1996).

According to Dean and Gottschalk (2007) in order to maximise the benefits of knowledge it is important to consider it within its cultural context in which it exists, and thus any discussion of KM should consider the impact of national culture factors, particularly in a non-Western setting which should be given key consideration. However, evidence shows that the UAE is struggling in terms of how to implement and synthesise KM ideas (Seba et al, 2012) into their unique context, which is steeped in traditional culture and stereotypes. It is surprising that with new steps towards modern and best business practices, progress has occurred in small steps with regard to inter-organisational knowledge management in the UAE public sector.

It is generally accepted that an organisation is unable to generate all the information and knowledge it needs internally, and thus collaborating externally with other organisations can provide a gateway to access other knowledge sources which may help organisations in correct decision making (Hislop, 2005). Similarly, there is a realisation that organisations that work together in terms of knowledge (inter-organisational) regardless of whether private or public, can positively affect their organisational performance (Harvey et al., 2010). For police forces collaboration, cooperation and knowledge-sharing with other organisations and agencies is acknowledged as essential to effective policing in the context of sustained growth in complex and cross-border organised and cyber-crime and terrorist threats (Ratcliffe, 2008). Moreover collaboration is increasingly being perceived as a significant means to achieve operational efficiencies and cost-savings in police forces (HMIC, 2012). Police services globally are entering into collaborations at an unprecedented scale at local, national and international levels and with a range of policing and non-policing agencies (Slessor, 2014).



A major component of inter-organisational knowledge management is formalised with a broader SMART e-government system that facilitates 'open data policies' which allows access and openness of data to the public (Bertot et al, 2014), encouraging knowledge dissemination. The SMART e-government initiative is a drive for the Abu Dhabi government to synchronise with changes in the external business environment, and reflect the digital revolution, by offering and allowing key stakeholders to be connected to key governmental services and departments electronically. It seeks to offer an electronic platform, which allows information dissemination between governmental departments and external customers, which include individuals and businesses (Abu Dhabi government, 2014). Currently, the Abu Dhabi SMART e-government initiatives for the police sector appear to only extend to information use, as it provides information on various procedures for emergency and safety situations and offers details on the relevant departments and contact numbers.

### **1.3 Research Problem**

Given the knowledge-intensive activities associated with the police sector this context has been the focus of several studies on KM, including research examining KM implementations specifically in police agencies. Hughes and Jackson (2004) highlight that police organisations do not form part of the competitive marketplace which can characterise other areas of the public sector. Nevertheless, current fiscal pressures are driving many public sector organisations to enhance their efficient management of available resources. To improve their efficiency over the last decades police agencies have increasingly engaged in continuous learning (Mitchell and Casey, 2007).

The rapid development of the public sector in the UAE including policing and security services and the challenge to increase quality has been linked to effective knowledge management. While knowledge management has been prioritised its implementation has been acknowledged as challenging. Sheikh Maktoum the ruler of the Emirates has asserted that there is an urgent need for a KM model that is consistent and sensitive to Arabian culture (Mohamed et al., 2008). Over the last decade growing knowledge gaps between Arab countries (UNDP, 2014) underline the importance of effective implementation of knowledge management in order to

overcome barriers to the transfer and localisation of knowledge. Research from the UAE evidences a wide lack of explicit knowledge management strategies and inadequate commitment of managers towards supportive organisational policies (Al-Esia and Skok, 2014). There is a pressing need and high level of demand for the application of KM in the UAE at an inter-organisational level in the public police sector. The research problem is therefore multi-faceted, as it seeks to uncover the existing nature of inter-organisational knowledge sharing in the public policing sector, whilst also considering the national culture and organisational cultural influences on knowledge sharing processes and inter-organisational knowledge management.

For police organisations knowledge sharing and collaboration is an increasingly vital aspect of modern policing. In the UAE the Abu Dhabi Police and Dubai Police are responsible for airport security and operate with a number of agencies to ensure public security and safety. Policing is becoming increasingly complex due to the rise of international crime and terrorism and combatting such highly organised crime requires complex collaboration between various organisations to share knowledge and succeed in crime prevention (Gottschalk, 2009). Thus, effective knowledge management between policing sector and various external actors is considered a fundamental and vital aspect of their effective operations and more research is needed to determine the best strategies to achieve this. Much investment and emphasis has been placed on formal explicit knowledge management systems such as the SMART e-government initiative. The adoption of e-government strategies has become an increasingly important strategy for transforming the way governments share information (Zhang et al, 2014). However, there is a potential gap in design for knowledge sharing accounting for the human element of KM for tacit knowledge. This has begun to receive increasing attention and is perceived as the fundamental element of successful KM. Thus, human resource elements of policing, as opposed to the technology aspects, are considered an organisational research priority in terms of understanding inter-organisational knowledge sharing between police and security agencies.

However, knowledge management is challenged due to the significant cultural diversity inherent in the UAE airport security context. The involvement of multiple

public and private entities emphasises divergence in organisational cultures while the presence of multiple different nationalities within the airport security workforce points to wide diversity in national cultures across organisations. This has significant implications for inter-organisational knowledge management in terms of risks for collaboration and knowledge-sharing in that the organisations involved may have diverging goals and competing interests (Pardo et al., 2001). Public sector organisations such as the police force and customs organisations safeguarding airport security have a predominantly social focus in contrast to industry organisations acknowledged to have a primarily financial focus (Lozano, 2007). Cultural diversity also underlines potential issues in relation to the building of trust. Trust is consistently key to the success of inter-organisational knowledge-sharing relationships both in the initial stages of relationship formation and as a consequence of positive relations over time (Sheppard and Sherman, 1998). Another issue is the difficulty of developing a shared language between participants of different nationalities and different education and experiences. The UAE is notable for having one of the most culturally diversified workforces globally. As part of the research context this diversity is demonstrated in differences between the public and private security agencies and between different levels of management which are comprised of diverse concentrations of UAE citizens, Western and non-Western foreign workers (Al-Esia and Skok, 2014). Not all foreign co-workers are perceived in the same manner in relation to knowledge sharing and this issue has been found to be exacerbated by organisational culture. Findings point to Asian co-workers as the least preferential group with whom to share information (Al-Esia and Skok, 2014).

To date the application of inter-organisational knowledge management in public sector organisations is not fully optimised. The lack of formal framework and policy for inter-organisational knowledge management contributes to the generation of independent knowledge silos. Examining the drivers and enablers of overall knowledge-sharing behaviour within organisational settings multiple studies have emphasised the need to overcome these perceived risks and barriers for the effective development of sustainable and efficient inter-organisational networks (Chen et al., 2012; Al-Alawi et al., 2007; Bock et al., 2005; Kankanhalli et al., 2005; Wasko and Faraj, 2005). Frequently legal or collaborative requirements or agreements neglect to integrate adequate conditions to enable effective collaboration between

organisations. This is observed to partially result from the presence of numerous determining factors with features related to both internal and external determinants including the characteristics of organisations in collaboration (Al-Busaidi, 2013). A key factor is the tendency to operate in silos and a lack of collaboration or sharing culture within and across public sector organisations (Ali et al., 2016). Inter-organisational knowledge management is also constrained by greater focus on internal organisational business and knowledge management requirements in knowledge management designs and less emphasis on information sharing and collaboration across organisations (Leung et al., 2012).

Both the Abu Dhabi Police and Dubai Police operations in the Abu Dhabi and Dubai Airports implement highly formalised technology driven information and knowledge management systems. Highly sophisticated networked identification and security information systems are implemented that enable management of explicit and codified information and knowledge. Confidential and classified knowledge is managed and shared within information technology systems with formal secure database technology infrastructure. While explicit types of knowledge have major investment and infrastructure there is significant consensus on the lack of understanding and framework for managing and sharing tacit forms of knowledge that represent a major dimension of policing and security operations. Difficulty in accessing and sharing such tacit implicit knowledge that is stored in the minds of security personnel at all levels is a major factor that potentially undermines the ability to benefit from the individual and collective knowledge that exists in human capital (Goldstein, 1990).

The inter-organisational knowledge management challenges and the cultural context outlined is further exacerbated by the disruptive role of social media on knowledge management and learning processes. Over the last ten years social media has been widely adopted with diverse organisational impacts. The impact of social media has been significantly embraced by organisations and individuals transforming communication, information sharing, problem solving and decision making (Qi and Leung, 2015). One of the most significant areas to be affected is knowledge management with social media bypassing earlier knowledge management processes (Kane, 2017). Social networking has enabled organisations to take

advantage of new popular knowledge sharing tools, such as corporate blogging, which allow the accumulation of knowledge for internal and external purposes, such as industry news or internal projects, as well as including feedback and linking mechanisms (Ojala, 2005). Yao et al., (2020) investigated how knowledge sharing influences technological innovation capability of the software in enterprises. They found that knowledge sharing culture, organisational culture has significant impact on tacit knowledge sharing, management system and IT support have significant impact on explicit knowledge sharing. With one of the highest levels of Internet penetration and social media adoption in the Arab world and globally social media represents a major factor affecting the dynamics of inter-organisational knowledge management in the UAE.

#### **1.4 Justification for Airport Security as the Context of Study**

The significance of knowledge and knowledge sharing to enhance intellectual capital that is vital to the achievement of security goals forms the overarching justification for this research. Specifically, there is an imperative to enhance employee capability in the particular area of knowledge sharing and security awareness. De Clercq and Pereira (2020) investigated the relationship between employees' knowledge sharing efforts and creative behavior, particularly they addressed how this relationship may be restored by three resources that operate at individual level. The study stresses the effectiveness of knowledge sharing efforts for motivating and encouraging creative behavior. The high volume of air passengers passing daily through airport terminals increasingly require higher levels of security (Fenza et al., 2010). New emerging threats from sources such as organised crime, cyber-attacks, drug trafficking, terrorism, and mass immigration has challenged defense organisations to maintain pace with dynamically changing risks. Security requirements now being undertaken at national, regional, and global levels are a reflection of the demands and expectations of citizens worldwide. To effectively analyse and address the risks requires expertise founded on stringent methods, proven technological capabilities and appropriate human and organisational resources (Fenza et al., 2010). Defense and security convergence necessitate novel technologies and solutions to facilitate collaborative decision making and support the sharing of

information and communications systems between organisations (Fenza et al., 2010).

Situation awareness is a key factor in decision-making characterised by monitoring and recognition of relationships between objects in dynamic environments (Fenza et al., 2010). Airport security represents a collaborative decision-making environment in which security operators could confront issues of information overload generated by the significant quantity of information provided by a range of highly dynamic and diverse sources. Thus, a comprehensive situation awareness in relation to all relevant objects or entities located in an area of interest is fundamental for ensuring the successful settlement of a developing situation (Fenza et al., 2010). Sharing up to date information on threats or events, transmitting it to relevant actors following which collaborative decisions are made is aimed at use of the airport infrastructure. Collaborative decision-making focuses on attaining a common situational awareness between economical systems and processes and collaboration between core actors for the purpose of adding value to real-time airport decision making (Fenza et al., 2010). Relevant agreed data needs to be shared in a timely manner among all partners and should be of a level of quality that can enable enhanced traffic predictability and planning capacities for all those involved (Fenza et al., 2010).

The human capital dimension for security is increasingly emphasised. Airport security systems are created from up to 20 layers of defense grounded in the security-in-depth model (Talbot and Jakeman, 2008). This implies the involvement in security responsibility not only of security personnel but many other individuals (Andriessen et al., 2012). Security situation awareness is linked to understanding of interaction and influence of developments in aviation security on the organisational conditions (Pettersen and Bjornskau, 2015). The threat of terrorism has been described as vastly problematic for the management of organisations in relation to critical infrastructure protection. Structural strategies emphasise organisations and inter-organisational relationships and focus also on the interaction between public policy and the private sector. They thus have core relevance for the aviation sector which interacts significantly with local, central, and international authorities. Pettersen and Bjornskau (2015) assert that protection against such problems is not

achieved without interconnection with the organisation and management of extant threats within critical infrastructures. This is critically dependent on the perceptions of security aviation employees in relation to security measures and the exchange of information, and trust (Pettersen and Bjornskau, 2015). Critical infrastructure protection is strongly reliant on anticipation in terms of target hardening and access control (LaPorte, 2006). More cost-effective resilience strategies require incorporation of continuous improvement and learning (Meyer, 2012).

## **1.5 Research Aims and Objectives**

The aim of this research is to investigate inter-organisational knowledge sharing in social media. In doing so, assessing the impact on intellectual capital that collectively results in an inter-organisational knowledge-sharing framework.

### **Objectives**

- To identify the key characteristics of knowledge sharing through the use of social media that results in enhanced intellectual capital in security awareness and threat intelligence.
- To evaluate the impact of inter-organisational knowledge sharing on security situation awareness that results in a novel taxonomy of factors.
- To develop an inter-organisational knowledge sharing framework that is underpinned by guidelines to support effective integration of knowledge sharing with social media.

## **1.6 Research Questions**

To address the research aims and objectives, this research study attempts to empirically answer the following research questions:

- i. What are the characteristics of inter-organisational knowledge sharing within social media?
- ii. How are the 3 inter-organisational units in airport security in the UAE sharing knowledge within social media?

- iii. How does knowledge-sharing within social media influence employee capability in terms of security situation awareness?
- iv. What are the contextual factors that facilitate or inhibit inter-organisational knowledge sharing?

## **1.7 Structure of the Thesis**

The generic form that a doctoral thesis may adopt is advocated by Phillips and Pugh (2010) who outline that a methodology consists of four key elements namely: (i) background theory; (ii) focal theory; (iii) data theory; and; (iv) novel contribution. These elements are outlined in the following sub-sections providing both summarisation and signposting of this doctoral thesis.

### **1.7.1 Background Theory**

Phillips and Pugh (2015, p. 64) define background theory as *“the field of study within which you are working . . . the standard way of demonstrating this is through a literature review”*. Development of a comprehensive underpinning theory involves examining the research field and determining the domain of the problem. Critically awareness of the factors influencing and impacting the phenomenon under study needs to be established. Thus, the rationale, the research problem statement, in addition to the literature review relevant to knowledge theory and inter-organisational knowledge theory are all considered and presented as part of the underpinning theory.

### **1.7.2 Focal Theory**

Focal theory, as explained by Phillips and Pugh (2010, p. 65) assumes a significant role in establishing the context of the problem and provides the focus for analysis. Focal theory centres on identifying the area of research, describing the nature of the issues being examined and providing an initiating point for the process of analysis. In this phase hypotheses and conceptual models are generated to advance the theoretical discussion. Consequently, the framework for this research,



developed from a synthesis of current literature, is discussed through the lens of the focal theory.

### **1.7.3 Data Theory**

Data theory according to Phillips and Pugh (2015, p. 66) provides *“the justification for the relevance and validity of the material that you are going to use to support your thesis”*. In terms of the content this theory should encompass various issues including: the conditions influencing the selection of research strategy, the most suitable epistemological approach, and the development of relevant research methods. This ensures that reliable and appropriate channels for enquiry are created and methods for the collection of data are satisfactorily developed. As a result, based on the data theory the in-depth methodological issues in terms of philosophical stance, strategy, data collection and data analysis are explained.

### **1.7.4 Novel Contribution**

A novel contribution as explained by Phillips and Pugh (2015, p. 66) *“is concerned with your evaluation of the importance of your thesis to the development of the discipline”*. The contribution made by this study is discussed and attention is drawn to the specific limitations of the research and implications for future research. Ultimately, this section of the thesis addresses the theoretical and managerial value and the manner and degree to which existing knowledge and focal theory in this field is advanced because of this research. The finding implications and contributions are discussed, and their significance are outlined, and presented with subsequent recommendations for further research avenues.

## **1.8 Significance of the Study**

The significance of the adoption of social media in the UAE has implications for understanding the role of virtual networks and social media in knowledge management. Moreover, it emphasises the knowledge management processes outside organisational boundaries and within personal networks that have implications for knowledge management processes. Organisations no longer operate in isolation, but as part of a wider environment and broader social system that incorporate both formal and informal networks such as social media. This aspect is fundamental to

inter-organisational knowledge management. Examining the drivers and enablers of overall knowledge-sharing behaviour within organisational settings multiple studies have emphasised the need to overcome these perceived risks and barriers for the effective development of sustainable and efficient inter-organisational networks (Chen et al., 2012; Al-Alawi et al., 2007; Bock et al., 2005; Kankanhalli et al., 2005; Wasko and Faraj, 2005). Furthermore, this study adopts a cultural lens towards research, and considers national culture as an important variable in international KM, while seeking to assess the impact this has on inter-organisational KM. This can support the development of a 'culturally sensitive KM strategy' in this context, proposing a KM policy which takes into account the tendencies of Arab national culture, in terms of social networks, communication patterns and attitudes such as trust (using Hofstede's framework as a guide), as well as the consideration of Arab specific issues such as the 'wasta' effect (Hutching and Weir, 2006). It is imperative that any culturally sensitive KM strategy must incorporate, account for and accommodate such issues, in order to ensure a suitable fit for its context. The culturally sensitive aspects focus on the human (personalisation) aspect of KM strategy, although technological aspects are considered to a lesser extent. It is envisaged that should such a strategy be formulated, this is likely to increase KM effectiveness at an inter-organisational level, as it helps to minimise obstacles created by national culture (and perhaps organisational culture) and promote cross organisational knowledge sharing.

## **1.9 Contribution to Knowledge**

The most significant challenge when using social media instruments to share knowledge is the dissemination to members of the organisation of tacit knowledge which includes opinions, ideas and experience (Amidi et al., 2015). While organisational culture and knowledge management are widely researched, little research has been conducted on inter-organisational knowledge management and the impact of culture. This need is increasingly recognised as paramount for modern public service organisations emerging from the fact that these organisations and the direction of social life is reliant on a complex operational system involving multiple and diverse institutions, organisations and services included in the delivery of public services (Kožuch and Kožuch, 2011). Research has found limited evidence

that knowledge management is applied in organisations, particularly in developing countries.

Thus this research makes a significant contribution to theory and praxis. These contributions will provide valuable understanding of the structure and patterns of connections in inter-organisational knowledge sharing and how social media mechanisms are employed to facilitate knowledge creation processes and enhance intellectual capital from the perspective of law enforcement and policing in the airport context. This research represents an original focus on the specific context of inter-organisational knowledge sharing within a police and airport security context. This research will contribute new insights into the study of inter-organisational relationships to explain why and how organisations facilitate knowledge sharing to develop intellectual capital. The specific contribution of this research can be stated as follows:

- Contribute insights into the structural, relational, and cognitive characteristics of inter-organisational knowledge sharing in social media and the behaviours and modes of sharing that facilitate knowledge creation. There is potential to contribute understanding of organising and co-ordinating mechanisms both formal and informal between inter-organisational units in terms of the absorption and disseminative use of different types of knowledge to enhance a critical and strategic employee capability in terms of security situation awareness.
- Explain how dimensions of social capital (structural, relational, cognitive) facilitate or constrain inter-organisational knowledge sharing between agencies in the airport security context.
- Provide insights into challenges, implications of risk and benefits associated with knowledge sharing with social networks.
- Identify the key antecedents of inter-organisational knowledge sharing and explain how national culture and organisational culture factors enable or constrain inter-organisational knowledge sharing.

The policy and managerial implications are significant in terms of enhanced understanding of the risk and benefits of knowledge sharing with social media and identification of critical failure and success factors for organisational performance. Thus, in terms of practical implementation this research provides key managerial insights and recommendations that will enable knowledge management practitioners to adapt and optimise their strategies.

### **1.10 Structure of the Thesis**

Chapter one provides a general background of this thesis, stating the research aim, objectives, and research questions. This chapter also states the research problem and significance. Chapter two provides a critical analysis of the current literature on inter-organisational knowledge sharing and the key associated dimensions that underpin the implementation of knowledge management. Chapter three positions the study within the right contextual frameworks, linking the study to previous research work and building on knowledge theory, social capital theory and intellectual capital theory to develop the thesis conceptual framework. Chapter four discusses the research methodology, strategy, approach, and methods adopted for this study including the methods used in selecting the samples as well as the data analysis techniques employed. Chapter five presents the results from the case study analysis of inter-organisational knowledge sharing (IOKS) in social media between the key agencies responsible for airport security in the UAE. Chapter six provides a detailed discussion of the results. The chapter discusses and summarises the findings related to each of the three research objectives. Chapter seven provides a summary of the research findings, general conclusion, contributions recommendations and a developed framework for Enhancing Inter-organisational Knowledge Sharing in Social Media

## **2 LITERATURE REVIEW**

### **2.1 Introduction**

This chapter contains a synthesis of the key associated dimensions that underpin the implementation of knowledge management. Knowledge management (KM) forms the central theme of this analysis that is interrelated with two further dimensions of inter-organisational KM and cultural dimensions influencing KM. This reflects the specific context of this study in focusing on a culturally sensitive model of knowledge management in Arab context. The chapter explores several theoretical strands that outline knowledge management processes in addition to cultural and interorganisational factors impacting on organisational KM design and implementation. The inter-organisational dimension of knowledge management presents a level of analysis for this study that underscores the policing context in the UAE and the increasing trend for police collaboration, public private policing programmes and broad stakeholder engagement and communications. The Arab and the public sector context emphasise the external and cultural factors that influence KM.

This synthesis on knowledge management seeks to provide an overview of related definitions and concepts related to KM and culture, Inter-organisational KM and KM and the policing sector. Key models of knowledge management provide insights into stages of knowledge creation and elaborate on the interaction between tacit and explicit knowledge. This is viewed further in terms of human, structural, and relational perspectives and the classification of key sub-elements that combine and contribute to the concept of intellectual capital. This is explored within the context of the policing sector with an analysis of how intellectual capacity is manifested in various policing roles and underpinning organisational processes.

Research suggests the importance of knowledge networks and relationships to facilitate knowledge transfer and creation contributing overlapping perspectives. Key issues identified in the literature influence the theoretical basis for this research necessitating a deeper understanding of the socialisation dimension of knowledge and focus on tacit processes (Nonaka and Takeuchi, 1995). Socialisation can be defined as the transformation of tacit knowledge into new tacit knowledge by

means of social interactions and the sharing of experiences while combination refers to a process of generating new explicit knowledge by merging (Easterby-Smith and Lyles, 2011). The significance of social media in this process is an emerging theme in the literature with social media surmounting many of the constraints of earlier knowledge management technologies (Kane, 2017). Focusing on knowledge management can be argued to have practical importance as it is asserted that KM is the organisational aspect most impacted by social media (Kane, 2017). The personal nature of social media is particularly significant with relevance for socialisation and individuals' personal networks being cited as a major factor in knowledge transfer within inter-organisational networks (Rejeb-Khachlouf et al., 2011).

The comparison between the role of KM in public and private sector organisations is also addressed that emphasises differences in culture, perceptions of knowledge and the utilisation of knowledge management practices in public and private organisations. This analysis shifts towards the cultural perspective and its relationship with KM. The literature points to several key interrelated cultural factors that consist of culture types, leadership, power and relations, structures, attitudes to knowledge and its value, structures and communication processes that influence KM in practice. The tenor of this analysis incorporates inter-organisational dimensions that provide a framework for understanding the conditions for maximising knowledge transfer success between source and recipient organisations. It is evident that cultural challenge exists not only in relation to internal challenges in terms of achieving an optimal cultural context and alignment between sub-divisions and teams, but in terms of aligning with external cultures of partner organisations. This discussion is further situated within the national cultural context and sector specific cultural context of policing. The empirical evidence is reviewed and provides insights into policing styles, strategies and management structures that influence KM.

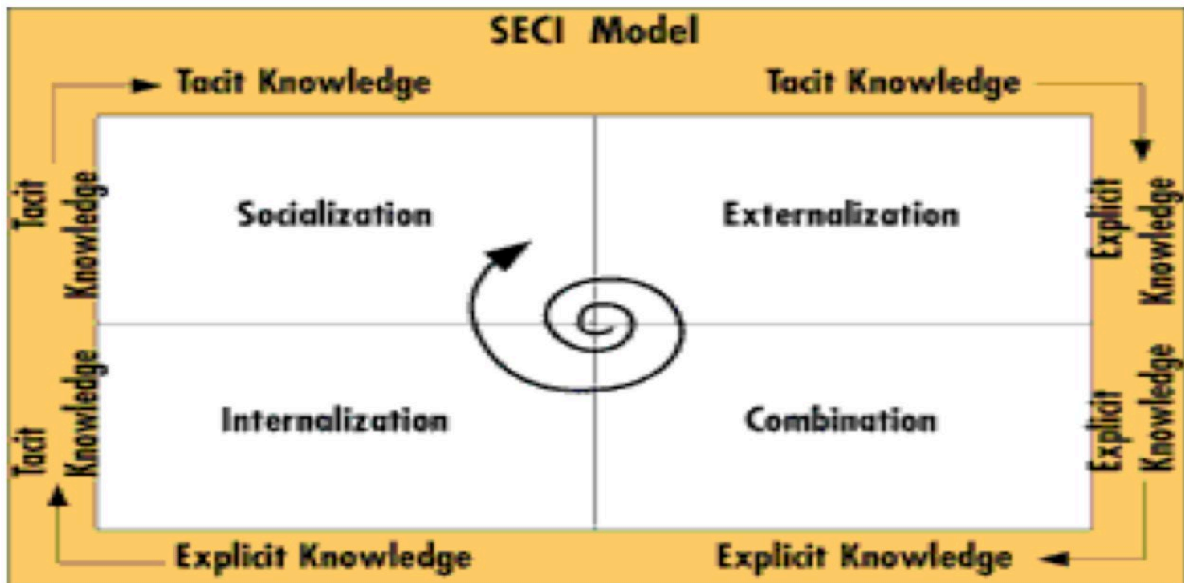
A synthesis of this literature reveals the preponderance of research focused on Western contexts and research gap in terms of KM in Arab policing and public service context. This underscores the basis for this study and the final part of this chapter presents a theoretical framework that intersects knowledge management

concept with cultural theory and inter-organisational knowledge management theory. This aims to provide a framework evaluating the design of KM management processes that address cultural contexts and inter-organisational knowledge transfer for policing in the UAE.

## **2.2 Knowledge Management**

A significant focus in the knowledge management (KM) literature is the practical applicability of KM models, linked in recent research to both national and organisational culture. A key conceptual distinction is whether culture is solely an element within a KM model, or rather is perceived as a limiting factor for a model (Andreeva and Ikhilchik, 2011). The SECI model critically underpins knowledge conversion theory within KM and such widespread acceptance is suggested to indicate that some aspects of the model are universally appealing to most cultures (Andreeva and Ikhilchik, 2011). According to Brown and Duguid (2000) KM is a purposive management style deliberately aimed at promoting knowledge generation, sharing and dissemination for its re-use in operations and encouraging innovation.

Nonaka and Takeuchi (1995) pioneered the SECI model, which helped to explain how knowledge is created in organisations as shown in Figure 2-1. Two key forms of knowledge are conceptualised here: tacit and explicit knowledge. Tacit knowledge refers to intangible knowledge, which is stored inside the head of an individual, in a working setting an employee is the custodian of tacit knowledge. Explicit knowledge on the other hand is tangible knowledge which is easily stored and distributed, such as that found in reports, databases, files, and manuals.



**Figure 2-1 SECI Model**

Source: Nonaka and Takeuchi (1995, p.32).

The SECI model involves four stages, whereby tacit and explicit elements interact in different ways.

1. **Tacit to Tacit (Socialisation)** – based on social interaction via face-to-face interaction or an exchange of experiences, ideas, information. Informal in nature. Socialisation is proposed to facilitate the transference of knowledge between individuals and is achieved through sharing, guiding, teaching, coaching, training, mentoring and the adoption of shared beliefs and values (Easterby-Smith and Lyles, 2011).
2. **Tacit to Explicit (Externalisation)** – The tacit knowledge is then transferred into a more tangible and published format. Knowledge is captured in written form and stored in books and databases, which makes it easier to share the knowledge.
3. **Explicit to Explicit (Combination)** – Occurs via the integration of two stored explicit knowledge sources. New information can be combined with existing organisational knowledge (in databases for example) to create new knowledge. This knowledge can then be distributed and shared.



4. **Explicit to Tacit (Internalisation)** – The stored knowledge is then used by individuals to solve problems, detect issues, or inform other issues, and develop new knowledge in their mind.

This process is ongoing and continues to spiral, thus creating organisational knowledge continuously. Any deficiency in tacit or explicit sources of knowledge will evidently obstruct the creation of organisational knowledge. This model suggests that adequate social interaction processes as well as appropriate knowledge capturing technologies should be present in order for organisational knowledge to be captured.

Hansen et al's., (1999) key work on KM uses different terminology to describe the different components of knowledge, albeit utilising the same concepts: personalisation and codification. Hansen et al (1999) define codification as the capturing of knowledge in repositories for reuse, thus helping an organisation to achieve economies of scale with that information as it enables wide-scale distribution to relevant knowledge workers, whilst the personalisation approach centres upon the sharing of interpersonal knowledge via interaction and networking, and is useful in organisation where an expert based customised approach is needed. Hansen et al., (1999) suggest that based on these approaches, an organisation must choose a dominant approach of either the former or the latter.

### **2.2.1 Characteristics of Knowledge**

A dimension of analysis in relation to inter-organisational knowledge transfer are the characteristics of the knowledge (Battistella et al., 2016). The literature has identified a wide range of properties and characteristics that describe the nature of the knowledge as an object of transfer and that are acknowledged to have an impact on the transfer process (Battistella et al., 2016). The object to be transferred is acknowledged to have diverse types and forms including skills and technology as well as knowledge, and may have different features and properties (Battistella et al., 2016). The boundaries between these types and forms are acknowledged to be easily altered as not only physical things or patents and different technologies but also skills and know-how gained by individuals, groups or organisations itself are transferred (Battistella et al., 2016).

Two main types of knowledge defined as organisational and individual have been distinguished in literature (Nonaka and Takeuchi, 1995). Organisational knowledge is explained as generated within and developed by groups of individuals (Alavi and Leidner, 2006). There is however an acknowledged gap in the knowledge possessed by individuals and that of the organisation. For the effective leverage of knowledge within an organisation it is agreed that individual knowledge sharing should be facilitated (Chan and Ford, 2003). Individuals are acknowledged to retain diverse types of knowledge. Within organisations a traditional classification of the nature of knowledge is that made between tacit and explicit knowledge (Nonaka and Takeuchi, 1995).

#### 2.2.1.1 Explicit Knowledge

Explicit knowledge is defined as codified textually and/or visually and easily expressed (Nonaka and Takeuchi, 1995), such as a training manual where knowledge is incorporated on the procedures for achieving tasks (Chan and Ford, 2003). Thus explicit knowledge is by definition codified and widely perceived to be more easily understood and transferred between individuals (Canestrino 2009; Polanyi 1966). Canestrino (2009) articulates explicit knowledge in the form of data, scientific formulas, and different symbols which can be coded, and disseminated simply.

In the UAE, part of the e-government represented a major initiative to establish information and communication technology to deliver important services, online information conveniently for nationals and residents, organisations and other public agencies (Carter and Belanger, 2005). The adoption of e-government strategies has become an increasingly important strategy as it is transforming the way governments share information and deliver their services (Zhang et al, 2014). This initiative incorporated processes focused on the codification of knowledge to explicit for access to public service personnel and promoting knowledge sharing and transfer between organisational units including security and police functions. Explicit knowledge was categorised in terms for reporting, general information or policy (Nam, 2014). The emphasis on formal explicit knowledge sharing is underlined by the SMART government services by the UAE governments to facilitate

'open data policies' to allow access and openness of data to the public encouraging knowledge dissemination (Bertot et al, 2014). As well as this, it also provides the opportunity to governments for the collection of 'big data', which involves extremely large data sets which can then be used to find relationships and patterns from elements within that data (Bertot et al, 2014). This therefore creates a large opportunity for government departments to gain insights which may have been hidden to them previously, and is actively used by governments to decipher and identify issues or problems (Bertot et al, 2014).

Currently, the Abu Dhabi SMART e-government initiatives for the police sector appears to only extend to information use, as it provides information on various procedures for emergency and safety situations and offers details on the relevant departments and contact numbers. Currently, it is not as integrated into the police function as it is with other departments, and there is no service for reporting crimes live. There is certainly scope and it is recommended that Abu Dhabi police force can improve the nature of this service with external stakeholders (citizens), designing the system so it can be used as a source of providing knowledge and intelligence within Abu Dhabi police sector by making it more of a two-way interactive system which allows citizens to report illegal or suspicious activity directly. Furthermore, according to Sinclair (2014) smart phones generate important information related to location points showing where phones are being used from and generating useful data. Citizens represent a key external stakeholder group for police departments and it is imperative that appropriate knowledge management techniques are employed with them, using both codification and personalisation methodologies.

#### 2.2.1.2 Tacit Knowledge

Tacit knowledge is described as non-codified knowledge obtained through experience and often not easily expressed or codified (Nonaka and Takeuchi, 1995). While both types of knowledge are perceived as valuable, tacit knowledge is viewed as more complex to encapsulate and share as it is contained within individuals (Chan and Ford, 2003). Knowledge is considered tacit when it is scarcely articulated and only transferable when expressed while explicit knowledge is

presented in the form of practices or documents (Howells, 1996; Argote et al., 2003; Canestrino, 2009). According to Battistella et al., (2016) tacit knowledge resides in individuals' minds and abilities, and its transfer is linked to an individual's capacity for transmission and learning.

Tacit knowledge is suggested to only be acquired based on practical experience and represents the background of the knowledge structure. Explicit knowledge can be generated through logical deduction and together with tacit knowledge reinforce the quality of knowledge (Battistella et al., 2016). Ambiguity is more highly associated with tacit knowledge than explicit knowledge (Simonin, 2004). Knowledge that is ambiguous or unclear in character is noted to be more challenging to transfer than more defined knowledge (Argote et al., 2003), as the process of learning and reproducing new skills and knowledge is shown to be significantly more complex if they are presented in an unclear or ambiguous form (Canestrino, 2009; Cummings and Teng, 2003; Cohen and Levinthal, 1990). Given the exploratory character of most new product development activities it can be safely concluded that the knowledge "object" to be transferred in these cases possesses a significant amount of uncertainty and ambiguity.

Knowledge can also be perceived in terms of its components, where it resides and its embeddedness (Autio and Laamanen, 1995). Knowledge can be referenced in terms of physical and technological characteristics and resides within the object, known as the technoware component. The humanware component is suggested to refer to the knowledge residing within individuals and is relative to their use of it, while the infoware component is most easily transferrable as the knowledge is embedded in information codified in manuals and documents. The final component, orgaware, is the knowledge encapsulated in the organisational structure and can be found, for example, at the level of working practices and rules. This component is acknowledged to be the most difficult to transfer as it is deeply embedded in its context (Battistella et al., 2016).

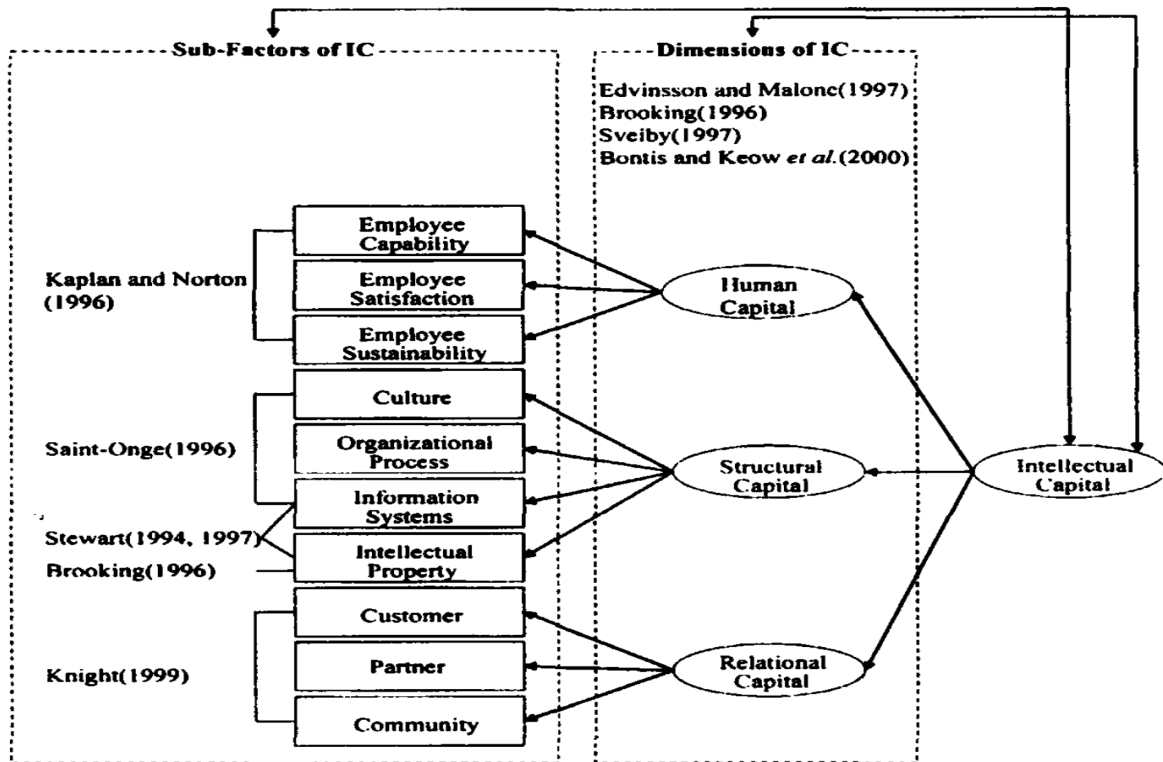
### **2.2.2 Intellectual Capital**

The link between intellectual capital (IC) and knowledge management has been documented by several authors (Collier, 2001; Bukh et al., 2001). Intellectual

capital can be generally defined as comprising of intangible knowledge and skills bases (Collier, 2001). In any type of organisation, the most valuable resources are the expertise, experiences and knowledge of employees, professionals and leaders. The concept of intellectual capital is argued to provide a broad theoretical view for defining and exploring the configuration of resources that most effectively support the complex purposes and reason for being of organisations (Evans et al., 2015). Advocates of intellectual capital suggest it plays a fundamental role in organisational success, even more so than financial capital (Collier, 2001). With the move towards a knowledge economy, traditional accounting techniques undermine the value of intellectual capital and can actually serve to underestimate its contribution to an organisation (Guthrie, 2001). Bukh et al., (2001) asserted that accounts pertaining to IC actually represent a firm's knowledge management activities, as opposed to actual knowledge levels, and that the bottom-line figure is not actually a monetary value, but provides an overall picture or sketch of a firm's knowledge-management activities.

Moon and Kym (2006) offer a comprehensive model, which quantifies intellectual capital in terms of three main components of human capital, structural capital and relational capital. It seeks to synthesise previous works and adds emphasis on a newer element, namely relational capital. Human capital relates to individuals, and relates to both tacit knowledge and soft communication skills (Carson et al., 2004). The subcomponents may include employee capability, satisfaction and sustainability (Kaplan and Norton, 1996). Structural capital relates to the process and procedural outcomes as a result of intellectual capital input of workers (Carson et al., 2004). This is made up of structure, such as strategy, systems used, and culture (Saint-Onge, 1996) as well as information systems and intellectual property (Stewart, 1997). Relational capital acknowledges that businesses no longer operate in isolation, but as part of a wider environment, thus relations with external stakeholders have become fundamental. Networks are a vital aspect of business operations now (Moon and Kym, 2006). Thus the knowledge accrued from customer insights and strategic alliances with other organisations is increasingly critical (Knight, 1997).

This model is particularly pertinent to the research owing to the emphasis on external actors and inclusion of the inter-organisational component, which includes knowledge from other organisations. In graphical terms, the various elements all merge to form intellectual capital.



**Figure 2-2 Intellectual Capital Classification Scheme**

Source: (Moon and Kym 2006, p.257).

Such a model is useful to managers wishing to capitalise on their intellectual capital for a variety of reasons: it helps to understand and identify key areas, where to focus their resources such as training programs to improve employee capability, or can be used to identify weaknesses or gaps in the existing intellectual capital strategy (Moon and Kym, 2006). This will help to avoid wastage and improve the overall impact and success of an intellectual capital strategy. However, while the benefits of intellectual capital are well documented in terms of contribution to human capital, many authors have alluded to the problematic nature of valuing intellectual capital using a financial lens, owing to the intangible nature of such assets (Moon and Kym, 2006; Collier, 2001) making it difficult to measure accurately (Ynoudt and Snell, 2004).

Within a police or security context it is found that the most important aspect of IC in the policing sector is not related to the investment or cost of IC, but to the flow and use of that intellectual stock (intellectual capacity) to serve the mission and objectives of policing in reducing crime (Collier, 2001). According to Collier (2001) intellectual capacity in the police is manifested in terms of roles: generalists are knowledge workers trained to attend to a wide breadth of tasks, in the policing context this may be reflected in the diversity of incidents a police officer may attend in a single shift: e.g. a burglary and murder; specialists represent the knowledge worker trained in one specific task/role, e.g. fingerprint experts, intelligence analysts, communications operators. Collier's (2001) findings indicated that intellectual capital was embedded within five processes/aspects that can be identified as fundamental to IC in policing: training and knowledge; knowledge sharing; organisational knowledge structures; hierarchical redundancies; amortisation. Training can develop intellectual capital in relation to knowledge of key law and procedures, as well as the correct interpersonal skills in dealing with difficult situations. Knowledge sharing represents a key mechanism in policing that occurs in numerous contexts: shift briefings, mentoring, exchanging informal stories in social areas or operational debriefing. Inter-organisational knowledge sharing also occurs between regional and national levels. Organisational manuals and handbooks which capture the knowledge of a few officers and turn them into policies and procedures for all, especially when the situations are rare occurrences, can be drawn up as contingency plans. Police national databases and IT systems where legal information are key stores for explicit knowledge that is codified and can be used by officers as a point of reference; or individual force databases holding records of incidents and also that of criminal intelligence; crime information systems are used for identifying patterns in criminal activity. The police national computer holds records of all convicted offenders and all police forces can access them. Meanwhile hierarchical redundancy provides a waterfall perspective on IC management, in which local knowledge and tactical decisions are sent up the decision chain, while more strategic decisions and resource deployment decisions are sent down the command structure. This can result in amortisation which is the knowledge that can also be lost due to changes in policy, legislation or technology, which makes some knowledge get lost over time. The information stored on them is very difficult and

subjective. Thus Collier (2001) asserts that IC is best valued when it is linked to performance targets to show how it helps in crime rates and detection. Collier (2001) advocates that the utilisation of knowledge (intellectual capacity, how knowledge flows) is more important than the valuation of knowledge.

### **2.2.3 KM in the Public Sector**

Knowledge management in the public sector may exhibit differences to that in the private sector emphasising consideration of the context in knowledge management strategies. Increasing convergence in relation to knowledge management between the public and private sectors however is apparent such as the growing emphasis on intangible outputs and the active establishment of increasingly advanced information systems to support decision-making (OECD, 2001). Nevertheless, evidence shows that public sector organisations have lagged behind their private sector counterparts in instituting systematic organisational changes which support learning, transfer of knowledge and knowledge sharing (OECD, 2001). McNabb (2007) asserts that public sector organisations are government owned public service organisations which may take the form of agencies, units, corporations, or departments that occur via state, local, municipal or national level. McNabb (2007) suggests that both private and public sector organisations use a lot of the same management principles, but for the most part, key initiatives are usually first pioneered in the private sector, and later taken up by public sector organisations. This suggests that there is no problem with transferring KM principles into a public organisation. McNabb (2007) cites various examples of KM success in the public sector in the U.S. such as in NASA, and KM systems at use in the Army.

The literature available on public sector KM is general in nature and limited discussion is evident on the challenges, issues, and opportunities for knowledge management in the public sector (Cong, 2003). Nevertheless, research suggests that KM principles and strategies do not work homogeneously; rather that there is a difference in the utilisation of knowledge management practises in public and private organisations (McAdam and Reid, 2000). One significant explanation is argued to be the role of the public sector in equity and due process including the



importance of data protection and information security which influences knowledge sharing (OECD, 2001). Al-Bastaki (2013) contends that a cautious approach to knowledge management and sharing has been adopted in the public sector due to the greater perceived political risks and consequences in relation to information security. In the policing context this factor is heightened and indicates the importance of achieving an effective balance between information security and sharing within knowledge management. Moreover, the OECD (2001) points out to the issue of learning, acknowledged as a central part of effective knowledge management, which in the public sector is identified as problematic as a result of the difficulty in measuring policy outcomes and the diverse range of political goals. Cong and Pandya (2003) highlight two further key differences between the public and private sector which are acknowledged to influence knowledge management practices. The public sector is firstly characterised as stakeholder rather than shareholder dependent and asserted to be more complex to manage involving multiple and diverse parties and interests. Further the competition and survival based business environment of the private sector drives the adoption of novel management tools such as knowledge management while no such stimulus to organisational change exists in the public sector (Cong and Pandya, 2003).

Cultural differences between the public and private sectors further highlight the particular context of the public sector for which knowledge management strategies and frameworks need to be adapted. McAdams and Reid's (2000) research found that KM was more actively used as a management concept in the public sector, which they attribute to being driven by on-going public pressure for improved efficiency drive, the need for resources reduction and overall need to raise quality standards in the public sector. However, their research crucially revealed that information is captured at the highest levels of the hierarchy and to a lesser extent middle manager but generally fails to reach lower echelons. Al-Bastaki (2013) suggests that this could be because of the association within the public sector of knowledge with power. Thus, there exists a need for further studies on public sector KM in a cross-cultural setting, as to date this does not exist for the Arab region.

The social dimension of organisational learning has further been identified in the literature that is valuable for understanding the effectiveness of transfer process.

Learning is discussed as a social phenomenon in which knowledge is viewed as intangible capital. According to Foray and Zimmermann (2001, p.7) *“only fast and widened knowledge circulation makes it possible to profit from the single potential of a great number of qualified individuals”*. Speed is considered to be highly important however the scope of dissemination of knowledge further has substantial value (Foray and Zimmermann, 2001). Research examining knowledge transfer processes has frequently been conducted within the social network contexts (Cowan and Jonard, 2006, Gerbin and Drnvesk, 2020). Having greater interconnection is acknowledged to expand a sense of community and community belonging, and a desire to learn more about shared issues can prompt the search for connections (Wenger et al., 2011). Thus learning can be viewed not solely as an individual process of acquiring knowledge but more as a process of social participation, with significance in both knowledge transfer and learning processes due to the influence it has on the way in which knowledge is spread within communities (Guechtouli et al., 2013, Gerbin and Drnvesk, 2020).

A critical success factor in policing has been identified as knowledge management (Dean et al., 2008, cited in Gottschalk, 2009). Traditionally policing agencies were viewed as highly bureaucratic institutions but are now evolving into knowledge organisations (Gottschalk, 2009). According to Bennett (2005, cited in Gottschalk, 2009) such knowledge organisations are flexible systems which are centres around people and their relationships (knowledge workers) which organise themselves in such a way (team, departments) that they are autonomous, but are still linked to the system. This suggests that an important aspect of KM in the policing sector centres around tacit knowledge, as there is a strong emphasis on knowledge workers, who are the custodians of tacit knowledge. Seba and Rowley (2010) conducted research of KM in the policing sector in the UK and used an inductive approach given the paucity of available literature on the topic, via semi-structured interview questions to help shed insight into the topic. Seba and Rowley (2010) assert that knowledge, in the context of the police sector is a vital aspect of operations, as they must find proactive methods to manage both tacit and explicit forms of knowledge.

The human resources element is a powerful driving force in any sector including policing. Dean and Gottschalk (2007) assert that tacit knowledge is an integral part of police work and they assert that tacit knowledge in a police context requires officers (knowledge workers) to have proficiency in the following area:

- **Cognitive:** knowledge of one's own abilities and skills (organisational and motivational skills) very much an internal process.
- **Technical:** Knowledge of how to conduct tasks effectively and what operating standards/protocol to use (This is commonly linked to training levels received by officers).
- **Social:** Knowledge of others, how to interact and use personal networks, the public and police culture.

Hulst's (2013) study of a police station found that social interaction and storytelling that occurred between police personnel was an integral part of how to be better police officers and a keyway for transferring tacit knowledge.

#### **2.2.4 Knowledge Sharing**

Knowledge sharing is identified as an act in which knowledge is made available to other individuals within the organisation (Ipe 2003, p.341), and involves sharing diverse elements such as information, ideas, suggestions and expertise between people (Bartol and Srivastava, 2002). Internal activities are conducted including obtaining, organisation and reuse of experience-based knowledge to ensure that all employees are able to access knowledge (Lin, 2007). Enabling social exchange is a core concept of social media (Choo et al., 2002). Digital services delivered on platforms are generating new forms of interaction between consumer and service providers. Support contact and dialogue can be extended by providers employing digital-service platforms nevertheless consumers can act independently through recourse to own information forums or posting visible queries for providers to later respond (Rantala and Karjaluo, 2016).

Knowledge sharing is viewed not only in terms of the transmission of knowledge to targeted receivers but additionally as the consequent absorption and use by

people. Davenport and Prusak (1998) have depicted this conceptualisation as an equation: knowledge sharing (transfer) = Transmission + Absorption (in use). This comprises a broad spectrum of behaviours that support exchange of acquired knowledge exchange. Organisations may be viewed as social communities generating, sharing and transferring both explicit and implicit knowledge. The key goal of knowledge management is therefore to transform individual knowledge into organisational knowledge (Nonaka and Takeuchi, 1995). As this research has chosen to focus on the human element of KM (seeking to focus on a personalisation strategy), it then becomes pertinent to understand the various ways in which tacit knowledge can be cultivated. Human interaction is one of the most basic ways of enhancing tacit knowledge. This is confirmed by Hulst (2013) whose study of a Dutch police station found that storytelling that occurred between police personnel was an integral part of how to be better police officers, and shows how the sharing of information from person to person helps to improve overall performance.

### **2.2.5 Knowledge Sharing Channels and Mechanisms**

The quality and type of the knowledge object, in conjunction with the effectiveness and strength of the channels used to transmit it, are claimed to be critical (Malik, 2002). Therefore, the channels used to transfer knowledge across organisations are suggested to be further dimensions of interest and involve the mechanisms through which knowledge can be transferred and the contextual elements that impact it. Organisations have a wide choice in terms of the channels and mechanisms adopted for knowledge transfer to take place. Knowledge is able to be transferred through the movement of people, source structures or technologies to the receiving organisation, or through change in people through training initiatives, or changes in technology or facilities (Battistella et al., 2016).

Due to the differences in the object transfers, Amesse and Cohendet (2001) argue that the tacit and explicit nature of the object transferred, contextuality, uncertainty, codifiability, complexity and rate of change are specific characteristics and properties which must be taken into account when appropriate channels and transfer mechanisms are defined. Zhu et al., (2016) identify two routes of transmission of tacit knowledge: online contact through social networks and face-to-face

physical contact. Tacit knowledge commonly arises via face to face meetings, team building initiatives, social networking, online discussion forums and the establishment of communities of practice (CoPs) (Hislop, 2005), which may consist of individuals which are either internal or external to an organisation, but share a common purpose or identity (Hislop, 2005).

Such CoPs occur either in a personal way or in a virtual way where the members are geographically dispersed. Such CoPs have a proven track record on organisations such as Rio Tinto, which have been able to overcome complex and costly engineering problems by sharing tacit knowledge between members of the CoP.

The significance of the socialisation dimension of knowledge sharing is emphasised by Oliveira et al., (2014). Research incorporating knowledge management mechanisms within the SECI model emphasised a strong link to socialisation and personal interaction. Sharing of individual experiences and reflection on the experiences of others within the organisation implies factors such as the individual proximity, their flow within the organisation, the direct interaction, the communication, and the collection and transference of tacit knowledge (Oliveira et al., 2014). Table 2-1 outlines the principal knowledge management mechanisms within the SECI model. Externalisation is a process in which tacit knowledge is externally expressed and converted into explicit knowledge, achieved through the utilisation of words, images, defining concepts, metaphors, analogies, figures and many other means. Mechanisms are linked to externalisation as they promote the contribution of individual knowledge to develop a shared resource of organisational knowledge (Oliveira et al., 2014). Acquiring new tacit knowledge is viewed to be an effect of explicit knowledge. Knowledge management mechanisms may also be linked to internalisation as they facilitate individuals to convert explicit knowledge into tacit knowledge by connecting it with their own experiences and ideas (Oliveira et al., 2014).

**Table 2-1 KM Mechanisms within the SECI Model**

<b>Socialization</b>	<b>Externalization</b>	<b>Combination</b>	<b>Internalization</b>
Brainstorming	Best practice	Best practice	Best practice
Communities of practice	Blog	Blog	Blog
Creative rooms	Communities of practice	Communities of practice	Communities of practice
Expert directories	e-mail	e-mail	e-mail
Informal conversation	Expert system	Expert system	Expert system
Instant messaging	Forum	Forum	Forum
Meetings	Instant messaging	Instant messaging	Instant messaging
Mentoring	Intranet	intranet	intranet
Phone calls	Lessons learned	Lessons learned	Lessons learned
Staff mobility	Organizational newsletters and newspapers	Repository	Repository
Storytelling	Repository	Simulation programmes	Storytelling
Teamwork	Storytelling	Storytelling	Training
Training	Training	Training	Voice mail message
Videoconference	Voice mail message	Wiki	Wiki
Yellow pages	Wiki		

Source: Oliveira et al., (2014, p.6).

## 2.2.6 Modes of Inter-Organisational Knowledge Sharing

One mode of inter-organisational knowledge sharing is unilateral in which knowledge sharing is one-way. This includes for example outsourcing arrangements in which clients share knowledge with vendors to ensure product or service delivery (Oshri et al., 2015; Ko et al., 2005). Within these arrangements there is no direct implication that vendors will likewise share knowledge with clients. This mode of knowledge sharing is viewed to generally take place in sectors selling knowledge and expertise such as market research or media agencies. In different situations the underpinning logic of collaboration points to bilateral knowledge sharing (Vlaar et al., 2008). Mutual knowledge sharing is a primary determinant for achieving the expected benefits.

Unilateral knowledge sharing can be sequential or pooled, consisting of steps of identification and transference unidirectionally of previously agreed knowledge. Nevertheless pooled interdependence may be viewed as more indirect and bilateral knowledge sharing which draws on the same communal pool. Bilateral knowledge sharing implies greater complexity in work-sharing arrangements as

they entail inter-firm teams of professionals to clarify and control exchanges of knowledge (Loebbecke et al., 2016).

Theorists have underlined the dynamic character of inter-organisational knowledge sharing showing how organisations implement various strategies including competition, collaboration, accommodation, compromise and avoidance (Jasimuddin et al., 2012; Larsson et al., 1998). Two key dynamics of inter-organisational knowledge sharing are acknowledged of firstly expanding knowledge sharing beyond the scope of formalised arrangements and secondly shifting knowledge sharing mode between unilateral and bilateral (Loebbecke et al., 2016). In occurrences of knowledge sharing counteracting forces are contended to potentially exist to change the dynamic of knowledge sharing from unilateral to bilateral or vice versa, as shown. Based on the capacity of an organisation to assimilate knowledge (Grant, 1996), organisations undertaking unilateral knowledge sharing are stated to attempt to expand and optimise the process of absorbing information and the development of unique internal capabilities while at the same time limiting the seepage of knowledge into their external environment. In time the motivation may develop to change to a bilateral knowledge sharing mode to obtain knowledge beyond that originally agreed (Loebbecke et al., 2016).

### **2.2.7 Coordination and Control Mechanisms in Knowledge Sharing**

Coordination identifies the management of dependencies within knowledge-based organisations, requiring consideration of key elements such as the creation of reward structures and incentive systems to promote knowledge sharing and the formalising of knowledge flows to expand knowledge sharing opportunities. A key focus for coordination is ensuring that participants perceive the benefits of sharing knowledge (Holsapple and Joshi, 2000; 2002). Control centres on ensuring that the requisite resources and processes are in place in sufficient quantity and quality to foster knowledge sharing. Key aspects include identifying the content of the knowledge shared and its quality, developing knowledge sharing channels that enable opportunities for all participants to share knowledge and also protecting knowledge sources including source retention (Holsapple and Joshi, 2000; 2002). Whether social or electronic channels are adopted to share knowledge,

organisations are argued to be challenged by the “boundary paradox” and will need to establish proprietary strategies for inter-organisational knowledge transfer to overcome it (Chen et al., 2002).

Coordination and control mechanisms can be applied to address the knowledge sharing paradox. A key focus of literature on strategic knowledge management are cognitive processes within organisational boundaries including transforming tacit into explicit knowledge, knowledge generation, and the transfer and integration of knowledge (Snyman and Kruger, 2004; Nonaka and Takeuchi, 1995). Knowledge sharing across organisational boundaries, as well as trust building, close contact between organisations and relational contracting (Powell, 1996) are suggested to emphasise coordination and control mechanisms to address the paradox of both sharing and protecting knowledge (van Fenema and Loebbecke, 2014; Gupta and Polonsky, 2013; Trkman and Desouza, 2012; Smith and Lewis, 2011). Structural coordination and control is viewed as advantageous in situations associated with higher risk of opportunistic behaviour. The mechanism is dependent on team structure, hierarchy and liaison (Carlile, 2004; Williamson, 1990).

Suitable for explicit, able to be codified knowledge, procedural coordination and control enables the specification and limitation of the content of knowledge to be exchanged. The mechanism encompasses commitment to professional standards for managing sensitive information (Sobrero and Schrader, 1998). Technical coordination and control is considered relevant in situations where knowledge is entered in systems which provide controlled access at different levels (Loebbecke et al., 2016).

Social coordination and control mechanisms can be realised in terms of personal relationships, trust building, team working and relational contracting. These mechanisms have significant likelihood of being deployed at some level for any knowledge exchange containing direct interaction between people (Loebbecke et al., 2016). **Rese et al., (2020) examined coworkers' knowledge sharing, focusing on attitude, behavior and individual creativity on a sample of 95 German coworkers and found that the attitude towards knowledge sharing and actual sharing behavior improve coworker's creativity and that lower collaborative orientation results in**



knowledge sharing being rated low. However, it is argued that overuse of this mechanism can be costly and may not align with the temporal feature of cooperation. In order to ensure that inter-organisational knowledge sharing is reciprocally advantageous, trust building, close inter-firm contact, and relational contracting are considered key (Powell, 1996; Sobrero and Schrader, 1998).

	Unilateral knowledge sharing	Bilateral knowledge sharing
Tacit knowledge	Outsourcing strategies: Client-supplier software specifications	Exchange of complementary market research information between competitors
Explicit knowledge	Client-supplier nexus in automotive industry	Collaboration of R&D units in semi-conductor industry

**Figure 2-3 Inter-organisational Knowledge Sharing Configurations**

Source: Loebbecke et al., (2016, p.8).

The inter-organisational dimension of work-flows are proposed to emphasise two forms of coordination and control mechanisms contingent on their focus on either unilateral or bilateral knowledge sharing (Gittel and Weiss, 2004). When unilateral and bilateral knowledge sharing is applied to explicit and tacit knowledge four configurations of inter-organisational knowledge sharing are produced as shown in Figure 2-3.

### 2.2.8 Knowledge Contextuality

The context of knowledge emerges in the literature as a key factor in inter-organisational transfer. In particular context is suggested to be a barrier to knowledge transfer in the sense that the greater the context-specificity of the knowledge the more challenging it is to implement in different contexts (Canestrino, 2009). The emphasis on context arises from the argument that explicit knowledge becomes practical knowledge only in the case that individuals can bring to bear their contextual understanding and experience to interpret the consequences and details of the action. An increased facility for action is argued to be produced if explicit knowledge is further integrated within the more tacit dimensions of stories and languages, rules and practices (Roth, 2003). Thus knowledge is perceived as context-dependent and embedded in organisational, group or individual processes (Cohen and Levinthal 1990; Howells 1996; Argote 1999; Canestrino 2009). One of the most important properties of the object is related to the nature of knowledge being

transferred, such as degree of ambiguity or uncertainty, codifiability, complexity and speed of change (Battistella, et al., 2016).

Given the exploratory context of most new service development activities it can be safely concluded that the knowledge “object” to be transferred in these cases possesses a significant amount of uncertainty and ambiguity. Knowledge that is ambiguous or unclear in character is noted to be more challenging to transfer than more defined knowledge (Argote et al. 2003), as the process of learning and reproducing new skills and knowledge is shown to be significantly more complex if they are presented in an unclear or ambiguous form (Cohen and Levinthal, 1990; Cummings and Teng 2003; Canestrino, 2009).

Codifiability has also been identified as a characteristic of the object and is held to represent the extent of understanding and communicability it possesses (Malik, 2002; Argote et al. 2003; Ferdows, 2006). The degree of knowledge codification is asserted to represent the extent to which the knowledge is translated, possibly into software or documents, for ease of understanding by the operator. Codified knowledge is widely acknowledged to be simpler to transfer than non-codified (Ferdows, 2006). The ease with which knowledge can be taught in contrast conveys the level of difficulty for the transfer of knowledge: in other words the extent to which employees can be trained to acquire specific skills. In this case the property is argued to reflect the individual training of employees (Zander and Kogut, 1995).

An additional characteristic of knowledge objects is the complexity of the transferred information (Argote, 1999; Szulanski, 2000; Stock and Tatikonda, 2000). This feature accounts for the variations and diversities inherent in knowledge when merged with different skills. Stock and Tatikonda (2000) emphasise that knowledge is significantly more complex when comprised of differing and numerous experiences and when it encompasses both internal and external dependencies. Individuals’ tacit knowledge and the skills and experiences of individuals are perceived to represent a type of knowledge with a high extent of viscosity. In contrast codified or explicit knowledge available through documents or databases is argued to be less viscous or thick and consequently less complex and rich (Davenport and Prusak, 2000).

In work on the diverse aspects involved in inter-organisational knowledge transfer Bozeman (2000) emphasises the significance of the external context. A knowledge transfer's progression and success is argued to be affected by the characteristics of the project's environment (Battistella et al., 2016). These include the productivity or unproductivity levels of the external and internal organisational environment which affect the knowledge transfer as they are based on the type of framework and formal systems and structure, as well as on competence and management. In addition the external context's levels of unpredictability may vary with changes to the market and competition, as well as political, economic, social, technological and environmental factors (Battistella et al., 2016). The knowledge object is also shown to be characterised by speed of change in terms of the degree to which new information and novelty is introduced between stored and transferred knowledge. In stable periods and contexts this characteristic is viewed as holding minimal importance however in contexts marked by uncertainty and rapid change higher importance is assumed as organisations require understanding and integration of new useful knowledge for sustainability and to meet stakeholder expectations (Carlile and Reberich, 2003). Stock and Tatikonda (2003) emphasise further that current business contexts are characterised by an increased level of change than experienced before.

Another characteristic of the object and its impact on the transfer is represented by the interrelation novelty-time framework. In a stable environment, the amount of information introduced between two stages, storing and transferring knowledge is not very important. In a dynamic context, the situation changes and the organisations need to understand and integrate useful knowledge, based on stakeholders' expectations (Carlile and Reberich, 2003). If the context changes very fast then knowledge becomes outdated (Davenport and Prusak, 2000). The speed of change in knowledge assumes further importance as it is asserted to impact transfer effectiveness. Rapid transformations in knowledge as a result of both external and internal forces in conjunction with the impossibility of or uneconomic opportunities to codify that knowledge are argued to create significant issues. In contexts of rapid technological changes codification may also be perceived as counter-productive (Battistella et al., 2016). The speed of transformation depends on a number of factors: external forces such as novel scientific breakthroughs; internal forces

including forceful policies on the adoption of technological innovation; and issues related to the codification of the changes, such as costs. In a context of unpredictable and rapid technological evolution, reliance on equipment and instruction manuals is perceived to be potentially adverse, as an organisation's absorption capacity is based on the people who function as contact points between the outside world and the company (Battistella et al., 2016). Cohen and Levinthal (1990) argued that a larger gamut of potential "receptors", i.e. the individuals liaising between the external environment and the firm, advantages companies in this type of situation. According to Argote (1999), interfacing workers play a central role in the evaluation of technological and methodological innovation and in recommending implementation procedures. This is due to the importance of direct observation and human mobility in the transfer of tacit knowledge (Argote, 1999). Hence, the establishment in the participating groups of reciprocal interdependence and of networks of interrelated abilities can provide a valid solution to these issues (Battistella et al., 2016).

### **2.3 Inter-organisational Networks**

Faced with significant change organisations innovate by means of a process of continuous learning through which new knowledge and skills are created (Md Zahidul et al., 2009). Social networks are considered key resources for organisations. By connecting to other groups such relationship networks can significantly influence organisational actions. Through networks organisations are able to obtain knowledge and information, and critical resources for competitiveness and long-term sustainability in the current knowledge society (Garcia-Sanchez et al., 2017).

It is generally accepted that organisations are unable to generate all the information and knowledge they need internally, and thus interaction with other organisations / key players who are external to them will provide them with a gateway to access knowledge which they are unable to create themselves. Within inter-organisational networks there is critical emphasis on inter-organisational relations. Provan et al., (2007) highlight that terms such as collaboration and collaborative alliance are often used as synonyms for inter-organisational networks. Collaboration has been defined as taking place when independent stakeholders to a problem participate in an interactive process utilising shared structures, rules and norms to

make decisions or act on issues related to the problem (Gray and Wood, 1991). Nevertheless there are particular challenges to engaging in inter-organisational networks and although they can be significant vehicles for attempting to resolve complex problems it is argued that they should only be mobilised when there is strong potential for collaborative advantage (Huxham and Vangen, 2005).

A good way to understand current levels of inter-organisational knowledge sharing is to conduct a knowledge audit of the organisation and map knowledge flows in order to see the frequency and intensity of knowledge exchanges between the organisation and their respective stakeholders. Phelps et al., (2012) assert the benefits of what they call inter-organisational 'knowledge networks', which is where organisations form strategic alliances in terms of knowledge creation and sharing, and they cite a number of studies which show that the benefits of such inter-organisation knowledge alliances are innovation and improved organisational performance (Schilling and Phelps, 2007 cited in Phelps et al, 2012). Therefore, there is a wealth of literature on the benefits of external inter-organisational KM.

Much of the research on inter-organisational knowledge networks centre around the notion of 'absorptive capacity', which is a notion which asserts that an organisation's internal performance is affected by their ability to absorb knowledge externally and thus ensure their internal processes related to knowledge are in unison with the external environment (Harvey et al, 2010). Organisations with strong inter-organisational knowledge sharing are said to have a high absorptive capacity, which results in high levels of innovation/ problem solving (Hislop, 2005). Therefore, it can be considered that an organisation with a high absorptive capacity will encounter greater organisational performance than organisations with a low capacity. Absorptive capacity has been measured in a variety of ways, such as ability to scan the external environment, standard of existing technology and communication networks and knowledge of markets (Shu et al, 2005, cited in Harvey et al, 2010).

The transfer of knowledge between organisations is held to occur when specific knowledge passes from one to another (Buckley et al., 2009). The concept has been defined as the identification and favourable utilisation of skills, knowledge or

capacities originating within another organisation (Vaara et al., 2010; Oshri et al., 2008). Hamel (1991) further explains inter-organisational knowledge transfer as a process involving two key steps. The first comprises the disclosure of knowledge by the expert or organisation in possession of it, while the second denotes the acquisition and assimilation of that knowledge by the organisation requiring it.

### **2.3.1 Benefits of Inter-organisational Networks**

### **2.3.2 Formal-Informal Networks**

The nature of inter-organisational relations may manifest itself within formal or informal mechanisms. Phelps' et al., (2012) review of inter-organisational knowledge networks found that they work best when there are strong interpersonal links between key personnel in the various organisations, as well as formal contractual links between the partner organisations; this therefore poses a case for strong informal links to be forged if inter-organisational knowledge collaboration is to be successful (Phelps et al., 2012). Phelps et al., (2012) also assert that if inter-organisational knowledge networks are poorly managed they can have drawbacks in terms of high costs and outcomes.

Formal networks have been defined as those purposely created with a form of binding agreement conditioning participation. In contrast informal networks are generated more organically, perceived as derived from organisational contingencies that engender multiple actors to collectively collaborate to resolve (Isett et al., 2011). Informal networks are noted to frequently emerge with the key aim of information sharing. This is characteristic of all networks which to a degree need to participate in information sharing to achieve joint purposes and goals, however informal networks may additionally have significant utility in terms of problem solving, building capacity and delivering services (Isett et al., 2011). Informal social mechanisms of cooperation and coordination are prompted when employees are entrusted by managers to perform assigned tasks (Ouchi, 1979). Literature focused on coordination processes underlines that informal social coordination may have a key role in enabling tasks and objectives to be achieved. Jonsson and Grunland (1988) indicate how individuals take responsibility and are inclined to consider

other individuals with whom they are interacting characterised by the active pursuit of information to address the task.

Work by Donada and Nogatchewsky (2006) is one of a small number of studies to specifically focus on the interaction between the coordination mechanisms present in relationships between organisations. It is concluded that within a relationship predominantly characterised by market-based control and evidencing the presence of different types of coordination mechanisms, socially based control is “exerted at the operational level in response to operational needs for flexibility and adaptability” (Donada and Nogatchewsky 2006, p.284). This identifies a role within power-based relationships for informal, social mechanisms. Inter-organisational relationships are noted to frequently involve multiple connections and links at an individual and process level (Hakansson and Lind, 2004) which are key to understanding cooperation and coordination. Different people within the relevant organisations are emphasised to exercise different types of control, for example the marketing power depended on by purchasing managers may be moderated by operative managers depending on informal social coordination (Donada and Nogatchewsky, 2006). This points to the potential for social coordination mechanisms to facilitate flexibility within coordination processes.

### **2.3.3 Source, Recipient and Intermediary Actors**

Studies widely acknowledge sources and recipients as significant actors, characterised as two organisational entities and signifying individuals, organisational groups and business units or organisations (Battistella et al., 2016). Sources in the transfer process are those with the knowledge to be transferred while recipients or containers are those with the need to acquire source knowledge (Cummings and Teng, 2003). Liyanage et al., (2009) enlarge conceptualisations of source and recipient actors, highlighting specific capacities belonging to each which enable knowledge transfer: knowledge relevance and spontaneity of sharing in the case of the source and absorptive capacity and spontaneity of acquisition associated with the recipient. Lane and Lubatkin (1998) identify that the recipient absorptive capacity is influenced by culture, knowledge retention capabilities and past experiences.

Knowledge transfer has been described as a non-free exchange between parties (Davenport and Prusak, 2000). Intermediaries have been defined as actors who play an enabling role in the transfer of knowledge and technology across business sectors, institutions, and people (Hargadon and Sutton, 1997). Alternatively, termed gatekeepers or brokers, the knowledge transfer process does not necessarily require their presence. As such less attention has been paid in research to these other potential actors (Battistella et al., 2016).

When transfers occur between organisations, intermediaries are suggested to fulfil the function of process facilitators, sustaining the process by enabling the parties to relate to each other (Battistella et al., 2016). The gamut of intermediary typologies varies from agencies and organisations sustaining technological innovation and offering intermediation services to single agents and consultants supplying their expertise and specialised services (Lichtenthaler and Ernst, 2007). Their main role is to intervene in the system and act as a mediator or facilitator between parties. Research on intermediaries has concentrated either on the process of intermediation or on the organisations acting as intermediaries (Howells 2006). However, Lynn et al., (1996) emphasise a more complex role to intermediation, focusing on two major functions associated with this process: scanning, searching and gathering of information in addition to communication.

Intermediation is held to play a fundamental role in sustaining innovation through creating a connection (bridging) and moderating or brokering between the actors and the matter at hand. Intermediation thus comprises two functions: the brokering of knowledge and the bridging of innovation. Brokering involves the intermediary enabling information exchanges between companies (Wolpert 2002) and functionally linking existing technologies, inventions, or ideas between different industries (Lichtenthaler and Ernst 2007; Hargadon and Sutton 1997). Bridging involves facilitating unrelated organisations to become connected (Hargadon and Sutton 1997; McEvily and Zaheer 1999). It is therefore acknowledged as beneficial in that it enables separate parts to be linked, novel technology and knowledge to be incorporated, and distinct organisations to collaborate (Howells 2006; Albors et al., 2005).



While formal design of inter-organisational networks senders and receivers can be identified, within informal network arrangements they may be less transparent and operate within broader more complex multilateral connections. The advent of social media networks has generated vast opportunities for individuals and groups to engage in more complex processes of socialisation.

Inter-organisational relationships have been defined as formal arrangements that combine the tangible or intangible assets of two or more legally independent organisations with the goal of producing mutual value. In this way both inputs and outputs are formally shared by both organisations (Bachmann and Witteloostuijn, 2006).

#### **2.3.4 Forms of Inter-Organisational Relationship**

Different types of inter-organisational relationships may be characterised firstly in relation to the extent of dominance of two forms of control and coordination, power and trust, and secondly according to the sources of power and trust such as inter-personal interaction and institutional arrangements (Bachmann, 2001). Power ensures that those subject to it will act according to its mandates despite their own wishes while trust encompasses expectations that other actors will act in reciprocal ways to freely offered favours even if not immediately. In inter-organisational relationships both power and trust perform as social mechanisms which minimise uncertainty (Luhmann, 1979; Giddens, 1990; Bachmann, 2001). In this way these attributes foster transactions across organisations cooperating either vertically or horizontally (Bachmann and Witteloostuijn, 2006).

Two separate sources of power and trust in inter-organisational relationships exist, acknowledged to be reliant on the cultural and informal environment and the formal institutional environment, and in which power and trust inter-relate in distinct ways (Bachmann and Witteloostuijn, 2006). Sources of power or trust in the informal environment are found at the inter-personal level in which either power or trust prevails in the relationship. In the formal environment power or trust “*originates with constitutive reference to the formal institutional environment in which relationships are placed*” (Bachmann and Witteloostuijn, 2006, p.7). In such a context power is impersonal and this quality facilitates the development of trust in relationships with

external organisations. In contrast the exercise of personal power in business relationships decreases the likelihood that trust will be developed (Bachmann, 2001). Amalgamating the two dimensions yields four potential patterns of power and/or trust related to four typically representative forms of inter-organisational relationship shown in Figure 2-4.

	<b>Institutional power dominance</b>	<b>Personal power dominance</b>
<b>Institutional trust dominance</b>	<i>Pure Form 1</i> Fully institutionalised form (FI-form)	<i>Hybrid Form 1</i> Institutional trust / Personal power (IT/PP-form)
<b>Personal trust dominance</b>	<i>Hybrid Form 2</i> Institutional power / Personal trust (IP/PT-form)	<i>Pure Form 2</i> Fully personalised form (FP-form)

**Figure 2-4 Four typical forms of inter-organisational relationship**

Source: Bachmann and Witteloostuijn (2006, p.7).

The adoption of an entirely institutionalised means of framing inter-organisational relationships implies a well-defined and coherent structure of institutional arrangements that regulate the behaviour of the social actors involved such as organisations and individual managers (Bachmann and Witteloostuijn, 2006). In contrast a fully personalised form of inter-organisational relationship may exist in which power and trust arises at the inter-personal level in the absence of reference to any formalised framework (Bachmann and Witteloostuijn, 2006). In situations in which there is a lack of strong, reliable organisations and widely embedded rules of behaviour, it is asserted that the decision-making of organisations and managers should be based on resources of power and trust that can be mobilised on an individual level (Bachmann and Witteloostuijn, 2006).

Inter-organisational relationships can involve hybrid forms of power and trust relations. There can be institutional and personal power forms where there is a relatively robust institutional trust-promoting system in place however concurrently

the cultural foundations at the micro level foster risk-taking and individualistic strategies and behaviours (Bachmann and Witteloostuijn, 2006). Another hybrid form is characterised by institutional power and personal trust in which strong configurations of power-promoting institutions exist while the micro-cultural environment is significantly based on norms of collaboration and cooperation in problem-solving. In this form institutional power operates concurrently with personal trust. Therefore on the one hand it appears that inter-organisational relationships may not find trust generating institutions beneficial, pointing to an absence of macro-level protections against opportunistic behaviour and entailing that actors need to develop trust mainly at the micro inter-personal level (Bachmann and Witteloostuijn, 2006). On the other hand, power is integrated in an institutionalised environment of cultures and rules which support the hierarchy allowing individuals and organisations recourse to generalised rules of power behaviour (Bachmann and Witteloostuijn, 2006). All four typical forms of inter-organisational relationship present specific advantages and disadvantages. In relation to power and trust the forms incline either towards a high-trust or low-trust system (Bachmann and Witteloostuijn, 2006).

## **2.4 Social Networks and Knowledge Management**

Social networks may be viewed in terms of the connections linking a specific group of individuals or social actors (Seibert et al., 2001). Social network research highlights that these connections enable collaborative efforts and exchange of knowledge, ideas and information between members (Fernandez Perez et al., 2012; Fliaster and Spiess, 2008) in addition to identification of opportunities and problems and creation of solutions (Kijkuit and Van Den Ende, 2007). Given the efficiency of social networks for facilitating access to extensive new knowledge and information (Burt, 1992) the significance has been stressed of organisational integration mechanisms for assimilating external knowledge that can in turn be transformed and exploited (Cohen and Levinthal, 1990).

Research has underlined the potential benefits obtained from social networks (Fernandez Perez et al., 2012; Kijkuit and Van Den Ende, 2007; Obstfeld, 2005). Social contacts are shown to enable access to expanded sources of information and further to enhance the relevance, quality and opportunity of that information (Garcia-Sanchez et al., 2017). Social networks have been found to be more

efficient in supplying valued information on the external environment as well as information on internal hierarchical structures in which communication can be challenging (Powell, 1990). Moreover they provide trust and social support, as having robust shared beliefs and norms minimises the necessity for controlling the information shared and offers motivation for building knowledge flows (Garcia-Sanchez et al., 2017).

Studies have pointed to social capital as the primary antecedent for knowledge sharing (Chang and Chuang, 2011; Inkpen and Tsang, 2005). Within the literature the social capital concept has been applied to virtual communities, showing that social capital fosters member knowledge sharing behaviour (Chang and Chuang, 2011; Chiu et al., 2006). Burt (1992) adopts a highly personal perspective of social capital in which it is viewed as mutually connected to people who through their interaction can obtain or contribute information or abilities. Social capital has also been conceptualised as a resource obtained by individuals or groups by means of an established network of relationships (Bourdieu and Wacquant, 1992). Yoo et al., (2014) explain this further arguing that social capital is comprised of both the actual and potential resources that are embedded within the network relationships belonging to individuals or groups. According to Fukuyama (1992) social capital is the shared norms and informal value among group members that can foster cooperation.

Increasing utilisation of social media among professionals to acquire and exchange knowledge increases worker contribution of beneficial knowledge to their work context, and facilitates them to gain knowledge they can then effectively share with the cooperative endeavour to exchange and gather knowledge (Yu et al., 2010). According to Chang et al. (2013), the term knowledge contribution indicates the amount of value ascribed by other individuals to the knowledge shared. Social media tools allow the networked users to integrate rapidly and with ease their knowledge and thoughts with other users' contributions wherever users are located (Pi et al., 2013). Research suggests that people who use online communities anonymously are more inclined to voice their personal ideas and opinions (Luarn and Hsieh, 2014). The social media activities utilised for sharing knowledge include seeking knowledge and contributing to knowledge. Studies suggest that when

knowledge is shared by employees in the context of work it is important to attain an optimal level of social media utilisation for activities related to knowledge sharing (Hung and Cheng, 2013; Chai and Kim, 2012; Chen and Hung, 2010). Online communication diverges from conventional interpersonal communication in the anonymity afforded (Wallace, 1999).

The social interactivity taking place within social media applications involves people becoming gradually acquainted with the tool and progressively increasing their engagement and their interactions thus making possible the sharing of knowledge or tasks within the social network space (Blasco-Arcas et al., 2013). Social interactivity is an important aspect of an innovative and dynamic drive which originated in the development of social media tools and produced the expansion of platforms for knowledge sharing and communication (Fischer and Reuber, 2011). Social interactivity has several related aspects within social networks such as reciprocal social exchanges and communication (Okazaki and Taylor, 2013).

Organisations, as well as individuals, may encounter a number of significant barriers related to the inclination towards reusing explicit knowledge, the generation of trust between people, and the dissemination of information across boundaries to online users (Chen and Hung, 2010). It has often been shown that exchanging and managing dynamic knowledge can be highly challenging. The varied reasons for this difficulty include the anxiety of losing control over the knowledge and an assumed absence of personal advantage, as well as the expenditure of time and resources in systematising the information (Ahmed et al., 2018).

## **2.5 Social Capital Theory**

Social capital concepts are a key focus within social sciences literature. Theories of social capital assert that social relationships between community members can be viewed as productive resources (Coleman, 1988). Social capital is argued to foster coordinating and cooperating processes within communities for collective benefit (Putnam, 1995).

Several studies have examined and formalised the influence of social capital in the development of intellectual capital (Nahapiet and Ghoshal, 1998; Adler and

Kwon, 2000). Social capital literature and theories can be valuable in addressing the complexity inherent within the process of inter-organisational knowledge management. According to a widely used definition social capital is *“the sum of actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit. Social capital thus comprises both the network and the assets that may be mobilized through that network”* (Nahapiet and Ghoshal 1998, p.243).

The characteristics of knowledge, nature of knowledge transfer, and theory of organisational learning discussed so far emphasise the significance of dynamic processes that are reflective and dependent on social interaction. This is compatible with the notion of social capital and the idea that organisational knowledge transfer is largely contingent upon the collected social capital established within the social networks of organisations (Sherif and Sherif, 2008). Developments in the literature on social capital could be advantageous for supporting the development of a framework that encompasses the complexity inherent in knowledge transfer processes.

The emergence of the knowledge-based organisation has been a principal driver in this research focus (Lesser, 2000). Therefore, social capital is viewed to have significant relevance for information scientists seeking to understand how social networks can provide organisational advantage by means of exploiting the store of shared resources accessible through relationships (Tymon and Stumpf, 2003). At an organisational level social capital emphasises information as a resource (Tsai and Ghoshal, 1998). The relevance of social capital is underpinned by its links to information and knowledge sharing. Moreover, patterns of information behaviour are rooted within both personal and organisational structures in which individuals interact. As the search for information frequently occurs within collaborative settings, social aspects are thus viewed as a critical dimension. Knowledge transfer is viewed largely as a social process. Therefore, to gain insight into knowledge management between organisations, it is considered critical to first gain an understanding of the structure and social community within an organisation (Kogut and Zander, 1992). Earlier research emphasises the critical significance of the relationship between recipient and source of knowledge. Underpinned by social

capital theory, most of these studies have examined inter-organisational relationships (Liu, 2018). Social capital has been usefully categorised into three areas of structural, relational and cognitive dimensions as shown in Figure 2-5 (Nahapiet and Ghoshal, 1998). Relational, structural, and cognitive social capital embedded within organisations has been suggested to enable access to knowledge resources facilitating exchanges among organisational members. Higher social capital among organisational members therefore facilitates greater speed in knowledge transfer between units. Effective knowledge transfer requires the active participation of both source and recipient (Chen and Lovvorn, 2011).

Dimensions of social capital and aspects focused in the different dimensions		
Structural dimension	Cognitive (content) dimension	Relational dimension
Network ties	Shared codes, language	Norms
Network configuration	Shared narratives	Trust
Appropriable organization		Obligations
		Identification

**Figure 2-5 Dimensions of Social Capital based on Nahapiet and Ghoshal (1998)**

Source: Nahapiet and Ghoshal (1998, p.243).

Social capital can be viewed as a form of resource available within a social network (Burt, 1992). Social networks are comprised of interaction connections among network members (Hanneman and Riddle, 2005). In a network each member represents a node, and two members can form a tie in terms of a relationship between them. The structure of the network created by multiple such nodes thus forms a social network (Hanneman and Riddle, 2005). The pervasiveness and high adoption of the internet has offered an alternate option for individuals with similar interests, aims and preferences to interact and share and exchange information by means of online communities (Ellison et al., 2007). These consist of multiple social networks and offer valuable social capital. However social capital is not considered in all circumstances a positive resource, as the investment required to generate social capital is associated with particular risks (Hsu, 2015).

### 2.5.1 Structural

Nahapiet and Ghoshal (1998) underline that social capital is an inherent aspect of social networks and identified three key dimensions as shown in Figure 2-5. The

structural dimension relates to the structure of social interaction between network members, including access to other individual or organisational actors, who information is shared with and the motivation and frequency for sharing information (Hazleton and Kennan, 2000). Structure plays a key role in the generation and use of social capital and information sharing within organisations (Hazleton and Kennan, 2000; Nahapiet and Ghoshal, 1998), with social interaction within structures viewed as channels for the flow of resources and information (Tsai and Ghoshal, 1998). Structure is also held to affect the two other dimensions of social capital (Hazleton and Kennan, 2000; Nahapiet and Ghoshal, 1998).

Knowledge transfer processes are frequently linked to significant change within the recipient unit including alterations in firm culture or ending of current practices (Kostova, 1999). The complexity inherent in knowledge transfer necessitates the allocation of significant resources to absorb, adjust and incorporate new knowledge into current systems. Consequently, recipients of knowledge transfer are often confronted by high risk and uncertainty while undertaking the process of integrating knowledge from other units into the unit's own processes (Liu, 2018). However, the owner of knowledge can also acquire trust and reputation through transferring their knowledge and further increase social capital and other bargaining and psychological advantages for exchanges in the future (Blau, 1964).

Knowledge transfer and the sharing of resources are significantly enabled by the social relationship between sender and receiver, as consistently shown in previous research (van Wijk et al., 2008; Argote et al., 2003; Amesse and Cohendet, 2001). Social connections are acknowledged to enable access to resources, ideas and knowledge, and raise the probability and quantity of knowledge transfer taking place in an organisation (Reagans and McEvily 2003). Research indicates that the potential to access new pertinent knowledge increases with a higher number of or inter-organisational relationships (Battistella et al., 2016). Further relationships increase the ability to process information, hence raising the efficiency of the knowledge flow (Hansen, 1999).

From the perspective of Network Theory knowledge transfer is conceptualised as occurring within networks in which different units share linkages. This network



allows organisational units to acquire key competencies that over time enhance competitiveness (Tsai, 2001). Evidence from Inkpen and Tsang (2005) underlines the significant influence in knowledge transfer processes of the social capital accumulated within different network structures. Wang (2013) underlines that social networks are critical elements for consideration in further understanding the processes of knowledge transfer. Based on real-world observations, it is advanced that the most frequent form of knowledge flow among individuals is direct communication. Knowledge sender's and recipient's interaction is noted to mainly take place within social networks, with the recipient's social capital perceived to play a key role in what information is received (Wang, 2013).

Social networks are held to assist both the search for and the interpretation of information. A key theme explored in research is the influence of the position in the network, and the effects of network structure and tie strength. Network ties that span "structural holes", or elements of a network not linked otherwise are shown to have greater exposure to different information (Burt, 2004). Evidence further shows that ties bridging structural holes facilitate the development of new knowledge in particular when there are shared third-party ties (Tortoriello and Krackhardt, 2010).

Social capital dimensions have been classified further to reflect the strength and diversity. The social capital structural dimension has been evaluated utilising degree of trust, and the structure of the social network and position within it including factors such as network centrality, betweenness centrality, network size and density, structural holes, the homogeneity or heterogeneity within networks, homophily/heterophily, network constraint, and tie strength. It has also been measured in terms of the amount of social resources, quantity of network memberships, association memberships and social participation and also social connections and relationships in terms of bonding, bridging and linking ties and connectivity (Bourdieu, 1986).

Tie strength describes the relational closeness and frequency of interaction between two parties (Li et al., 2014). Findings by Hansen (1999) on network strength showed that strong ties more readily facilitated tacit knowledge transfer while contrastingly weak ties more easily enabled explicit knowledge transfer. Evidence

suggests that the strength of ties both within the organisation and with other firms have constructive impacts on aspects such as trust and cooperation that generate the conditions for complex or tacit knowledge transfer (Gilsing and Noteboom, 2005), and help to surmount barriers traditionally associated with knowledge transfer such as technological and geographical disparity (Singh, 2005). Research has shown that weak ties increase the speed of knowledge creation as they frequently link to new and hard to access areas of knowledge and are more readily suitable for activities associated with knowledge exploration (Atuahene-Gima and Murray, 2007).

Network density refers to the proportion of actual relationships among network participants in comparison with the highest number of relationships possible within a network (Li et al., 2014). Network centrality characterises the status held by a member in relation to other network members and the centre position in relationships (Li et al., 2014). Studies on network structures have revealed that dense internal network structures facilitate both the generation and transfer of knowledge, particularly tacit knowledge (Reagans and Zuckerman, 2001; Rulke and Galaskiewicz, 2000). Empirical findings have further indicated that tie strength was not as important as dense internal networks with linkage to external networks for promoting knowledge transfer. Significant subsidiary embeddedness has a relationship with local contextual understanding of where knowledge is located. In some social networks, knowledge and information is frequently rapidly disseminated and shared as a social resource. In the context of the creation of social networks, the knowledge transfer networks of individuals are identified as a consequence of social interaction (Wang, 2013).

Furthermore, the higher the centrality of an actor the faster and easier their access to a wide array of contacts, hence to relevant resources and opportunities, due to the brevity of the paths connecting them directly or indirectly to other actors (Mehra et al., 2006). This is consistent with earlier evidence demonstrating that actors who are centrally positioned have a higher number of contacts, and as a result can more easily obtain and gather external knowledge (Monteiro et al., 2008). The structural dimension of social capital is viewed to be operationalised through linking, bonding and bridging connections (de Jong, 2010). Bonding social

capital identifies horizontal, strongly cohesive ties between individuals or groups which have demographic characteristics in common (Acquaah et al., 2014). In contrast bridging social capital relates to ties which extend across different groups and individuals. The character of this social capital is based on diverse and externally focused connections with people from different social groups, for example relationships that span organisations (Ferlander, 2007). Linking social capital identifies vertical ties that extend across different power relationships thus connecting people across differing vertical social levels (Woolcock, 2001). Linking social capital is frequently associated with external connections rather than internal ties.

### **2.5.2 Relational**

The relational aspect of social capital denotes the nature of the relationship fostered between people through repeated interaction over time (Nahapiet and Ghoshal, 1998). The extent to which organisations are embedded in networks is reflected in their ability to absorb new knowledge from the context specific environment which may lead to new knowledge creation. Embeddedness depends to some degree on a multinational enterprise's context-specific relationships which have been developed with the local business partners (e.g., clients, universities and local research institutions). This aspect stresses the specific quality of relations held such as friendship, trust and respect which may affect the way one individual behaves toward the other. By means of informal social activities coordination and communication is fostered while the aspect of reciprocity develops trust and in turn advances the flow of resources within society (Hsu, 2015). This also relates to expectations and obligations and represents the assets generated by a relationship with trust viewed as the most critical asset (Nahapiet and Ghoshal, 1998).

The social capital relational dimension emphasises social networking, relationships and trust. Factors that have been assessed include social networking, social relationships, social interactions, social cohesion, social support, and associability. Relational social capital is associated with aspects including:

- Trust in relationship (confidence level);
- Sociability or social interaction.

- Social relationship;
- Social networks and interactions (linking, bridging, bonding),
- Social support (Acquaah et al., 2014).

Of significance trust is considered a vital antecedent to knowledge sharing and impacts access to other structure members. It underpins the anticipated value of the exchange and the motivation to participate in the generation of new knowledge (Hazleton and Kennan, 2000; Nahapiet and Ghoshal, 1998). As the development of trustful relationships within networks progresses the reputation for trustworthiness of individual members is asserted to grow. Multiple levels of trustworthiness have been identified leading to diverse levels of resource exchange and combination (Tsai and Ghoshal, 1998).

By means of such ongoing personal relationships individuals are argued to be able to realise social motives such as approval, sociability and prestige (Chen and Lovvorn, 2011). Substantial motivation, in addition to significant time and effort from key decision-makers and actors in the recipient unit, is required for effective knowledge transference (Liu et al., 2018). Significant potential relational barriers can characterise the relationship between the actors in knowledge transfer (Battistella et al., 2016). Information stickiness, in terms of the cost and difficulty of obtaining, transferring and utilising knowledge, is noted to rise when there is an absence of recipient motivation, a lack of trust and perceived source unreliability, and further a contentious relationship between the receiving unit and the source unit (Szulanski, 1996).

### **2.5.3 Cognitive**

The cognitive aspect of social capital is held to identify particular elements within interpersonal relationships that afford shared meaning systems, interpretations and representations (van Wijk et al., 2008). Cognitive social capital measurement has focused on use of indicators addressing general and interpersonal trust, shared culture, common goals, feelings of safety, and reciprocity (Acquaah et al., 2014). This dimension can be related to communal understanding of collective objectives that may be established within a specific social system (Tsai and Ghoshal, 1998). This dimension is described as a key condition essential for the formation and use

of social capital in addition to being a critical mechanism for initiating further organisational goals such as intellectual capital (Hazleton and Kennan, 2000). Communication is viewed as the mechanism through which the store of social capital can be accessed and harnessed to promote organisational objectives and aims (Hazleton and Kennan, 2000).

Cognitive social capital is related to:

- trust (general and interpersonal)
- reciprocity and cooperation
- feelings of safety
- fellow feeling
- shared goals
- shared culture
- general social support
- emotional support
- instrumental support, which enables individuals to do things
- informational support, which facilitates people to know things (Harpham et al., 2002; Acquaah et al., 2014).
- links to resource-holding groups, frequently official organisations such as local government
- connections with parallel groups (Harpham et al., 2002).

## **2.6 Antecedents of Inter-organisational Knowledge Management**

Moon and Kym (2006) proposed a classification of intellectual capital with three components: human capital, structural capital and relational capital. Human capital consists of employee sustainability, employee satisfaction and employee capability while structural capital is composed of organisational processes, culture, intellectual property, and information systems. Relational capital comprises the capital gathered from relationships with partners, customers, and the wider community. These components and sub-components are evident in the inter-organisational knowledge management literature. Structural capital traditionally relates to the

procedures and processes generated by the intellectual contribution of the organisation's employees (Carson et al., 2004).

### **2.6.1 Organisational Cultural Dimensions**

Culture is perceived to strongly determine the success or failure of knowledge management as a result of the centrality of individuals as the key enablers for successful knowledge enterprises (Asrar-ul-Haq and Anwar, 2016). Culture can be defined as a set of beliefs entrenched in the society and made evident through individual and organisational behaviour (McDermott and O'Dell, 2001). Lam (2006) underlines the influence of culture in the degree to which individuals are prepared to trust those introducing knowledge management interventions.

**Table 2-2 Dimensions Analysis of Culture and KM**

<b>Dimension/Authors</b>	Alr awi et al (20 13)	Asrarul- Haw & Anwar (2016)	Bures (2003)	Van Den Brink (2001)	Campbell (2009)	Chan and Lin (2015)	Hendriks (2004)	Holowetz (2002)	Kau et al (2012)	Kim et al (2007)	Lin (2007)	Käser and Miles (2001)
Cultural orientation (5)	X	X			X	X			X			
Reward (6)		X			X		X	X			X	X
Relational (4)		X					X	X				X
Processes (4)		X		X				X	X			
Leadership (1)	X											
Communication (2)		X								X		
Cultural values (2)					X					X		
National culture (2)		X								X		
Structure (3)		X		X				X				
Individual knowledge (2)					X					X		
Barriers (2)			X				X					

Effective knowledge management has been defined in terms of four key processes of knowledge generation, codification, sharing and application. Knowledge sharing is noted as particularly significant as it plays a central role in the process of individual to organisation knowledge dissemination (Chan and Ford, 2003). Culture is widely acknowledged to be a primary factor in the facilitation or inhibition of knowledge sharing and transfer. Consequently, recent research in relation to culture has focused particularly on its influence on knowledge sharing and transfer. This suggests the importance of an organisational culture and climate in which knowledge sharing is fully supported. Table 2-2 indicates different dimensions of culture identified in the literature to impact knowledge management and knowledge sharing.

### **2.6.2 National Culture and Knowledge Sharing**

Despite the increased attention that KM has received in recent years in academic literature, there have been various concerns raised regarding KM, as Holden (2001) states that KM fails to address key factors such as culture or language factors, while Skok and Tahir (2010) concur stating that KM fundamentally ethnocentric and incompatible in non-western settings, and in particular should be used carefully in an Arab setting. In fact there are numerous studies which support the notion that national culture is indeed a critical factor to successful knowledge management such as those by Voel and Hans (2005) who found differences in knowledge sharing behaviours between Chinese and American Siemens employees.

As this study also wishes to consider not only the public sector variable in KM, but also the role in Arab national culture, it is deemed necessary that a framework which considers national culture should also be used to help modify and shape the questions in the semi-structured interviews, so that they can shed greater insight into the role of Arab national culture in public sector KM initiatives. In this regard, Hofstede's (1980) research on national culture types was selected over other national culture frameworks, owing to its wide applications across a variety of disciplines, which attests to the validity and relevance of Hofstede's research until today. The areas of Hofstede's research that are most likely to influence KM are



the individualism/collectivism dimension, as this is directly related to social interaction which is a key aspect of tacit knowledge, and thus emphasis should be placed on this dimension due to its pertinence to the research topic.

Hofstede (1980) describes national culture as a software, which controls or governs a person's behaviour and attitudes. Hofstede's (1980) pioneering work on cultural studies suggests that national culture has a deep impact on people's interaction and working practices. He offers four dimensions upon which national culture can differ and gives a score to each country for each dimension. He purports that national culture operates across four major dimensions:

- Individualism/ collectivism: the extent to which individuals prefer working alone or in a group situation. Arabs showed high levels of collectivism.
- Power distance: the extent to which a person perceives that power should be distributed unequally. Arabs showed high levels of Power distance.
- Femininity/ masculinity: Whether an individual has hard, authoritative beliefs, or softer more emotional beliefs. Arabs showed average levels of masculinity.
- Uncertainty avoidance: the extent to which individuals are uncomfortable with risk or uncertainty. Arabs showed high levels of uncertainty avoidance.

Individuals hold knowledge however decision-making and their attitudes and behaviour is acknowledged to be determined by the culture they have acquired (Hofstede et al., 1991). Hence, the understanding of different cultural orientations and their impact on the different facets of knowledge such as creation, storage, transfer and application, has formed a significant focus within the literature. An individual's national culture has been identified as a significant influencing factor in knowledge management and sharing and is proposed to comprise three sub-dimensions related to power relations, inclination towards knowledge and collectivistic cultural features such as face-saving (Hutchings and Michailova, 2004; Ford and Chan, 2003; Kurman, 2003). The connection between national salient determinants and specific outcomes of knowledge management can also potentially be understood through Hofstede's cultural lenses. Hofstede et al., (1991) explain diverse cultural characteristics which lead to different knowledge-related behaviours. Power distance, uncertainty avoidance, long-term opposed to

short-term orientation, and masculinity and femininity orientation are all held to resonate in organisational cultures and nurture an environment which is more or less conducive to knowledge production (Kim, 2007).

The areas of Hofstede's research that are most likely to influence KM are the individualism/collectivism dimension, as this is directly related to social interaction which is a key aspect of tacit knowledge, and uncertainty avoidance, as this may have ramifications for interaction with external stakeholders or inter-organisational stakeholders whom they do not know, as it is considered more risky. According to Esia and Skok (2014), there appears to be differences in the degree of collectivism shown by UAE workers depending on the nationality of the co-workers interacted with: UAE workers showed high collectivism when interacting with other UAE colleagues and high individualism when interactions took place with foreign colleagues.

While the collectivist nature of UAE culture is visible in the UAE nationals' preference for working in teams rather than independently, this dimension appears to be linked to already existing strong social networks, hence reserved to co-nationals. Interactions with non-UAE co-workers appear to be far more individualistic, with knowledge often being withheld from foreign colleagues, as UAE culture is experienced as discouraging uncomplicated, free interactions with foreign nationals. These findings indicate that collectivism in the UAE is limited to intra-cultural interactions, i.e. within pre-existing strong social networks (Al-Esia and Skok, 2014).

Uncertainty avoidance identifies the extent to which individuals are reluctant to accept uncertainty and equivocality. High uncertainty avoidance cultures are characterised as risk averse and greatly accepting of strict policies, laws and regulations. The masculine/feminine cultural dimension relates to the extent people are prepared to encourage social values. Thus in a highly masculine culture reliance on traditional power is prevalent while less attention is paid to social welfare (Hofstede et al., 1991). Cultures oriented towards processes, tightly controlled, and sharing individualist and masculine attributes are also acknowledged to constitute barriers to nurturing knowledge intensive environments (Chang and Lin, 2015),

while hierarchical cultures are argued to impede knowledge and entrepreneurial cultures and hinder the sharing process (Hendriks, 2004). In the cultural context of China extensive research findings have shown that the high masculinity and power distance, high uncertainty avoidance and low individualism have discouraged risk-taking and experimentation and ultimately constrained knowledge sharing and transfer (McAdam et al., 2012).

High collectivism of UAE culture may also suggest implications for inter-organisational knowledge sharing between agencies depending on the cultural diversity of those agencies. The unreceptiveness of Arab culture towards foreigners has been noted, as well as the necessity to increase the appreciation and knowledge of each other between expatriates and Arab co-workers (Attayah, 1996). It has also been shown that there exists a cultural insecurity in the UAE which impacts working environments as individuals behave in 'self-preservation' mode (Jones, 2008). For instance, there is an extremely high likelihood of a UAE worker sharing knowledge with another UAE colleague. On the other hand, the individualism showing in interactions with non-UAE workers results in a far lower likelihood of knowledge sharing. This is probably due to the high-power distance of UAE Arab culture which accepts unequal power distributions and considers knowledge as a 'power' shared for personal gain (Al-Esia and Skok, 2014). It could be argued that knowledge sharing is perceived as a power card to be played for gaining power or status. Seba et al., (2012) aligns with this view stating that knowledge sharing only occurs when there are advantages for the individual. Sharing knowledge with other UAE Arabs is highly attractive as part of established social networks.

Evidence appears to highlight the complexities and challenges of these factors. Research on UAE large-sized companies has shown that their plans and endeavours to develop internal efficient knowledge sharing have been generally unsuccessful as a result of the difficulties presented by the traditional approaches to trust, knowledge management, and information security (Ahmad and Daghfous, 2010; Daghfous and Barkhi, 2009). In the UAE public sector, research indicates there are several important variables affecting attitudes towards knowledge sharing and management including trust, organisational culture, use of technology, leadership and time (Seba et al., 2012). Similarly, organisational culture, training issues

and management's indifference are the main obstacles to internal knowledge sharing in Arab contexts (Skok and Tahir, 2010). However, while these studies utilise a single general classification for foreign workers, Klein et al., (2009) point out that the nationality of non-native workers is a significant factor in Arab culture as prestige, admired power and performance are seen as interdependent often resulting in inhospitable office environments. A study by Alserhan et al., (2010) on the perspectives about diversity held by UAE workers indicates that participants gathered according to cultural groups rejecting outsiders. It additionally shows an absence of positive links between the levels of diversity in the workplace and the attitudes of UAE workers. Moreover, it argues that foreign workers safeguard their jobs by stockpiling knowledge (Alserhan et al., 2010). These diverse studies indicate the need for a solution adjusted to the specific local circumstances.

Despite this understanding that national culture is a key factor in KM, Al-Adaileh and Al-Atawi (2010) assert that Arab KM research is still a rarity, and this presents Arab organisations with major obstacles when wishing to implement KM principles within their organisations. In fact, studies on Arab KM are extremely scarce, although it is interesting to note that there has been a recent emergence of interest in this topic in the last two to three years (such as Skok and Tahir, 2010, Ahmad and Daghfous, 2010, and Mohamed et al., 2008), which may suggest that this topic is a very relevant and pertinent area of study, worthy of further investigation.

### **2.6.3 Openness of Culture**

The degree of openness of a culture or of a system has further been utilised as a variable in the knowledge management literature which emphasises its great impact on knowledge sharing and transfer. Openness is understood either in terms of communication, trust and collegiality (Asrar-ul-Haq and Anwar, 2016) or flexibility (Kaur et al., 2012). Openness to change has been a significant focus of research in the Arab context and is emphasised as a key cultural characteristic for enabling knowledge sharing (Al-Adaileh and Al-Atawi, 2011). Magnier-Watanabe (2011) argues that openness to change involves a high absorptive capacity in addition to acknowledging the need for change and embracing it to improve performance. Openness is further noted to enable effective communication within the

organisation. Communication, in conjunction with openness, trust and team spirit is shown to support a climate of engagement enabling tacit knowledge sharing (Nakano et al., 2013). Although not researched extensively as a cultural attribute impacting the sharing and transfer of knowledge extant studies point to the key role openness to change plays in this process. Closed cultures, by contrast, are suggested to constrain the processes of creativity, knowledge production and transfer (Głód and Wronka-Pośpiech, 2015).

Organisational cultures are a further cultural dimension perceived to have a significant impact on the nurture or hindrance of knowledge management and sharing. Organisational culture is acknowledged to comprise factors regarding contextualised social interactions such as competition, trust and concern, customs and standards, knowledge ownership, and notions about the value of knowledge (Ardichvili et. al., 2003; Gupta and Govindarajan, 2000; Inkpen and Dinur, 1998; Simonin, 1999). A clan organisational culture is argued to facilitate tacit knowledge-sharing behaviour as it is concerned with flexibility and integration in which knowledge-sharing is positively encouraged, in contrast to a market cultural orientation which values competitiveness and rational goals (Asrar-ul-Haq and Anwar, 2016). Clan culture is characterised by a high adoption of team-working and employee participation activities, and high levels of commitment both from the organisation to employees and among work colleagues (Suppiah and Singh Sandhu, 2011).

Finally, professional culture has often been ignored in the literature although it is emphasised to include factors such as cognitive styles that affect the value ascribed to knowledge thus regulating the type of knowledge individuals will or will not share professionally. Cognitive styles develop from participation in recurring contextualised actions, professional procedures and experiences that bestow value on the job's functions (Pauleen and Wu, 2004; Taylor, 2004).

When pursuing a cultural orientation change, research highlights that the value of knowledge should be internalised for lasting impact (Alrawi et al., 2013). A supportive culture should thus be envisioned and pursued, taking care to avoid

embedding change in an existing culture which is argued to affect the organisation only temporarily (Alrawi et al., 2013; Campbell, 2009).

#### **2.6.4 Knowledge Culture**

The knowledge management literature underlines the important role that culture plays in the positive reception given to knowledge processes such as knowledge development (De Long and Fahey, 2000; Davenport et al., 1998; Nonaka and Takeuchi, 1995) and sharing (Ford and Chan, 2002; McDermott and O'Dell, 2001; Damodaran and Olphert, 2000) and the relationship between them (Glisby and Holden, 2003). The importance of having the right cultural conditions for knowledge development to take place is a key finding. In particular a commitment to learning, and a culture of openness and faith where mistakes are accepted as part of the learning process are found to be critical (Friedman et al., 2001). Antal et al., (2001) explain that culture can proffer barriers to learning, an example being an appreciation for tried and trusted solutions which could decrease openness to engagement with innovation and new ways of doing things.

Insights such as these are highly relevant as they emphasise the link between culture and knowledge sharing and how this can impact sharing, knowledge exchange and learning. Significant consensus exists in relation to the status of motivation, reciprocal trust and inclination to acknowledge and address problems as culturally governed conditions that determine whether knowledge sharing will take place (Goh, 2002; Neef, 1999; Ruppel and Harrington, 2001; Santoro and Gopalakrishnan, 2000). Glisby (2003) highlights that culture influences appreciation of the four SECI learning processes proposed by Nonaka et al., (2000) of socialisation, externalisation, combination, and internalisation. This is asserted based on the impact of culture on the acceptance of particular forms of knowledge sharing such as through social contact or through knowledge externalisation.

It can be concluded therefore that the extent and way an organisation appreciates knowledge is also influenced by culture. Studies have shown that this extends to the value placed on individual forms and aspects of knowledge (Chia, 2003; De Long and Fahey, 2000). One study highlights that software development companies, for example, value creative knowledge aspects and this appreciation is often

embodied in unready prototypes found at off-the-shelf software companies (McDermott and O'Dell, 2001). Such studies highlight the question not only of whether knowledge is valued within an organisation but how it is valued. Potentially knowledge value and appreciation could vary across different cultural types, such as the four cultures discerned by McGill and Slocum (1994).

Studies have also highlighted the importance of a learning culture, underlining that if a learning culture is not developed, innovation and creativity are hindered, and the nature of knowledge is not recognised and not implicitly shared (Alrawi et al., 2013; Hendriks, 2004). To value knowledge requires an organisational setting and a leadership who pursue changing values and overcome many of the cultural barriers which impede knowledge development (Alrawi et al., 2013). **For example, Muhammed and Zaim (2020) investigated the role of leadership support and knowledge management success and found that leadership support of the immediate manager is an important factor that contributes to the respondent's peer knowledge sharing behaviour.** Facilitating communication and promoting awareness and recognition of knowledge are favourable factors. National and group cultural determinants are also perceived to hinder the process of sharing, such as the sense of owning knowledge, lacking a sense of collectivism, risk-averseness or a power culture, all cultural values shown to build on barriers to knowledge sharing (Hendriks, 2004).

### **2.6.5 Leadership**

Leadership, as part of the general organisational culture, is a central theme in the knowledge management literature. Leadership commitment is generally assumed as necessary to generate a climate in which individuals not only share knowledge but are facilitated to assimilate and practice new knowledge (Kaur et al., 2012). Understood as a human-oriented success factor for knowledge management (Kaur et al., 2012, Pawlowski and Bick, 2015), less effective managerial leadership is identified with those performing rational goals and neglecting human and relational aspects (Kaur et al., 2012), forming a potential organisational barrier towards knowledge management utilisation.

According to scholars a committed leadership is needed as a key enabler for introducing knowledge management (Alrawi et al., 2013; Holowetzki, 2002). Leadership and managers are maintained to be critical in providing the overall organisational framework within which employees can share knowledge (Asrar-ul-Haq and Anwar, 2016). The leadership envisions the organisation structure and future orientation, which implies planning and implementing initiatives and development of knowledge management (Holowetzki, 2002). An empowered leadership that effectively promotes change inside their organisation is held to characteristically lead by example and engage in coaching, participative decision-making, showing concern for employees, and informing (Asrar-ul-Haq and Anwar, 2016). It is also the leadership who are argued to be able to strengthen learning processes and thus nurture a supportive culture for knowledge management, in conjunction with measures including narrowing the distance from power and encouraging open and informal communication (Chmielewska-Muciek and Sitko-Lutek, 2013).

Leadership is also viewed as a core factor in empowering employees to share and transfer knowledge, a key determinant for a knowledge enterprise (Asrar-ul-Haq and Anwar, 2016). In the knowledge intensive economy, leaders of competitive organisations and other similar organisations where knowledge creation and sharing meets barriers, are encouraged to become aware and responsible to introduce change. New conceptual frameworks, such as the Organizational Knowledge Management Mode (Kaur et al., 2012) and empirical research has been introduced to assist leadership to commit and adapt to the new challenges in creative knowledge enterprises. Chmielewska-Muciek and Sitko-Lutek (2013) advise that employees are encouraged to provide feedback for enhancing knowledge-sharing initiatives which could result in positive contributions and greater creativity, innovative thinking and performance. Business needs can then be addressed through application of the right knowledge.

#### **2.6.6 Social Relationships**

Relationships between actors are another dimension of inter-organisational knowledge transfer strongly emphasised in the literature. They are widely considered significant and identified as a potential barrier to knowledge transfer at



geographical, organisational, and functional levels (Dougherty and Hardy, 1999). Social relations are motivators of mutually beneficial behaviours in people within organisations. Inkpen and Tsang (2005) presume that the development of intra-organisational friendships increases the probability of knowledge transfers, which generally take place as a result of social capital and face-to-face communication. The positive correlation between social relationships, or intra-organisational networks of people, and knowledge sharing has been evidenced in a variety of studies. Zhou et al. (2010) highlights the connection between network bonds and trust between people, while Ghobadi and D'Ambra (2012) confirmed that knowledge sharing practices are strongly influenced by collaborative relationships between people. It has also been shown that the sharing of knowledge is facilitated by positive social relationships and interactions (Fullwood et al., 2013; Titi Amayah, 2013).

Based on these findings, it is suggested that the establishment of interpersonal networks based on trust should be encouraged to enable the sharing and transfer of knowledge (Asrar-ul-Haq and Anwar, 2016). The relationship between the actors involved in knowledge transfer is typically depicted as two-way, rather than strictly uni-directional, and characterised by reciprocity and feedback. Battistella et al., (2016) identify three main elements that characterise and influence the transfer of knowledge between actors: trust, intensity of the connections and distance between parties.

#### 2.6.6.1 Trust

Skok and Tahir (2010) also noted that trust is a key obstacle to knowledge sharing in Arab national culture, thus trust may have serious implication for inter-organisational knowledge sharing between cross agency organisations. On the organisational level, trust has attracted most attention in relation to knowledge transfer (Wang and Noe, 2010; Brink, 2001; Bureš, 2003, Easterby-Smith et al., 2008). Several recent studies evidence the negative impact of interpersonal mistrust on knowledge sharing within and between organisations; lack of trust between people has been shown to be the main inhibitor of intra-organisational knowledge sharing (Asrar-ul-Haq and Anwar, 2016). Studies have distinguished between three different dimensions of trust in inter organisational relationships: contractual-

based trust, competence-based trust and goodwill-based trust (Boersma et al., 2003; Connelly et al., 2012; Buckley, 2002). The first dimension arises from verbal or written promises that parties undertake during joint venture relationships. The second dimension implies that the party involved will perform its role competently (Boersma et al., 2003) while the final form of trust is characterised by non-explicit forms of promises, and the parties' willingness to put the needs or wishes of others before their own (Buckley, 2002).

Within an inter-organisational relationship trust is shown to not only facilitate learning but also affect the firm's ability to acquire new knowledge (Nielsen and Nielsen, 2009). Trust is held to permeate all levels of knowledge dispersion, from individuals to groups and organisations (Argote et al., 2003). As such, trust may have a significant influence on the effect of tacit knowledge on performance (Nahapiet and Ghoshal, 1998). Trust is claimed to have a greater effect on the willingness to share tacit knowledge as it increases the parties' inclination to assist each other and to comprehend external knowledge (Lane et al., 2001). Any initiative of sharing knowledge without trust between organisations becomes not only less efficient and an asymmetric process but is argued to eventually fail (Davenport and Prusak, 2000). In a relationship based on trust, reciprocity and confidence are also identified as key factors. Reciprocity is relevant because the relationship between actors is acknowledged as a two-way process in which the source invests time and resources and the recipient is motivated and capable of receiving the shared knowledge in an efficient manner (Easterby-Smith et al., 2008). It is suggested moreover that if willingness and openness are involved in the process, then the receiver acquires greater confidence in the whole process and in its success. These beliefs are argued to help overcome concerns about possible misconducts and misappropriation of knowledge (Battistella et al., 2016). Studies have also related trust with reputation, arguing that the two concepts are linked as partner reputation reduces recipient tendency to question the quality of knowledge (Davenport and Prusak, 2000).

#### 2.6.6.2 Intensity

Another element characterising the relationship between parties is intensity of the connections. Battistella et al., (2016) comments that the intensity of interaction involved in knowledge transfer can mean that the relational context is a highly influential dimension on its success. This implies that strong ties may lead to higher transfer of knowledge between members of the same organisation (Hansen and Lovas, 2004) and different organisations (Sukoco, 2016). The importance of this element relates to the fact that cultural differences may be alleviated if strong ties exist between organisations (Easterby-Smith et al., 2008).

Increased density of social ties among organisations are acknowledged to support these elements, facilitating increased opportunities for knowledge sharing and the development of co-operation and trust (Battistella et al., 2016). If strong social ties exist between the parties then it can be concluded that better opportunities to transfer knowledge and experience may arise.

#### 2.6.6.3 Distance

Distance between parties is a further element of trust considered in the literature. According to Cummings and Teng (2003) and Battistella et al., (2016) this element entails several components such as: organisational distance (the mode through which the actors transfer knowledge), physical distance (the time and cost impediments of face-to-face meetings), and knowledge base distance (the degree of similar knowledge between source and recipient). Other types of distances identified include cultural distance such as elements that assure representations, interpretations and shared meaning systems in the interpersonal relationship context. In terms of interpersonal relationships, the aspects that contribute systems of shared representation, meaning, and interpretation are termed social capital's cognitive dimension (van Wijk et al. 2008). Reciprocal understanding is supported by shared vision and systems. These also yield essential instruments enabling the amalgamation of the knowledge held by different individuals (Battistella et al., 2016).

Normative distance indicates the degree of shared aspects of the same organisational culture, values and beliefs and the degree of similarity in socio-behavioural features within their context of the parties in a knowledge transfer. Social norms refer to the spoken or unspoken prescriptions regarding how the members of a specific social environment should behave (De Long and Fahey 2000). Social norms dictate the conduct of groups and individuals in specific circumstances (Battistella et al., 2016). In the context of a knowledge transfer, a frictionless working relationship between the participants is argued to be facilitated by the similarity of their practices and normative systems, as shared social norms determine the admissibility or inadmissibility of behaviours within social settings (Battistella et al., 2016).

People are perceived to be key enablers for introducing knowledge into organisations and to create a supportive environment for knowledge to flourish, therefore how people interact is considered crucial (Asrar-ul-Haq and Anwar, 2016). Nevertheless, culture is acknowledged to play a central role in determining interactions between people. How organisations build their cultures is argued to affect interaction in the internal and external environment which in turn impacts knowledge management (Holowetzki, 2002).

According to Asrar-ul-Haq and Anwar (2016) the manner in which human relations are structured in organisations strongly affects the knowledge sharing process. Community culture facilitates knowledge transfer (Asrar-ul-Haq and Anwar, 2016) in addition to open cultures (Hendriks, 2004). Such cultures encourage more informal settings which are held to positively impact human interactions and facilitate knowledge processes (Kayworth and Leidner, 2003; McDermott and O'Dell, 2001). Research shows that trust and network are positively related to knowledge sharing and that lack of trust strongly impedes knowledge sharing and transfer (Asrar-ul-Haq and Anwar, 2016). In contrast studies have shown that in hierarchical structures where formal relations are the norm vertical knowledge sharing up and down the hierarchy is discouraged (Bhagat et al., 2002; De Long and Fahey, 2000; Ford and Chan, 2003). Notably however the literature points to the effectiveness of a single dominant culture for knowledge management. Communication and interactions are considered favourable to knowledge management

in a more uniform cultural setting than in a multi-cultural or multi-professional, which are acknowledged to create their own subcultures (Bhagat et al., 2002; Huang et al., 2003).

How people connect beyond their organisations is also argued to affect knowledge management and sharing. Networked organisations are considered to form communities where a more direct and smooth communication is enabled and, therefore, knowledge transfers easier and tends to be reused. This is in contrast to organisations which externalise their knowledge and the communication and relational processes are more formal (Hendriks, 2004).

Within an organisation social relationships are a stimulus to mutually beneficial behaviours, and it has been argued that friendly relationships increase the likelihood of knowledge transfer (Inkpen and Tsang, 2005). Social capital and face-to-face interactions are held to often form the context for knowledge exchange and the link between networks of people and knowledge sharing has been extensively researched and debated. It has been claimed that network bonds and trust between individuals are correlated (Zhou et al., 2010), and as a result it can be surmised that the development of networks based on interpersonal trust enables the transfer and sharing of knowledge. Further research indicates that behaviours related to knowledge sharing are appreciably influenced by cooperative relationships between individuals (Ghobadi and D'Ambra, 2012), and that knowledge sharing is facilitated by positive social relationships and interactions among colleagues (Fullwood et al., 2013; Titi Amayah, 2013).

The importance of relationships is highlighted when organisational barriers to knowledge-sharing are considered and which can act to prevent the generation of new organisational knowledge (Lilleoere and Holme Hansen, 2011). Research has highlighted a broad range of inhibitors to knowledge sharing however one of the most extensively researched and recurring is lack of trust, considered the most influential factor constraining knowledge sharing within organisations. Distrust among individuals has been identified as obstructing both inter and intra-organisational knowledge sharing (Asrar-ul-Haq and Anwar, 2016).

#### 2.6.6.4 Motivation to Share

Participants in knowledge sharing are found to be frequently inhibited by the possibility of rewards deprivation and face conflicts of motives in reciprocity and cooperation and incentives (Bureš, 2003). Reward systems are noted as a key cultural factor impacting attitudes and behaviours in an organisation (Hendriks, 2004, Holowetzki, 2002) while in turn culture is argued to be a key factor in individuals' perceptions of what constitutes a reward or an expression of recognition (Comeau-Kirchner, 2000; Greengard, 1998).

Both extrinsic and intrinsic motivation and rewards are shown to impact individual knowledge-sharing behaviours and people's intentions in relation to knowledge sharing (Gururajan and Fink, 2010; Deci and Ryan, 1975). In terms of rewards a direct positive relationship between the nature of rewards and knowledge behaviour has been observed while conversely, when rewards are lacking or prove imbalanced, knowledge-sharing is revealed to be negatively impacted (Asrar-ul-Haq and Anwar, 2016, Campbell, 2009, Hsiu-Fen, 2007). Provision of motivation is also emphasised as a key factor for knowledge sharing and sufficient motivation arising from praise and recognition, in addition to financial rewards, has been demonstrated to encourage knowledge sharing (Gururajan and Fink, 2010). Research by Huang et al., (2013) highlights that a perceived lack of fair compensation among expatriates led to an absence of adequate motivation to share and transfer knowledge.

People are acknowledged to respond to various motivations and the right rewards are looked for to incentivise a knowledge related behaviour through the lens of cultural differences which affect the perception of benefits (Hsiu-Fen, 2007). According to Hendricks (2004) different types of culture nurture or inhibit a certain type of knowledge-related behaviour, such as a market culture which clearly stipulates rewards and encourages individualism, or hierarchical or individualist cultures where the perceived benefits belong to the knowledge owners.

In relation to understanding what may motivate individuals to share knowledge in a context of incentives, theories of motivation define two main types of extrinsic and intrinsic motivation. Extrinsic motivation is noted to drive the knowledge sharer

to act based on the perceived rewards or compensation of the task. The basic aims of those extrinsically motivated to share knowledge are characterised as the gaining of organisational rewards or mutual benefits (Deci and Ryan, 1975; Kowal and Fortier, 2007). Organisational rewards can range from financial incentives such as higher salaries and bonuses to non-financial rewards including job security or promotion (Davenport and Prusak, 1998).

Nevertheless research indicates that expected organisational rewards can potentially have a temporary impact and do not influence significantly the knowledge sharer attitude and behaviour, while all other factors are significantly associated with knowledge sharing (Hsiu-Fen, 2007). Moreover, organisational rewards may potentially obstruct organisational knowledge sharing as it develops a conflict of motives and, often, the positive perception of rewards is shown to disfavour sharing (Bureš, 2003). In contrast intrinsic motivation initiates the sharing of knowledge for its own sake. While extrinsic motivation therefore emphasises expected organisational rewards and reciprocal benefits, intrinsic second is identified either as knowledge self-efficacy or enjoyment in helping others (Hsiu-Fen, 2007). Blau (1964) highlights that mutual benefits are considered positively by individuals participating in knowledge exchange. Reciprocity, an important factor in knowledge sharing, is asserted to be based on the establishment of a sense of indebtedness whereby those who contribute knowledge receive benefits in return (Kollock, 1998). It is suggested that reciprocal benefits could offer significant motivation facilitating knowledge sharing, as knowledge sharing is considered beneficial by employees who are convinced their behaviour will be reciprocated (Hsiu-Fen, 2007).

Intrinsic motivation in the context of employee knowledge sharing is identified as an activity engaged in for the satisfaction and pleasure gained from it. Satisfaction can be derived from helping colleagues and from providing useful knowledge to the organisation (Deci and Ryan, 1975). In cases where employees are intrinsically motivated to share knowledge, according to Deci (1975) motivation arises from an individual's need for a sense of competence and by the notional freedom provided by recognition within the organisation. Thus, competency and self-efficacy, evidenced by employees who think their knowledge can enhance organisational efficiency and solve work issues, are claimed as stimulating factors in

organisational knowledge sharing (Deci and Ryan, 1975). Employees holding such beliefs are claimed to eventually influence beneficial perspectives that support knowledge sharing (Hsiu-Fen, 2007).

Hsiu-Fen (2007) notes that a further intrinsic motivation is the enjoyment experienced when helping other people. Enjoyment is rooted in the notion of altruism, which comprises elective helping behaviours (Organ, 1988). Altruism is based on a sincere inclination to help others and has been shown to be a potential motivator for knowledge workers to share and help (Constant et al., 1996). Similarly, Wasko and Faraj (2005) find that the enjoyment, helpfulness and challenge of knowledge sharing are intrinsic individual motivators.

As knowledge and power are often regarded as equivalent, the challenge of developing and incentivising an environment favourable to knowledge sharing has been explored by researchers. A number of studies show that interpersonal knowledge sharing behaviours are influenced by incentives (O'Reilly and Pondy, 1979; Ipe, 2004), and that the number and type of incentives offered affects the sharing of knowledge (Gupta and Govindarajan, 2000; Quinn et al., 1996). However the costs of knowledge sharing for participating individuals have also been highlighted (Gee-Woo et al., 2005).

Individual beliefs that the costs are outweighed by the anticipated advantages have been shown to be a significant determining factor affecting knowledge sharing behaviours (GeeWoo et al., 2005). In addition to the effort and time involved in sharing knowledge, Gibbert and Krause (2002) have highlighted the "public good dilemma"; the term refers to the specific problem within an organisation that any beneficial information shared by one individual might be used by another person without the initial employee receiving a benefit in return. GeeWoo et al. (2005) thus highlight how knowledge sharing can be restricted by insufficient incentives. This suggests the importance of organisational identification of which rewards stimulate or hinder knowledge sharing behaviours in employees.

While the tendency to conceal knowledge by individuals who possess it has not been widely studied, nonetheless psychological ownership, a person's conviction they have proprietary rights over something, has been identified to date as the main



factor influencing it (Peng, 2013). However, it has been shown that willingness to share is positively correlated to psychological ownership, as there is an assumption that knowledge sharing will result in benefits focused on the expert (Constant et al., 1994; McLure et al., 2000; Pierce et al., 1991).

In terms of knowledge viewed from the perspective of knowledge flows, it has been assumed that knowledge sharing is fundamentally a communication process based on supply and demand for knowledge that takes place between individuals through a variety of media. Processes of knowledge generation and sharing are acknowledged as reciprocal and requiring the involvement of individuals in obtaining, exchanging, developing and applying knowledge (Oldenkamp, 2001; Grotenhuis and Weggeman, 2002). Communication processes are composed of channels, senders and receivers; similarly, knowledge sharing processes are argued to be founded on socially shared cognition and involve the sending and receiving of knowledge through a variety of vehicles (Osgood and Schramm, 1954; Shannon and Weaver, 1947). Culture and the type of communication channels people use are claimed to influence the sending and receiving of knowledge. Such channels can be informal, such as mentoring or social networks, and formal, such as training or KM systems (Bartol and Srivastava, 2002; Ipe, 2003).

### **2.6.7 Knowledge Processes**

Processes and the cultural orientation underpinning them are acknowledged to have a significant effect on knowledge sharing, transfer, and management. Different cultures are argued to have different attitudes and practices in relation to processes which impact on knowledge management and sharing. Process-oriented, loosely-controlled and employee-oriented cultures are considered to be of great advantage to develop knowledge, while results-oriented, tightly controlled and job-oriented cultures will hinder the same processes (Chang and Lin, 2015). Similarly, a professional culture may foster knowledge in contrast to a parochial one, which tends to reproduce itself (Chang and Lin, 2015).

Knowledge standardisation is identified as key within hierarchical cultures which are characterised by internal processes of control, routinisation and stability in addition to information management and documentation. Such cultures are perceived

to emphasise the establishment of work practices and routines which allow individuals to shape their knowledge to find solutions to practical problems (Kaur et al., 2012). Quinn et al., (2003) highlights that knowledge applied in practical contexts in turn forms the basis for new routines. This process is asserted to encompass the transformation of explicit into implicit knowledge through the definition of responsibilities, documentation, record-keeping and measurement.

### **2.6.8 Information and Technology Systems**

Technology can be viewed as a strategic mechanism for enhancing communication, cooperation and knowledge and information exchange through the adoption and effective utilisation of assets or tools that promote knowledge. Technology enables the more rapid flow and dissemination of information organisation-wide (Martin-Rojas et al., 2011).

Information and communication technologies development has brought heightened levels of innovation and change in organisations. Information systems, which bring together people, processes and technologies, are seen as a key factor in generating a knowledge culture (Bureš, 2003, Holowetzki, 2002, Yao et al., 2020). The purpose of technology is asserted to be to connect people with people or with explicit knowledge. This can bring into play the existing explicit and implicit knowledge which determine knowledge sharing and transfer within the organisation (Van Den Brink, 2001). Knowledge sharing and transfer through the use of information technology and communication through social media and web 2.0 technologies, is acknowledged to have radically changed and advanced organisational knowledge (Asrar-ul-Haq and Anwar, 2016).

Information technology is acknowledged as a significant facilitator of knowledge sharing (Mitchell, 2003, Yao et al, 2020). At the start of the millennium, intranets, databases, emails, e-fora, websites and bulletin boards were identified as effective enablers of knowledge transfer and sharing within and without organisations (Song, 2001). Subsequent research incorporating the technological improvements introduced since then has expanded understanding of this role. Web 2.0 technologies, such as Instant Messaging, blogs and wikis, have been shown to help knowledge sharing and support communication within organisations (Zhao and Chen, 2013),

while social web tools are emphasised as significant facilitators of implicit behaviours related to knowledge sharing (Panahi et al., 2013). It has also been shown that official and unofficial intra-organisational knowledge sharing is enabled by social media (Rathi et al., 2014). Yao et al., (2020) investigated how knowledge sharing influences technological innovation capability of the software in enterprises. They found that knowledge sharing culture, organisational culture has significant impact on tacit knowledge sharing, management system and IT support have significant impact on explicit knowledge sharing

Conversely, absence of technology is identified as an obstacle restricting effective knowledge transfer and sharing. Qureshi and Evans (2015) indicate that intra-organisational knowledge sharing is hindered by limited technology and by the expense of sharing knowledge. Similarly, research has shown that limited technological support restricts the development, retention, application and sharing of knowledge, as well as being an obstacle to organisational learning (Ranjbarfard et al., 2014).

In developing countries, knowledge management awareness and organisational learning is shown to be hindered because of a lack of technologies, though economic development is acknowledged to be not the only enabler of technology infrastructures. Organisational cultures are also argued to determine management awareness and the levels of acceptances and preferences of an organisation (Pawlowski and Bick, 2015).

In spite of the high technology development, knowledge management implementation is claimed to face cultural barriers, as the use of technologies depends on their understandings. Nevertheless Campbell (2009) claims that what knowledge is, who controls it, its usages and its creation is fundamentally linked to culture, and thus, it is the culture in itself which became a barrier to knowledge management, rather than technological assets.

### **2.6.9 Complementarity**

Kale et al., (2000) identifies “complementary” as referring to a lack of the same or similar assets and capabilities among members. If there is less similarity, there

is a higher level of complementarity. According to Kanter (1994) partners offering different but complementary skills can more easily integrate them into an organisation to create customer value. Complementary abilities, resources and knowledge can enhance the relationship between partners and promote business performance (Jap, 1999). Therefore, developing a positive complementary professional relationship is argued to involve individual complementary capacities (Kanter, 1994). When consolidating the partnership over time, there is improvement in the resources and capabilities of each partner to realise synergy (Harrigan, 1985). In the context of virtual communities, “complementary resources” can be viewed as members of a community who have different but complementary skills, knowledge and information. As a result of rapid changes and the need for flexible environments a single entity may be insufficient to address unique needs and therefore has to combine with other resources to balance any inadequacies. In the view of Hsu (2015) members within virtual communities with significant complementary capabilities and resources can combine them to create a higher level of knowledge competitiveness than able to be achieved alone.

## **2.7 KM Studies on Arab Public Policing**

Jaschke et al., (2007) (cited in Gottschalk, 2009) confirms that policing styles, strategies and management structures differ according to national context. In some countries the police are feared and viewed as corrupt, while in others they are highly trusted (Jascke et al., 2007). This adds weight to the argument that different national contexts may need more culturally sensitive adaptations to KM models. Furthermore, most of the research seems to have been conducted in western countries, there is a lack of studies on non-western police forces where KM dynamics may differ.

Seba et al., (2012) looked at the general factors affecting receptivity to the KM initiative within the UAE public police force (Dubai Police force). Their results found that these factors were found to be organisational structure, lack of trust, poor leadership and it were key. They also found that rewards do little to help in KM initiatives (Seba et al, 2012). Seba et al (2012) do not appear to focus on national culture as key issue, as their discussion of trust makes no mention of the role of national culture, but merely that trust can be an issue in public sector organisation. The lens

through which they view their research differs greatly to the nature of this research. However, Seba et al's., (2012) is more focused on intra-organisational KM and does not specifically address inter-organisational KM issues. Furthermore, they do not offer an Arab KM model, but rather just a series of recommendations do deal with the factors raised.

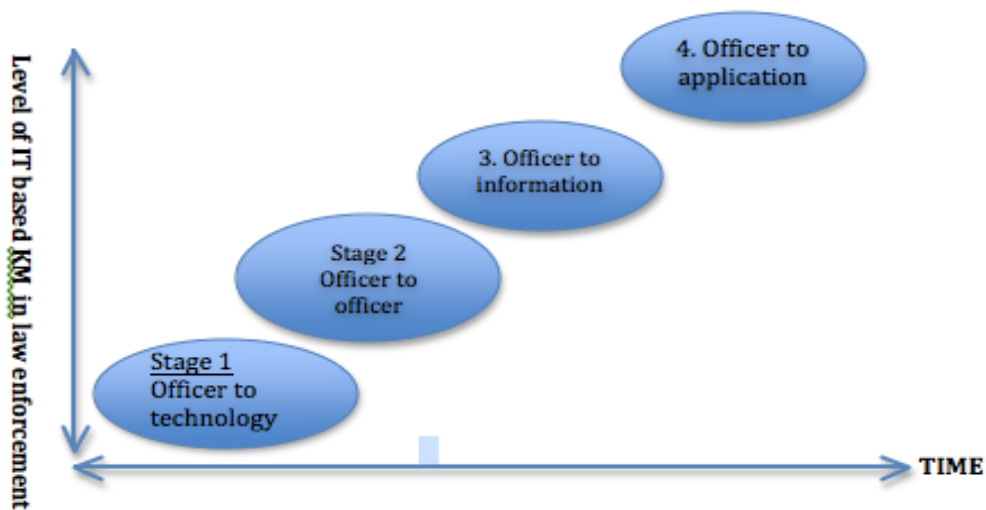
Prior to the study by Seba et al (2012) on Arab intra-organisational KM within the public police sector, limited research had been conducted in this specific context. However, a number of earlier studies have emphasised the essential relationship between culture and context and knowledge management and highlighted differentiated aspects of Arabic culture which impact on knowledge management and sharing. Weir and Hutchings (2005) argue that models of knowledge management are not universal and point to the importance of culturally embedded models which reflect societal and cultural norms. The socialisation focus and the importance of networks of relationships within Arab business culture is argued to emphasise the centrality and significance of trustful relationships to knowledge sharing. This conclusion is supported in a range of other studies which point to the barriers and critical success factors for effective knowledge management in the Arab context. In research in Bahrain Al-Alawi (2007) shows that trust and communication are essential for knowledge sharing in a society in which religion, tribal and household ties remain influential. Skok and Tahir (2010) argue that knowledge management strategies need to be adapted for Arabic contexts in which the most significant barriers to knowledge sharing were shown to relate to social and cultural beliefs. A hybrid strategy is recommended emphasising promotion of individual responsibility for knowledge sharing.

The influence of Arabic organisational culture and structures are a further focus of a number of studies. Sabri (2005) focuses on knowledge management in Arab organisational contexts and characterises traditional Arab organisations as highly bureaucratic. A proposed framework seeks to overcome the limitations of Arabic corporate cultures and structures for knowledge sharing through design of appropriate structures which catalyse a knowledge base culture and support the embedding of learning, information sharing and knowledge formation. Al-Alawi (2007) points to organisational structure as a factor while Al-Adaileh and Al-Atawi

(2011) emphasise the criticality of organisational culture factors for knowledge sharing and show that cultural attributes of trust, information flows and innovation have positive impacts.

Nevertheless, these studies including Seba et al (2012) mainly focus on internal KM processes, and give little regard to inter-organisational KM for the Arab police public sector. This will certainly seek to fill a research vacuum. It will firstly seek to establish existing KM trends in inter-organisational Arab policing, and secondly suggest methods of improvement. The focus of this research looks at ways to improve the human side of policing, focusing on the tacit side and capitalising on a personalisation strategy. It will therefore be necessary for any framework to include a way to ascertain the existing state of both tacit and explicit knowledge trends, within a cultural context, rather than focuses on solely tacit or explicit. The following section will consider frameworks which may help to pursue this research direction.

A review of the literature later in the methodology chapter operationalizes key KM, inter-organisational KM, cultural and KM effectiveness constructs and measures that can form the basis for empirical analysis. Gottschalk (2009) provides a relevant framework which is entitled the KMT model, which looks at the relationship between knowledge management, people (officers) and technology with respect to policing. The value in this framework is in mapping the progression of role and relationship of technology and police officers over time. Gottschalk (2009) describes these stages in more detail:



**Figure 2-6 KMT Model for Policing**

Source: Gottschalk (2009, p.45).

**Stage 1: OFFICER TO TECHNOLOGY:** The use of tools for the end user to improve productivity (e.g. Word for writing reports, small electronic notebooks).

**Stage 2: OFFICER TO OFFICER:** information about ‘who knows what’ is made known to other employees/officers and certain external partners. Involves the use of an intranet with facilities such as: Search engines, corporate yellow pages – these will encourage personalisation of knowledge (tacit knowledge exchange via personal emails, private conversations and meetings). Electronic discussion forms are also a key feature.

**Stage 3: OFFICER TO INFORMATION STAGE:** information from knowledge workers is stored in knowledge databases and accessible by internal employees and external partners, using search engines (Knowledge is codified/ turned into explicit knowledge which can be used by all).

**Stage 4: OFFICER TO APPLICATION STAGE:** Information systems are used by knowledge workers to solve knowledge problems (sophisticated use of expert systems) and help to support knowledge workers

The KMT seems to have direct similarities with the SECI model by Nonaka and Takeuchi (1995), which depicts how knowledge is created in organisations. Similarly, the model shows the importance of interaction between the humans and

technology to create knowledge, or in other words, the interaction of tacit and explicit knowledge to create organisational knowledge. It may have interesting applications to this research.

## **2.8 Overview of Police Sector**

The main public policing body within the United Arab Emirates operates via a group of forces to cover different geographical locations within the emirates, including Dubai police force and Abu Dhabi police force amongst others. The Dubai police force states that: *“Its mission is to improve the quality of life, in the Country, by operating in accordance with the constitutional rights to enforce the law and maintain security and safety of the community and of everyone living in the Country”* (Dubai Police, 2012). This police force has evolved dramatically over recent decades owing to the accelerated development of the UAE economy following the discovery of oil. This has meant that the police force, rather basic in its infancy during 1956 (Dubai Police, 2012), has had to radically adapt to the complex society it oversees protecting and enforcing. In terms of technology, Dubai police are highly advanced, using all the latest technology both operationally in the field and in behind the scenes crime work such as GPS, DNA testing, electronic finger printing and online electronic services (Dubai Police, 2012). Similarly, the Abu Dhabi police force places significant emphasis on the role of inter-organisational work and knowledge exchange with their external partners. The main mission of the Abu Dhabi police is: *‘The General Directorate of Abu Dhabi Police in Abu Dhabi Emirate operates with other agencies to achieve a safer society’* (Abu Dhabi Police GHQ, 2013).

### **2.8.1 Inter-organisational Knowledge Management in Policing**

It has become increasingly vital for the police to create and maintain relationships with external players, in a bid to fight crime and terror more effectively. This in turn depends on essential interaction and knowledge exchange with a variety of external stakeholders (Gottschalk, 2009). Highly challenging and complex cross-border crimes such as cybercrime and fraud, terrorism, and border security drive the need for effective knowledge exchange. The rapid evolution and development of new technologies and opportunities is significantly problematic for agencies responsible



for security in terms of maintaining their level of awareness and situational awareness. Growing complexity in terms of the different levels and types of policing institutions is observable in many police forces around the world driven principally by the need for flexibility and adaptation to rise to new challenges (Batts et al., 2012). This in turn creates greater areas of specialisms and expertise that is distributed across all areas and levels of the organisations. The structure and culture of organisations can be sources of tension associated with the needs and benefit of information sharing and represent significant factors in either facilitating or impeding knowledge sharing (Dean et al., 2010).

### **2.8.2 Socio-Cultural Context**

The UAE has a unique and multifaceted cultural context. Demographically the UAE is characterised by a high level of expatriate residents with only 13% of the population originating from the UAE. The greatest population group consists of south Asians at 58%, followed by other Asian groups at 17% and Western expatriates at 8.5%. The population is also predominantly male, containing the second highest gender imbalance in the world, representing a ratio of nearly three quarters male to a little over a third female. With the highest net migration rate in the world UAE police are challenged by constantly shifting population flows and ever-increasing diversity (WPR, 2015). This has posed several challenges for UAE police, not least how to communicate and address the concerns of such a culturally diverse population. One key issue is the need to address widespread disquiet over labour and human rights abuses among the migrant worker population which is subject to increasing criminalisation by the UAE in attempts to improve conditions. Evidence shows however that poor enforcement may be a significant barrier to stemming ever increasing abuse (Malit and Youha, 2013). Diversity has also generated substantial challenges in security, initiating a series of pre-emptive strategies such as widespread surveillance networks, community policing and standardised forms of identification (Lori, 2011). This emphasises the need for appropriate knowledge systems to support police service delivery to a significantly diverse population and enhance performance in this area.

## 2.9 Research Gap

Furthermore, there exists no single piece of research on Arab KM in the public sector, neither is there Arab research of inter-organisational knowledge sharing or collaboration. How does Arab national culture impact knowledge-sharing with external stakeholders (inter-organisational knowledge sharing)? There is currently limited literature to answer this question, which further supports the cases for this investigation. A review of the literature indicates that despite the research gap into KM in public and policing, these sectors can indeed benefit from KM principles. A synthesis of the literature was drawn from several strands of research outlined in Figure 2-7. The mind map provides a visual view of the literature review and the different pathways that stem from this research. The map reveals fragmented pattern of research and limited cohesion. The limited number of studies reveals research and gaps for comprehensive framework for application of KM in policing context in holistic way. Except for Seba et al (2012), the majority of the research only deals with separate elements such as KM, Arab KM, Policing and KM or KM at an interorganisational level individually. This is to be expected as these secondary research sources are written for differing purposes. Ultimately from this review it is evident that a clear gap related to research regarding Inter-organisational Arab KM public policing sector. Elements from the following four frameworks were selected as the basis of a newly devised framework, which is aimed at this specific set of research, as no one framework could fully satisfy the research aims and objectives, the new framework is a synthesis of the legacy ones (See Figure 2.2.). There is requirement for a novel Arab KM policing framework based on the key themes identified in this chapter and addresses the broad questions arising from the literature synthesised in Figure 2-7.

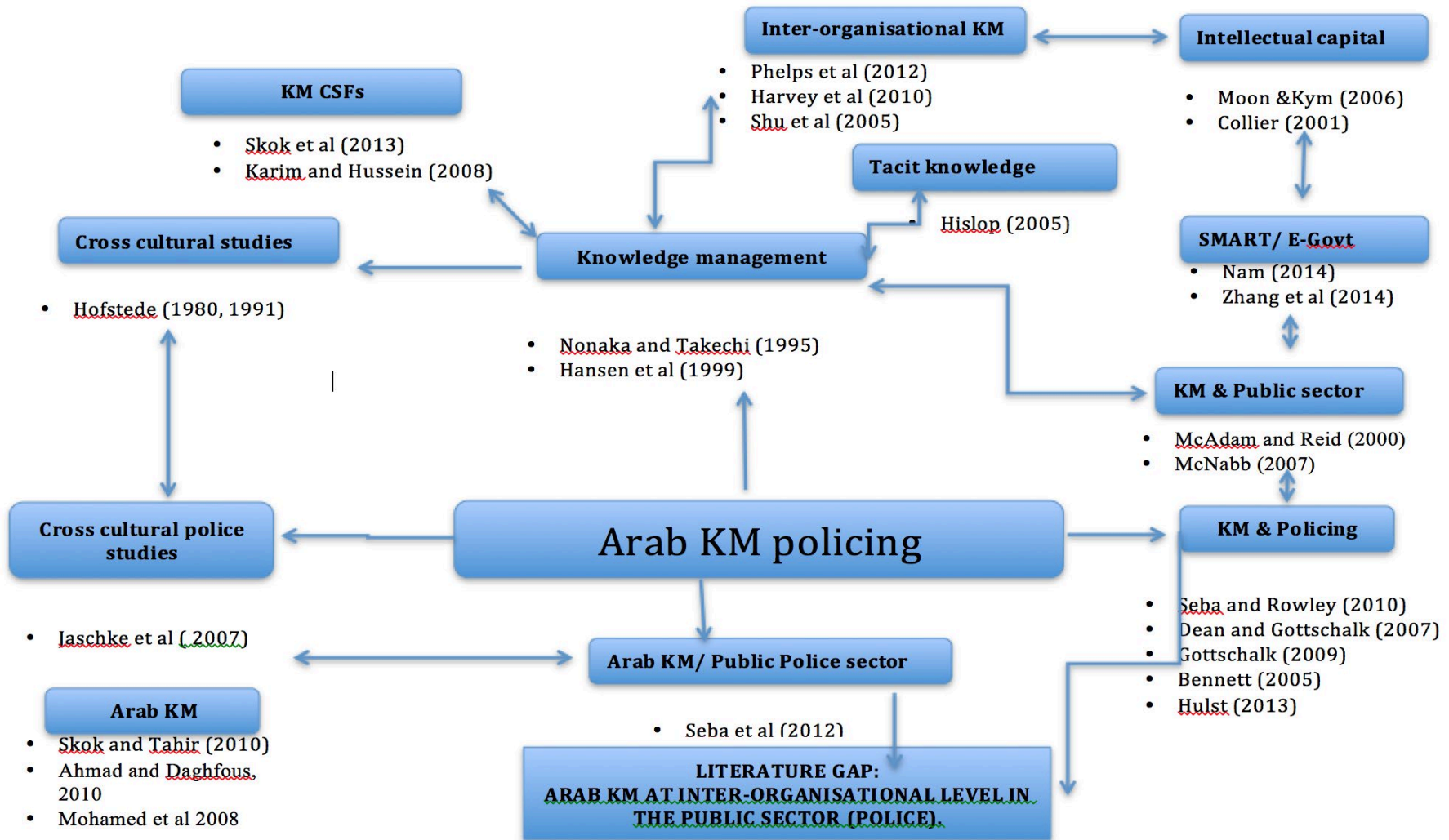


Figure 2-7 Mind map of Literature for Knowledge Management Arab KM Policing

More broadly, a limited amount of research has examined the relationship between knowledge sharing and social capital (Liu and Li, 2012). Despite the acknowledged important role of online knowledge sharing within virtual communities there is a significant lack of a comprehensive body of literature exploring both the positive and negative factors which impact online knowledge sharing (Hsu, 2015, Nguyen and Malik, 2020). A systematic literature review highlighted that the rapid development of the concept of utilising social media for knowledge sharing has stimulated growing research interest (Nguyen and Malik, 2020). However, within the current body of work some topics in relation to using social media for knowledge sharing have attracted limited interest and require further attention (Hsu, 2015, Nguyen and Malik, 2020). Social media applications are acknowledged as valuable for fostering organisational knowledge sharing actions and activities embedded in daily operations and in other organisational activities (Ngai et al., 2015). Chatterjee et al., (2020) investigated the factors that determine the knowledge exchange intention and behaviour nature by the help of social media tools adopting Valance-instrumentality-expectancy theory (VIE) and found that if stakeholders of higher education institutions feel the deficit of knowledge exchange, they realise the importance of knowledge sharing and use social media to increase the effect of knowledge exchange. Nguyen and Malik (2020) developed a new conceptual framework that investigates the moderating effects of organisational innovation on the relationship between regards and online knowledge sharing behaviours. The study found that self-efficacy significantly affects knowledge sharing behaviours regardless of the organisation type. Nevertheless, there is limited research which examines organisational levels and their correlation with the adoption of social media for knowledge sharing and the key factors promoting use.

Given the research objective, this section first provides a review of studies on knowledge sharing using social media to identify gaps in research as shown in Table 2-3. Organisational networks and inter-organisational knowledge sharing have received increasing attention over past years. The most frequent themes have been innovation, performance, absorptive capacity, social networks and their characteristics. Examination of the literature on knowledge management reveals a taxonomy of the key issues and research trends in this field over the past two

decades. Knowledge management was explored in terms of knowledge sharing, knowledge sharing in social media, inter-organisational knowledge sharing, and inter-organisational sharing using social media. A systematic review by Castaneda et al (2018) of knowledge management literature between 2004-2016 provides a taxonomy based on 16,185 studies from the Scopus and ISI Web of Science database. Between 1996-2005 KM the research exhibited technological driven KM themes: data mining, KM ontologies, information technology, retrieval, and transfer. Between 2006-2014 the taxonomy expanded to address strategic perspective; human-technical, social networks; knowledge flows and value creation. The human actor role is evidenced with the term of knowledge manager which featured frequently many studies. In this period research addressed types of capital, organisational culture and absorptive capacity, related to the strategic role of knowledge in organisations.

The themes could be branched into two branches: knowledge sharing and human resource management; and to explore knowledge acquisition through communities of practice, knowledge workers and knowledge creation. Knowledge transfer related to absorption capacity, intellectual capital and innovation and technologies. Since 2016, the pattern of research covered topics on KM in conjunction with strategy and organisational performance, innovation from perspective of absorptive capacity and dynamic capabilities. The importance of knowledge technological tools remained a consistent theme reflecting new advances on clustering techniques, business intelligence, machine learning and big data.

Table 2-3 reveals a taxonomy of knowledge management, knowledge sharing, inter-organisational knowledge sharing, knowledge sharing using social media, inter-organisational knowledge sharing within social media. Knowledge management themes were associated with individual level issues: behaviour, attitudes and intentions. At organisational level KM addressed the role of social media and the role of actors and the impacts and benefits were key themes including the accumulation of social capital and intellectual capital. The taxonomy for knowledge sharing is divided into organisational culture, cross-culture, knowledge sharing enablers, facilitators and barriers emerged as key subjects at this level. KM also focused on individual level factors: knowledge sharing behaviour and its determinants and

antecedents, socio-psychological factors, motivation, relationships, and trust. Technical aspects are a third area for investigation that comprised knowledge quality and knowledge sharing technologies as the main themes.

**Table 2-3 Knowledge Management and Knowledge Sharing Research**

<b>Field</b>	<b>Themes and Issues</b>	<b>Studies</b>	<b>Sector</b>	<b>Country/Region</b>
<b>Knowledge Management</b>	Benefits; impacts; risks	Al-Khourri, 2014; Biygautane and Al-Yahya, 2011	Public	UAE
	Barriers	Ajmal et al., 2010	Private	Finland
	Attitudes to KM	Alrawi, 2008	Public	UAE
		Gururajan and Fink, 2010	Public	N/A
	Motivation to share	Seba et al., 2012	Public	N/A
	Employees' intentions; expectancy theory	Behringer and Sassenberg, 2015	Private	Germany
	User behaviour	Behringer and Sassenberg, 2015	Private	Germany
	Employee empowerment	Abualoush, 2017	Private	Jordan
	Intellectual capital	Archer-Brown and Kietzmann, 2018	Private	NA
	Social capital	Archer-Brown and Kietzmann, 2018	Private	NA
	Role of social media in KM	Mäntymäki and Riemer, 2016	Private	Finland
	Actor roles; employee roles;	Wiesneth, 2017	Private	Germany
	Shujahat, 2017	Private	Pakistan	
<b>Knowledge Sharing</b>	Culture; cross-culture; organisational culture; cultural factors; Team KS	Li, 2010	Private	USA, China
		Al-Adaileh and Al-Atawi, 2011	Private	Saudi Arabia
		McAdam et al., 2012	Private	China
		Kim and Lee, 2014	Public	South Korea
		Chang et al., 2013	Private	NA
	KS Enablers	Al-Adaileh and Al-Atawi, 2011	Private	Saudi Arabia
	KS Barriers; Knowledge Barriers	Lilleoere and Holme Hansen, 2011	Private	Denmark
		Al-Adaileh and Al-Atawi, 2011	Private	Saudi Arabia
		Ranjbarfard et al., 2014	Private	Iran
	Behaviour user; recipient behaviour	Zhang and Jiang, 2015	Private	NA
	Lin and Lo, 2015	Private	Taiwan	

	Determinants of knowledge sharing; antecedents	Qureshi and Evans, 2015	Private	Australia
	Socio-psychological factors	Jeon et al., 2011	Private	Korea
	Motivation to share	Holste and Fields, 2010	Private	USA
		Rusly et al., 2014	Private	New Zealand
	Commitment, relationships	Chang et al., 2013	Private	NA
	Trust	Holste and Fields, 2010	Private	USA
		Teng and Song, 2011	Public	USA
	Affective trust	Casimir et al., 2012	Private	NA
	Knowledge quality	Kyoon Yoo, 2014	Private	USA
	KS Technologies	Kim and Lee, 2014	Public	South Korea
<b>Inter-organisational KS</b>	Benefits	Ahmad and Daghfous, 2010	Private	UAE
	Benefits of tacit knowledge sharing	Idrees et al., 2018	Private	Saudi Arabia
	Impacts on organisational performance	Marchiori and Franco, 2018	NA	NA
	Organisational culture, cultural factors	Al-Alawi et al., 2007	Private/Public	Bahrain
		Cavaliere and Lombardi, 2015	Private	Italy
		Al-Busaidi and Olfman, 2014	Public	Oman
		Mueller, 2012	Private	Austria
	Enablers	Van der Meer, 2014	Public	Australia
		Chen et al., 2014	Private	Taiwan
	Critical success factors	Nooshinfard and Nemati-Anaraki, 2014	NA	Iran
		Nooshinfard and Nemati-Anaraki (2012)	Theoretical	NA
		Joia, 2003	Public	Brazil
	Conditions for successful knowledge transfer	Hartley and Benington, 2006	Public	NA
	External influences	Van der Meer, 2015	Public	Australia
Barriers, knowledge barriers	Ahmad and Daghfous, 2010	Private	UAE	
	Van der Meer, 2014	Public	Australia	



		Fang et al., 2013	Theoretical	NA
	Challenges	Ahmad and Daghfous, 2010	Private	UAE
	Culture and power relations social media, social exchange theory	Qian et al., 2019	Private	China
	Cooperative-competitive tension	Idrees et al., 2018	Private	Saudi Arabia
	Inter-organisational learning	Mariotti, 2005	Private	Europe
	Organisational memory	Martín-Pérez et al., 2012	NGOs	Spain
	Effects of absorptive capacity on innovation and performance	Tsai, 2001	NA	NA
	Technology Diffusion	Del Giudice et al., 2015	Private	Italy
	Reward	Martín-Pérez et al., 2012	NGOs	Spain
	Design of interorganisational networks; network configuration, formation and governance [SEP]	Fang et al., 2013	Theoretical	NA
		Thorgren et al., 2009	Private	NA
		Rathi et al., 2014	Public	Canada
	KS configurations; directionality; knowledge type	Loebbecke et al., 2016	NA	NA
	Social network theory	Chen et al., 2002	Private	UK
	Knowledge network characteristics	Cricelli and Grimaldi, 2010	NA	NA
	Characteristics and actors knowledge sharing	Al-Alawi et al., 2007	Private/Public	Bahrain
	Tie strength, intermediate ties	Whelan, 2015	Public; security agencies	Australia
		Retzer et al., 2012	Private	New Zealand
	Collaboration	Mariotti, 2005	Private	Europe
		Carter, 2015	Law Enforcemen t	United States
	Impact of central inventors	Paruchuri, 2010	Private	USA
	Effects of network position on innovation and performance	Tsai, 2001	NA	NA
	Social Capital	Filieri and Al-Guezoui, 2014	Theoretical	NA

	Trust, peer trust	Whelan, 2015	Public; security agencies	Australia
		Whelan, 2016	Public; security agencies	Australia
		Chen et al., 2014	Private	Taiwan
		Hartley and Benington, 2006	Public	NA
		Al-Alawi et al., 2007	Private/Public	Bahrain
	KS behaviour	Cavaliere and Lombardi, 2015	Private	Italy
Knowledge worker attitudes, knowledge, efficacy/PEU	Al-Busaidi and Olfman, 2014	Public	Oman	
	Al-Busaidi, 2015	Public	Oman	
<b>KS Social media</b>	Utilisation and Benefits (Information benefits, richness, informal communication, employee creativity, innovation)	Eid and Al-Jabri, 2016	Public	Saudi Arabia
		Tamjidyamcholo et al., 2014	Professional communities	International
		Nisar et al., 2019	Private	International
		Sigala and Chalkiti, 2015	Private	Greece
		Rahman and Singh, 2018	Private	International
		Balubaid, 2013	Public	Saudi Arabia
		Margaryan et al., 2015	Private	UK
		Nezakati et al., 2015	Private	Malaysia
	Nisar et al., 2019	N/A	UK	
	Impact of social media	Rahman and Singh, 2018	Private	Australia
	Impact on individual performance	Kuegler et al. 2015	Private	USA
	Relative Advantage	Pillet and Carillo, 2016	Private	International
	Organisational affordances	Ellison et al., 2015	Private	International
	Social media affordances	Zhou et al., 2018	Public	Singapore
Pee, 2018		Public (law enforcement)/Private	Asia	

		Vuori and Okkonen, 2012	Private	Finland
	Influence of enterprise social media on organisational hierarchies	Behrendt et al., 2015	Public	Germany
	KS Networks and employee reputation	Alamsyah and Syawiluna, 2018	Private	Indonesia
	Facilitators	Pee, 2018	Public (law enforcement)/Private	Asia
	KS Attitudes	Behringer and Sassenberg <sup>[SEP]</sup> , 2015	Private	Germany
		Treem et al., 2015	Private	United States
	Employee expectations and assumptions	Treem et al. (2015)	Private	USA
	KS Motivation	Razmerita et al., 2016	Private	Denmark
	Intrinsic Motivation	Pee and Lee, 2015	Private	International
	KS behaviour	Papadopoulos et al., 2013; Behringer and Sassenberg <sup>[SEP]</sup> , 2015; Chin et al., 2015; Chen and Hung, 2010; Harden, 2012; Forkosh-Baruch and Hershkovitz, 2012; Alajmi, 2012; Alali and Salim, 2013; Gang and Ravichandran, 2015; Allam et al., 2012; Yan et al., 2016; Wu et al., 2006; Yan et al., 2013; Hung et al., 2015		
		Kwahk and Park, 2016	Private	South Korea
		Harden, 2012	Private	Global
		Forkosh-Baruch and Hershkovitz, 2012	Public	Israel
	User behaviour	Allam et al., 2012	Virtual communities	Canada
	Technology Acceptance Model, Theory of Planned Behaviour, Theory of Reasoned Action	Papadopoulos et al., 2013	Private	UK
		Behringer and Sassenberg, 2015	Private	International
		Hung et al., 2015	Professional communities	NA

		Alajmi, 2012	Public	International
		Alali and Salim, 2013	Public	Jordan
		Gang and Ravichandran, 2015	Professional communities	South Korea
	Expectancy Theory	Behringer and Sassenberg, 2015	Private	International
	Social Exchange Theory	Gang and Ravichandran, 2015	Professional communities	South Korea
		Yan et al., 2016	Professional communities	China
		Wu et al., 2006	Private	China
	Self-perception Theory	Yan et al., 2013	Private	China
	Intention to use; PEUs	Behringer and Sassenberg, 2015	Private	International
	Factors influencing KS behaviour	Chin et al., 2015	Private	International
		Chen and Hung, 2010	Professional virtual communities	Taiwan
		Hung et al., 2015	Professional communities	NA
	Social Capital	Liu and Li, 2012	Public	NA
	Trust	Hung et al., 2015	Professional communities	NA
		Razmerita et al., 2016	Private	Denmark
	Institutional Complexity	Oostervinck et al., 2016	Private	International

	Tacit knowledge	Panahi, 2014	Public	Australia
		Panahi et al. 2016	Public	NA
		Amidi et al., 2015	Theoretical	NA
	Transactive memory system	Chung et al., 2015	User communities	South Korea
<b>KS Inter-organisational Social Media</b>	KS framework; types of knowledge; transmitters and receivers of knowledge, context for knowledge transfer and the nature of the knowledge transfer.	Mussi et al., 2014	Private	Brazil
	Relationship-building: external	Rathi et al., 2014	Non-profit	Canada

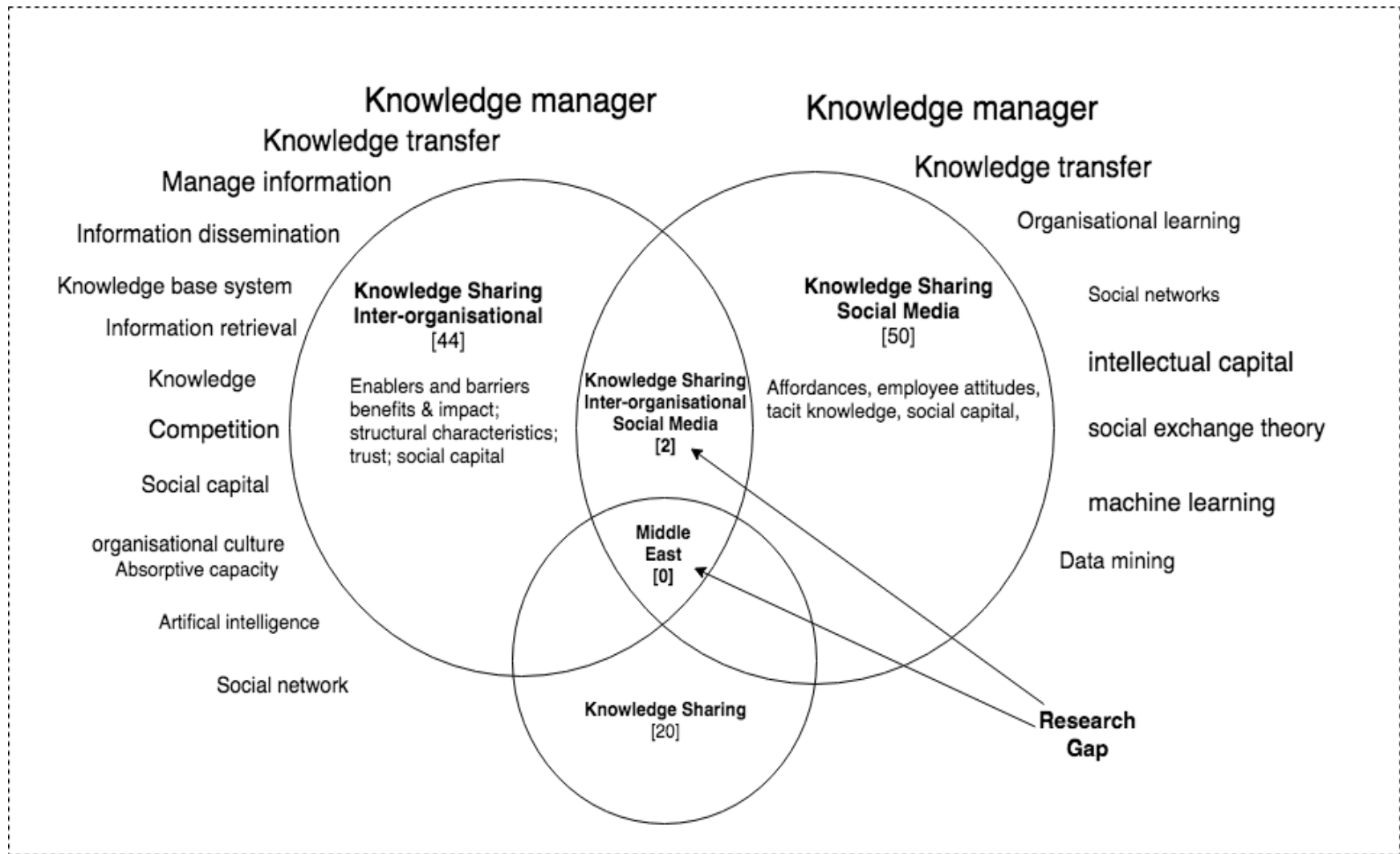


Figure 2-8 Research Gap

Research on inter-organisational knowledge sharing (IKS) between 2003-2019 was comprised of multiple themes that examined different aspects of IKS from organisational, structural and individual perspectives. Organisational level IKS addressed cultural factors; critical success factors; conditions for successful knowledge transfer and barriers. Some studies focused on organisational learning topics were associated with organisational memory, absorptive capacity, and technology diffusion. IKM outcomes were also examined in terms of the benefits and impact on organisational performance. Structural themes were associated with relational aspects of interorganisational knowledge sharing in terms of design and configuration of IKS networks; social network theory, knowledge network characteristics, actor centrality, tie strength, collaboration, social capital, trust and effect on innovation and performance are key topics examined. Some research investigates IKS from an individual perspective in terms of behaviour and attitudes.

Of the research in knowledge sharing in social media much is concentrated on individual and consumer contexts accounting for nearly half of the studies (Ahmed, 2019). The research on individual knowledge sharing in social media is focus online groups and user communities (e.g. Chung et al., 2016; Wang et al., 2016; Seliaman, 2013), consumer information sharing (Bilgihan, 2016, 2014; Munar, 2014) or knowledge sharing in academia (Eid et al., 2016; Balubaid, 2013; Chan et al., 2013). A quarter of the research examined is organisationally situated focused on: organisational, employee, and systems. Studies examine utilisation and benefits of organisational social media KS in terms of information richness and innovation, as well as relative advantage, affordances, and performance impacts; or employees' attitudes, motivation, expectations and assumptions. KS behaviour is a major theme and frequently explored in terms of intentions and widely acknowledged theories including Technology Acceptance Model, Theory of Planned Behaviour, Theory of Reasoned Action, Social Exchange Theory, and Self-Perception Theory. Factors influencing KS behaviour are examined and include key themes of social capital, trust, institutional complexity and tacit knowledge. In the systems area the theme of transactive memory systems was identified. The review identified a gap in of literature on inter-organisational knowledge sharing using social media. A large majority of the research is concentrated in the west and Asia. Figure 2-8

shows the pattern of research in this field. While the area of inter-organisational knowledge sharing and knowledge sharing in social media has received increasing attention over the past decade, there have been few studies examining inter-organisational knowledge sharing using social media. A gap revealed in this review for the Middle East, where although prior studies in the Middle East and UAE in IOKS have focused on barrier, benefits and broad cultural factors, there is limited understanding of complex interactions and structures of knowledge sharing.

This study addresses this gap in this review and the question of how social media has influenced knowledge sharing behaviour and organisational dynamics and working culture has yet to be addressed. Increasingly organisations are utilizing social media platforms for communication and knowledge sharing purposes and while it has made knowledge sharing convenient there little understanding of the risk and negative impacts. The literature shows major challenges for the adoption of traditional forms of KM and in understanding knowledge sharing in Arabic cultures (Al Bad, 2018; Al-Esia and Skok, 2014; Yeo and Gold, 2018; Al-Alawi et al., 2007; Skok and Tahir, 2010).

The research challenge is associated with the disruptive influence of social media to organisational processes and the increasing importance of knowledge sharing between organisations. As knowledge now more than ever important to be share between organisations there is challenged to address to understand this from an inter-organisational aspect.

Social media is giving rise to it more flexible and dynamic knowledge sharing with new unstructured knowledgebases and multilateral connections and interactions. Few studies have examined the dynamics of knowledge sharing using social media in organisational networks. New theory needs to concentrate develop inter-organisational understanding of forms of knowledge sharing, benefits, and risk of effectively integrating social media within existing.

The three main countries that emerged from this analysis were China, the UK and Taiwan. In Latin America, Mexico and Brazil were the countries with the highest productivity. In Africa, there were virtually no OL publications but a more significant number of KM publication.



This thesis draws on an integrated theoretical perspective to provide a holistic investigation of knowledge sharing within social media. While there is an increasing interest in the role of social media in knowledge management, there is a significant gap in terms of understanding knowledge sharing processes and how they contribute to intellectual capital. This research study proposes a theoretical framework which presumes that knowledge sharing within social media is related to social capital and this dynamic contributes to the development of intellectual capital. A comprehensive review of the current literature in this field in this chapter emphasises the value of the social network perspective to knowledge sharing. Organisational networks and inter-organisational knowledge sharing have received increasing attention over past years. The most frequent themes have been innovation, performance, absorptive capacity, social networks and their characteristics. Examination of the literature on knowledge management reveals a taxonomy of the key issues and research trends in this field over the past two decades. Knowledge management was explored in terms of knowledge sharing, knowledge sharing in social media, inter-organisational knowledge sharing, and inter-organisational sharing using social media. Research on knowledge sharing and social media is evolving but few studies have given attention to the implications of social media adoption for knowledge sharing between organisations. To develop effective models and frameworks in this area there needs to be deeper understanding of how IKS using social media is impacting traditional KM systems roles and organisational culture.

## **2.10 Conclusions**

This chapter provided a synthesis of the literature on the key associated dimensions that underpin the implementation of knowledge management. The key themes in the literature were presented and discussed. Knowledge management forms the central themes of this analysis that is interrelated with two further dimensions of inter-organisational KM and cultural dimensions influencing KM. This reflects the specific context of this study in focusing on a culturally sensitive model

of knowledge management in Arab context. The chapter explores a several theoretical strands that outlined knowledge management processes in addition to cultural and interorganisational factors impacting on organisational KM design and implementation.

A research gap was identified in terms of comprehensive perspective for knowledge management that integrated and addressed cultural and inter-organisational dimensions. A synthesis of this literature reveals the preponderance of research focused on western-context and research gap in terms of KM in Arab policing and public service context. This underscored the value of this study in intersecting knowledge management concept, social capital and intellectual capital. The inter-organisational dimension of knowledge management contributed a level of analysis for this study that underscored the policing context in the UAE and the increasing trend for inter-organisational knowledge sharing across different boundaries.

The synthesis on knowledge management seeks to provide an overview of related definitions and concepts related to the KM, KM and culture, Inter-organisational KM and KM and the policing sector. The focus of this analysis incorporated inter-organisational dimensions that provided a framework for understanding the conditions for maximising knowledge transfer success between source and recipient organisations. It is evident that cultural challenge exists not in only relation to internal challenges in terms of the achieving an optimal cultural context and alignment between sub-divisions and teams, but in terms of aligning with external cultures of partner organisations.

A theoretical framework was constructed that defined the dimensions of social capital, knowledge sharing and intellectual capital to inform this investigation. This frameworks premise that structural, cognitive and relation dimensions of social capital facilitate knowledge sharing and the knowledge creation process between inter-organisational units. Intellectual capital provides a focus on understanding the impact on human capability in terms of the

This consisted of a range of interrelated cultural factors: culture types, leadership, power and relations, structures, attitudes to knowledge and its value,

structures and communication processes that influence KM in practice. The research model addresses these factors in evaluating knowledge management processes and the influence of culture and inter-organisational dimensions of the effectiveness of knowledge management. This framework constructed will provide an empirical foundation that firstly assesses the extant of knowledge management in Arab Policing and secondly assess the role of cultural factors and inter-organisational dimensions on organisational outcomes and the success of knowledge sharing within social networks.

## **3 CONCEPTUAL FRAMEWORK FOR THE STUDY**

### **3.1 Introduction**

The focal theory that will inform this investigation draws on knowledge theory, social capital theory and intellectual capital theory. Research suggests the importance of knowledge networks and relationships to facilitate knowledge transfer and creation contributing overlapping perspectives. Contemporary research in the field of information science has utilised social capital as an underlying framework applied to the analysis of information behaviour (Widén-Wulff and Ginman, 2004; Widén-Wulff, 2007).

The relationship between intellectual capital and knowledge management has been documented by several authors (Collier, 2001, Bukh et al, 2001). This aspect relates to individuals and relates to both tacit knowledge and relational skills (Carson et al, 2004). Given the significance of both tacit knowledge and learning by doing (Johnson, 1995) within organisations and between them, contemporary research has highlighted that networking beyond organisational boundaries is of increasing importance in the learning process (Sharp, 2001). Literature has classified the social networks and associated ties integrated within structural and relational dimensions of social capital. This has been based on the diversity and strength of the ties including linking, bridging and bonding, the direction of the ties either vertical or horizontal, and the formal or informal character of the ties. Additionally, the focus of this research is situated within a cultural context. Culture is a key factor within knowledge sharing processes (Karlsen and Gottschalk (2004). In particular it is argued to form the context for the social interaction that is critical in shaping how knowledge will be shared as well as influencing knowledge creation, validation and dissemination processes across the organisation. Research shows that organisational culture is the primary determining factor in the effectiveness of knowledge management and organisational learning as a result of its significant role in determining the beliefs, values and work systems that promote or hinder knowledge sharing and learning (Jane and Prasarnphanich, 2003). These facets form the underpinning theoretical considerations for and guide the focus of this

study to understand the social processes of inter-organisational knowledge management and the impact of cultural factors.

Before discussing the key development of the conceptual framework, the risk and benefits of IO knowledge sharing in sections 3.2 and 3.3 are outlined before the importance of key elements of the focal theory are discussed in section 3.4.

### **3.2 Risks of IO Knowledge Sharing in Social Networks**

Social networks may produce risks that in certain instances can exceed the potential benefits to be gained. A key risk is the type of information obtainable as acquiring information can involve significant investment in the creation and development of network relationships. It has been noted that the most significant challenge when using social media instruments to share knowledge is the dissemination to members of the organisation of tacit knowledge which includes opinions, ideas and experience (Amidi et al., 2015). It is evident that effective knowledge sharing has significant benefits but is nevertheless the socialisation process and the importance so far emphasised for developing this presents key risk. Risks are present in terms of solidarity and trust. Strong unanimity among group members may restrict the flow of ideas and result in a closed perspective which could impact group entrepreneurial activity, development, and growth (Fernandez Perez et al., 2011). The reciprocal interactions taking place between members of a community in a social network create social capital including elements such as shared connections, plans and trust. While researchers mostly consider social capital to be a beneficial asset, some experts view this perspective as one-sided (Adler and Kwon, 2002).

Online communities link their members through a network of connections. They also comprise social rules that can determine what behaviour is acceptable or unacceptable for members of the community. This type of effect between people that influences the behaviour of an individual is generally a hidden antecedent and is called a subjective norm (Ajzen, 1991). The term normative pressure refers to the tension members experience when they feel they are unable to completely accept the rules of the community (Algesheimer et al., 2005; Hsu et al., 2012). A member's

opposition to normative pressure can be a social capital risk for the network's interrelations.

Researching knowledge sharing in online communities from the perspective of social capital demands an unbiased standpoint, as the risks and advantage of social capital need to be taken into consideration (Hsu, 2015). It has been suggested that resistance occurs when members experience normative pressure as a threat to their personal opinions. This tends to decrease how often individuals participate in the community and how much they share (Quick and Stephenson, 2007).

### **3.3 Benefits of IO Knowledge Sharing in Social Networks**

Inter-organisational knowledge transfer is widely perceived to provide significant benefits particularly for those organisations unable to develop needed knowledge internally (Easterby-Smith et al. 2008; Goh, 2002). Current views emphasise its decisiveness in achieving increased productivity and efficiency (He et al., 2011; Buckley et al., 2009), value (Renzel, 2008) and lowering failure rates (Squire et al., 2009). Research by Perez-Nordtvedt et al., (2008) points to the potential for extending the organisational knowledge base and positively impacting organisational outcomes such as human resource performance and development. New knowledge is also found to encourage innovation in methods and ways of working which can be absorbed into daily routines and organisational culture (Darr and Kurtzberg, 2000). There is significant consensus exists in relation to the importance of inter-organisational knowledge transfer for a firm's sustainability and competitiveness (He et al., 2011; Hutzschenreuter and Horstkotte, 2010; Salmi and Torkkeli, 2009; Zhao and Anand, 2009). Organisations are argued to retain a competitive advantage if they are able to transfer critical knowledge from partners efficiently and effectively. Easterby-Smith et al., (2008) highlights the necessity of enabling learning from others to keep pace with increasing competition while van Wijk et al., (2008) asserts the primacy of knowledge transfer for organisational success.

Further, the aspiration to acquire and absorb valuable resources such as knowledge and capabilities enjoyed by source firms is emphasised as a key driver towards engaging in inter-organisational knowledge transfer activities (Ranft and

Lord, 2002; Ahuja and Katila, 2001). Previous studies have revealed that organisational learning is achieved through collaboration between organisations, knowledge transfer and the scrutiny and adoption of best practices. Evidence shows that 45% of innovations within international companies originate from external sources (Linder et al., 2003), as typified in the example of SONY Corp which has pursued a range of business partnerships with telecommunications and IT firms to ensure that employees at all levels are able to access valuable new knowledge from business partners (Inkpen, 2000). Inter-organisational knowledge transfer has recently been examined widely within differing configurations and arrangements such as joint ventures, strategic alliances, research and development and supply chain partners. Such studies highlight that the activity of acquiring new external knowledge and integrating it with present knowledge deepens capacities in relation to improving decision-making and performance (Al-Salti, 2011).

Finally, the strong interpersonal connections present in long-lasting social networks enable tacit reciprocal exchanges to be prevalent (Smedlund, 2008). Social network theory allows interactions and relationships between individuals and between and within groups to be researched. Social networks vary in strength or weakness and understanding their workings facilitates the management of knowledge and the discerning of information requirements (Schultz-Jones, 2009). Strong social networks are characterised by frequent interactions between individuals, high levels of face-to-face interaction, and increased degrees of closeness and trust. Over time, social networks change positively expanding the frequency, nature and number of the original connections and relationships. Hence strong social networks have the advantage of more intense knowledge sharing resulting from their more frequent and trustful interactions (Feld et al., 2007).

### **3.4 IO Knowledge Sharing in Social Networks**

#### **3.4.1 Knowledge Sharing: SECI Model**

At the core of knowledge theory, the SECI model points to four modes, namely socialisation, internalisation, combination and externalisation, that provide a specific focus on examining knowledge sharing in social media in terms of knowledge conversion and transfer processes related to tacit and explicit knowledge.

Knowledge sharing practices and socialisation processes within social media can be examined to explain how tacit and explicit forms of knowledge are converted and transferred within social networks. For example, knowledge assimilation is dependent on valuable links among knowledge actors known as network ties. Knowledge generated through internalisation is conceptualised as visceral knowledge, argued to be strongly rooted in professional knowledge and skills and relating to the absorption of old knowledge to internally generate new knowledge (Schulze and Hoegl, 2008). The structural dimensions of social capital provide the focus on “the overall pattern of connections between actors and its influence on knowledge sharing” and identification of resources and connections.

### **3.4.2 Social Capital**

Social capital theory provides insights into the structural, relational and cognitive dimensions that support knowledge sharing.



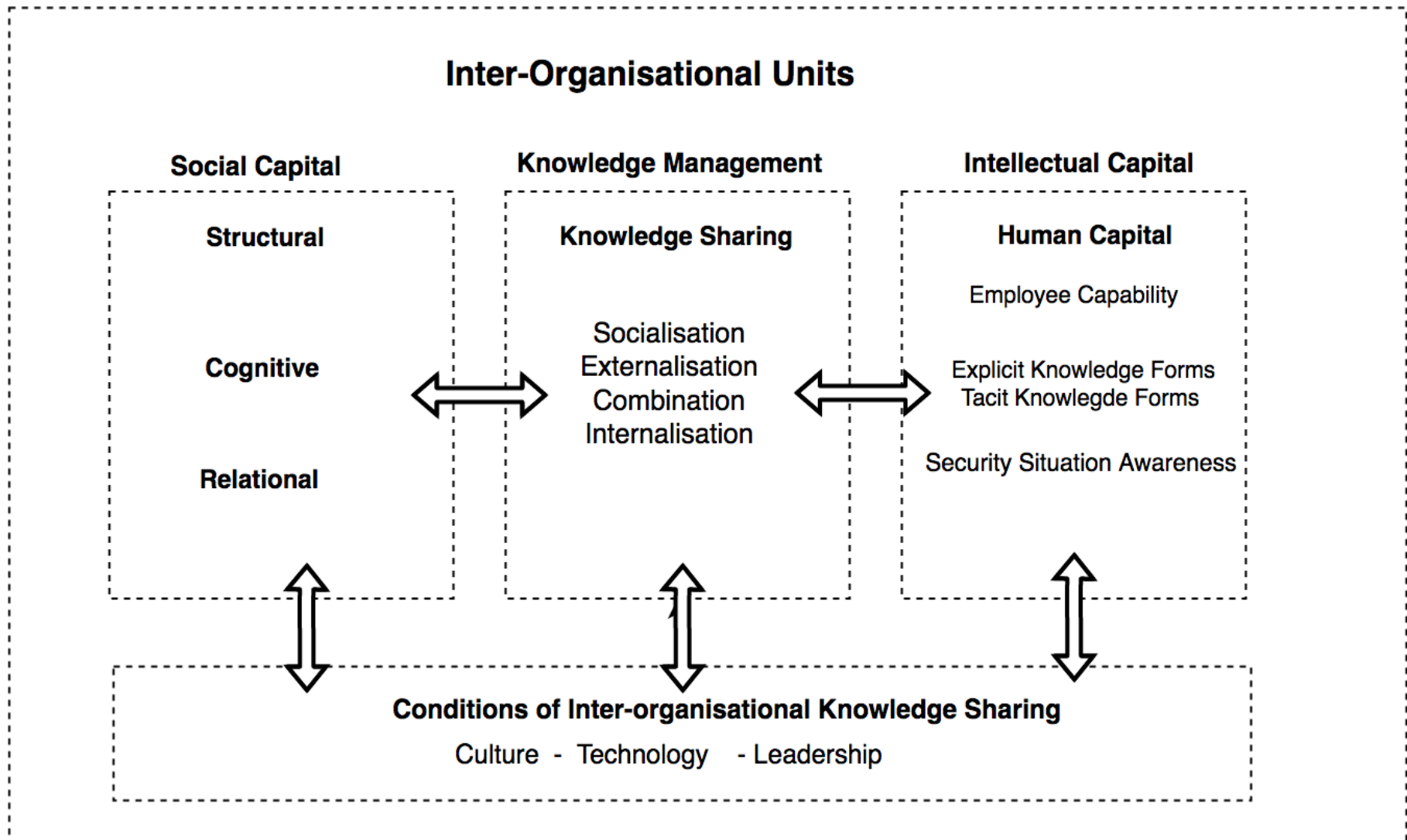


Figure 3-1 Theoretical Framework for Inter-organisational Knowledge Sharing

#### 3.4.2.1 Importance of Structural Dimension

Social knowledge structures between the organisations, how new knowledge is facilitated, frequency, density, structure and types of networks are all key factors in inter-organisational knowledge sharing. The literature reveals that social capital is a valuable theory to examine and understand the interactions that fundamentally affect knowledge creation and the development of intellectual capital. Social networks may enhance the absorptive and disseminative capacity based on myriad configurations of social capital dimensions and elements. Social capital enables analysis of the inter-organisational interactions.

For instance, network ties offer mediums for information exchange between members, with increased transmission of information associated with greater combination actions. Robust network ties are shown to foster socio-emotional support that builds member bonding. This helps to increase goodwill and further promote the absorption and transformation of knowledge sourced from others (Yli-Renko et al., 2001).

#### 3.4.2.2 Importance of Relational Dimension

The trust component of the relational dimension of social capital can provide insight into the effectiveness of knowledge sharing. Notably, Politis (2003) stressed the key importance of building a climate of interpersonal trust that can encourage the acquisition of knowledge. Findings showed that nearly of the interpersonal trust dimensions evaluated had a positive relationship with knowledge acquisition variables. Studies have underlined that trust can improve the ability to absorb new knowledge and promote knowledge transfer (Chen, 2004).

#### 3.4.2.3 Importance of Cognitive Dimensions

In terms of the cognitive dimension shared vision allows members to evolve a shared mental model and lead teams in the correct direction. Shared vision has been argued to foster relative absorptive capacity, identified as the capability to absorb new knowledge and which is partly dependent

on the possession of related prior knowledge (Yli-Renko et al., 2001). Continuous ongoing social interactions are argued to enhance the ability to absorb the knowledge transmitted, thus incentivising members towards increased contribution to knowledge-sharing routines. Norms can be a constraining and enabling influence on knowledge sharing but also, they may be viewed as evolving in terms of new norms that emerge within the social space between inter-organisational actors. Such norms and routines may bypass formal non-virtual norms of practices.

### **3.4.3 Intellectual Capital**

Social network theory reflects the importance of adopting a broader perspective of human capital beyond education and technical skills to account for social relationships and connections as a measure of human capital (Subramaniam and Youndt, 2005). Employee capability is a sub-dimension of human capital. In terms of knowledge sharing the notion of absorptive capacity and disseminative capability outlined in this chapter can in themselves be viewed as a source of intellectual capital (Davenport and Prusak, 1998). The concepts of absorptive capacity and disseminative capacity are key aspects of knowledge sharing processes. For instance, absorptive and disseminative capacities influence the four modes of knowledge conversion. At the same time these can be viewed as measures of human capital as employee capability as they reflect a form of collective knowledge. The ability to quickly acquire and share knowledge in the police and security sector is a particularly significant capability given the fast-changing security context. This represents a vital form of intellectual capital that security agencies have prioritised to enhance employees' capability to develop dynamic capabilities and responsiveness to the challenging and ever-changing security context.

### **3.4.4 Socio-Organisational Factors**

The theoretical framework finally draws on the inter-organisational literature on the key antecedents on knowledge sharing: culture, trust, technology. Social capital, knowledge sharing processes and intellectual capital are both influenced by and influence organisational conditions. Cultural and

contextual factors are argued to affect group member activities as well as their emotional and cognitive experiences, which has implications for information sharing (Hyldegard, 2006). The construction of a KM model implies a multidisciplinary and integrated approach that comprehensively addresses these factors. The literature conceptualises different ways in which culture influences and affects knowledge management. The themes identified in this chapter emphasise numerous relationships between culture and knowledge sharing. The knowledge culture is shaped by assumptions and the recognition of the value of knowledge, and knowledge processes. These imply that different types of knowledge mechanisms can be valued differently across cultures. They can affect the design and implementation of knowledge processes and the specification and acceptance of knowledge management. The conceptualisation framework incorporates analysis of key cultural factors that affect knowledge management both at the organisational and inter-organisational level. The Arab policing context indicates both the specific internal and external drivers that can shape strategy and operations. The internal context is shaped by the organisational culture. The cultural dimensions listed have been widely discussed in the literature in terms of their influence on KM. The inter-organisational dimensions represent a specific level of analysis that focuses on factors that the literature has identified as impacting on successful knowledge sharing between source and recipient.

### **3.5 Conclusions**

In summary, social capital, knowledge theory and intellectual capital as specifically human capital perspectives are integrated as a suitable theoretical framework to explain and understand inter-organisational knowledge sharing in organisations. These theoretical perspectives are significantly intertwined in a reinforcing dynamic. As social capital may represent a source of knowledge or configuration of social assets that support knowledge sharing, the components of social capital are key factors that may be embedded in any of the four knowledge conversion modes for tacit or explicit knowledge. The socialisation dimension is a critical theme that underpins both knowledge theory and social capital theory. Applying a social capital

perspective can support further exploration of the social context in which knowledge sharing occurs. It can offer a framework for understanding the underlying motivations for sharing information, providing the necessary social setting for information behaviour. Therefore, to address multiple facets in relation to knowledge sharing mechanisms it can be argued that dimensions of social capital are appropriate tools identifying relations, structures and contents. More broadly, the challenges of knowledge sharing are perceived to be reflected in social capital dimensions. An overarching social dimension from an inter-organisational perspective is valuable to provide insights in terms of how interactions between the organisations influence intellectual capital in each organisation. This theory is particularly valuable within the security, border, law enforcement context focused on understanding the dynamic capability and learning to maintain and enhance employee capability in terms of security awareness in a highly turbulent and complex environment.

## **4 METHODOLOGY AND METHODS**

### **4.1 Introduction**

This chapter outlines the research methodology adopted to address the research objectives focused on furthering understanding of knowledge management (KM) and knowledge sharing in the UAE. The way research is undertaken can be considered in terms of the research philosophy adopted. Firstly, the research philosophy for this study is clarified in relation to alternative perspectives. This commences with a discussion of the rationale for the research position and the influence of epistemological assumptions on the choice of overall strategy and research methods. Based on this position the remainder of this chapter explains the design and rationale for the research protocols that will be employed in pursuit of the research goals. This will detail the protocols related to instrument design, data collection procedure, study sample, ethical considerations and validity and reliability of the study.

### **4.2 Methodology**

#### **4.2.1 Research Philosophy**

All research is underpinned by a research philosophy suitable for addressing the research aims and guiding the research design and implementation. Research philosophy refers to assumptions and beliefs concerning the manner in which knowledge is acquired and developed (Saunders et al., 2009). Consideration of the appropriate approach to take in researching knowledge management is influenced by a key debate centred on the nature of reality and knowledge and how they can be known, reflected respectively in ontological and epistemological assumptions (Blunden, 2009). Two main ontological perspectives view reality on the one hand as concrete, independent and external to human perception or alternatively as subjective, and existing predominantly in human consciousness (Saunders et al., 2009). These two perspectives have been termed positivism and interpretivism.

A principal philosophical approach of positivism assumes that reality is stable and asserts an external and objective reality which according to Saunders et al. (2009) can be measured using scientific methods without relation to context. This furnishes the essential basis for formulating laws and generalisable conclusions based on the data (Bryman and Bell, 2007). Primarily linked to quantitative methods, a significant benefit of this approach is the capacity to determine and describe relationships between variables and generate predictions (Bryman and Bell, 2007). In contrast, an interpretivist approach views humans as primarily social actors involved in the social construction of existence. It emphasises multiple perspectives and interpretations of reality that can only be correctly understood in its context and by directly accessing and experiencing the phenomena (Wimmer, 2012). The limitation of such a perspective is that it is subjective and reliant significantly on the role of the researcher to interpret this reality.

#### **4.2.2 Knowledge Management Research**

A review of the literature was conducted in relation to the research approaches used in three areas relevant to this thesis: inter-organisational knowledge management, knowledge management in policing, and knowledge management in Arab contexts. Appendices 1-3 summarise this review of approaches by research area. The overall pattern of research approaches is significantly qualitative and interpretative in nature, and in minor cases a mixed method approach is employed. These studies predominantly adopted case study or descriptive approaches, and mostly utilised qualitative methods: interviews, content analysis, observation, and in certain cases quantitative surveys. One study adopted an explanatory scientific approach, utilising structural equational modelling and hierarchical linear modelling to explore relations between variables. This pattern of research is reflected in knowledge management in policing studies and knowledge management research in an Arabic context. The qualitative nature that dominates this area reflects the complexity of studying a highly socio-cultural field and interrelated systems. At the same time, it represents a methodological gap in this area that can be addressed by this study. In this thesis, it is acknowledged

that both approaches can be integrated to progress research in this field. There is merit in undertaking a scientific approach by defining constructs and measures in terms of culture, knowledge management, inter-organisational factors and impact of measures to understand the relation between variables.

#### **4.2.3 Rationale for Research Approach**

The design advocated for this study has considered the key philosophical perspectives and the assumptions related to the nature and type of knowledge. The research stance for the study recognises both objective and subjective dimensions in relation to knowledge management. The goal of this research is focused on inter-organisational knowledge management in the context of airport security in the UAE with the specific purpose to understand how knowledge is shared between organisations in social media.

Firstly, given that the study is situated within social media and social networks, a positivist approach could yield quantitative data in terms of the structural properties and numerical data on information flows. This would support the achievement of one of the research questions that is focused on structural measurable properties of the social network. There is a rationale for viewing constituent elements of police knowledge objectively focused on determining categories and defining sources of police knowledge in distinct and easily detectable entities or factual elements. This position is valid in relation to understanding the technical requirements and processes in a systematic, structured, and quantifiable manner.

However, as the research questions of this study are predominantly focused on processes, a qualitative approach is required. The research topic is people centred and explores their position as active social actors (Saunders et al., 2009). Therefore, a subjective position is similarly valid in relation to understanding the role of organisational structures and social interactions, which emphasise specific contextual interpretations in generating meaning (Berger and Luckman, 1966). At the same time McAdam and McGreedy (1999) assert that an objective view of knowledge fails to account for the



diversity and complexity in human processes in knowledge creation and sharing.

This is particularly relevant given the evolving and dynamic nature of policing knowledge therefore supports consideration of the interpretative approach. Moreover, an interpretative approach is emphasised in understanding the complexities and realities of different actors within the system. Saunders et al., (2009) assert that an inductive approach is best suited to cases where the research context is a key factor for consideration. This requires in-depth explanation and exploration to examine the key issues that are operating in a context rich culture. These perceptions can only be facilitated through the predominantly qualitative methods associated with interpretivist approaches (Remenyi et al., 1998). It is through this approach that the research questions can best be pursued, in understanding the relational and cognitive dimensions of knowledge sharing practices in social media, perceived risks and benefits ascribed by the actors and socio-cultural factors that impact inter-organisational knowledge sharing.

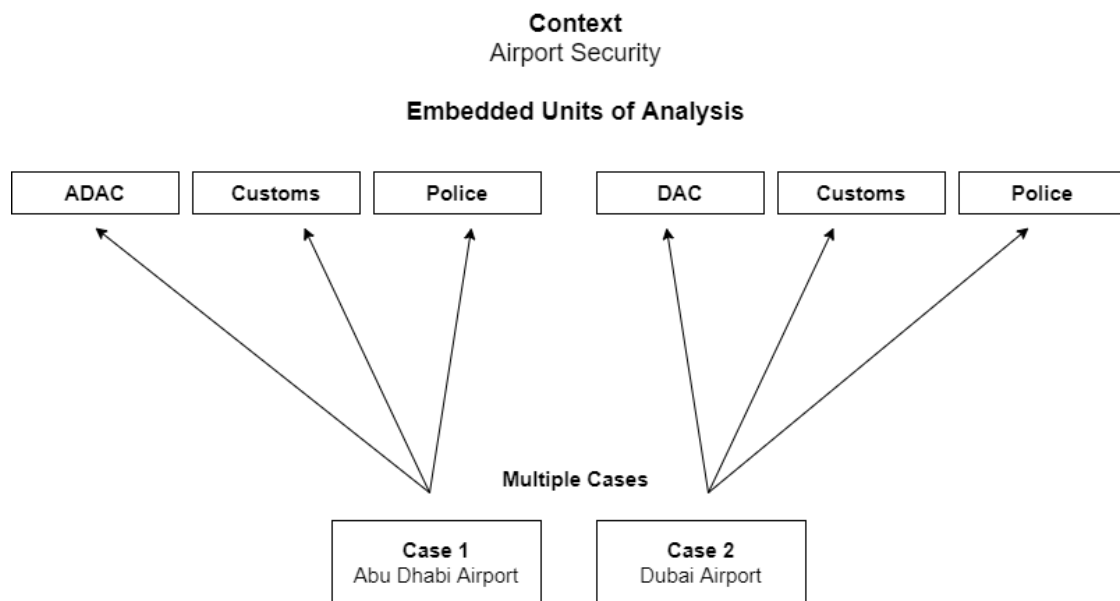
#### **4.2.4 Research Strategy**

A cross-sectional case study strategy combining qualitative and quantitative methods was selected as suitable to achieve the research objectives (Yin, 2013). Creswell and Plano-Clark (2007) identify a mixed method case study approach as a method. A multiple case design is adopted with multiple units of analysis outlined in Figure 4-1. Abu Dhabi International Airport and Dubai International Airport represent the two cases each with three key organisations (Police, Customs, and private airport security).

There is a strong rationale for employing a case study approach for this research. According to Yin (2013), a case study can best be described as an empirically based inquiry examining research phenomena within their social context, particularly applicable in situations where the boundaries between context and phenomenon are indistinct. There is a pressing need and high level of demand for the application of KM in the UAE at a national public sector level, and this can only be achieved by contextual and specific

research. The research problem is therefore multi-faceted, as it seeks to uncover the existing nature of inter-organisational knowledge sharing in the public policing sector, whilst also considering the cultural context of the Arabian national culture of KM and whether this may impact knowledge sharing processes and inter-organisational knowledge management.

This strategy is particularly relevant to the study's phenomena that are otherwise challenging to isolate from their context, and it consequently enables a real-time view and interpretation of events as they occur. In researching inter-organisational knowledge, it is necessary to study routines and patterns of interactions within the social network context. The social process of transferring knowledge, sharing, and learning are complex processes that require in-depth examination drawing on different data to construct a holistic view of events (Hammersley and Gomm, 2000).



**Figure 4-1 Multiple Case Study Design**

Additionally, a case study approach can be appropriate for an initial exploratory study that requires consideration of contextual aspects (Saunders et al., 2009). There is limited inter-organisational research in this area of study, particularly in relation to social networks and culture. A case study strategy provides the opportunity to explore and identify factors in an area at the boundary between phenomena and context that are as yet to be

delimited. Yin (2103) argues that a case study approach is highly appropriate for situations where in-depth analysis is required and can help to answer “why” and “how” questions. Harrison and Leitch (2000, p.11) argue that case studies are distinctly valuable in research situations in which “complex observational tasks” are implicated and it is important to capture the dynamism and complexity involved in the organisational setting or context. Case studies allow a closer view to be obtained of the complexities inherent in the social world by means of the capacity to reveal patterns of interaction, elucidate the interdependencies existing between individuals and groups and support understanding of unexpected change outcomes thereby generating new insights and queries (Dopson, 2003).

A significant advantage of a case study is the ability to employ multiple sources of evidence. Diverse methods have frequently been employed to investigate knowledge management (Seba et al., 2012; Al-Adaileh and Al-Atawi, 2011). The approach enables the gathering of data on a research phenomenon from a limited number of organisations utilising different sources of data and, contingent on the methods employed, can generate empirical and detailed qualitative data (Yin, 2013). As practices of knowledge management can bring significant benefits, insights from case studies and qualitative research should enable consideration and development of criteria. Given the clear potential value that knowledge management practices can provide, qualitative perspectives and case studies are considered invaluable for offering possibilities for benchmarking and reflection.

It is accepted that adopting quantitative and qualitative methods can provide greater understanding of research questions than possible from a single method (Gummesson, 2000). This enables investigation of the complex organisational and cultural context of knowledge management providing the opportunity to capture a holistic perspective using mixed methods centred on the research goals.

**Table 4-1 Overview of Research Design**

Key Research Question	Data Type	Method	Data Analysis	Tools
What are the characteristics of inter-organisational knowledge sharing within social media?	Quantitative Qualitative	Semi-structured Interview	<ul style="list-style-type: none"> <li>• Social Network Analysis</li> <li>• Thematic Analysis</li> </ul>	<ul style="list-style-type: none"> <li>• NVivo 12</li> <li>• Social Network Analysis</li> </ul>
	Qualitative	Semi-structured Interview	Thematic Analysis	NVivo 12
	Qualitative	Semi-structured Interview	Thematic Analysis	
How are the 3 inter-organisational units in airport security in the UAE sharing knowledge within social media?	Qualitative	Semi-structured Interview	Thematic Analysis	
How does knowledge sharing within social media influence employee capability in terms of security situation awareness?	Qualitative	Semi-structured Interview	Thematic Analysis	
What are the contextual factors that facilitate or inhibit inter-organisational knowledge sharing?	Antecedents of KM and IKM	Semi-structured Interview	Thematic Analysis	

Furthermore, a mixed-method approach potentially counterbalances the limitations of relying on any one particular method (Bryman and Bell, 2007). Table 4-1 provides an overview of the research design outlining the different data types collected and methods used to achieve the research goals.

This addresses the potential bias associated with qualitative research as a result of the subjectivity in interpretation exercised by the researcher. At the same time, the more restricted contextual understanding and the greater detachment from participants acknowledged in quantitative methods can be balanced by the higher interaction typical of qualitative approaches facilitating more in-depth comprehension (Creswell and Plano-Clark, 2007).

Consequently, in providing a basis for a combination of methods and philosophical theories and assumptions, the adoption of mixed methods research can offer a more complete understanding of inter-organisational knowledge management in the Arab cultural context.

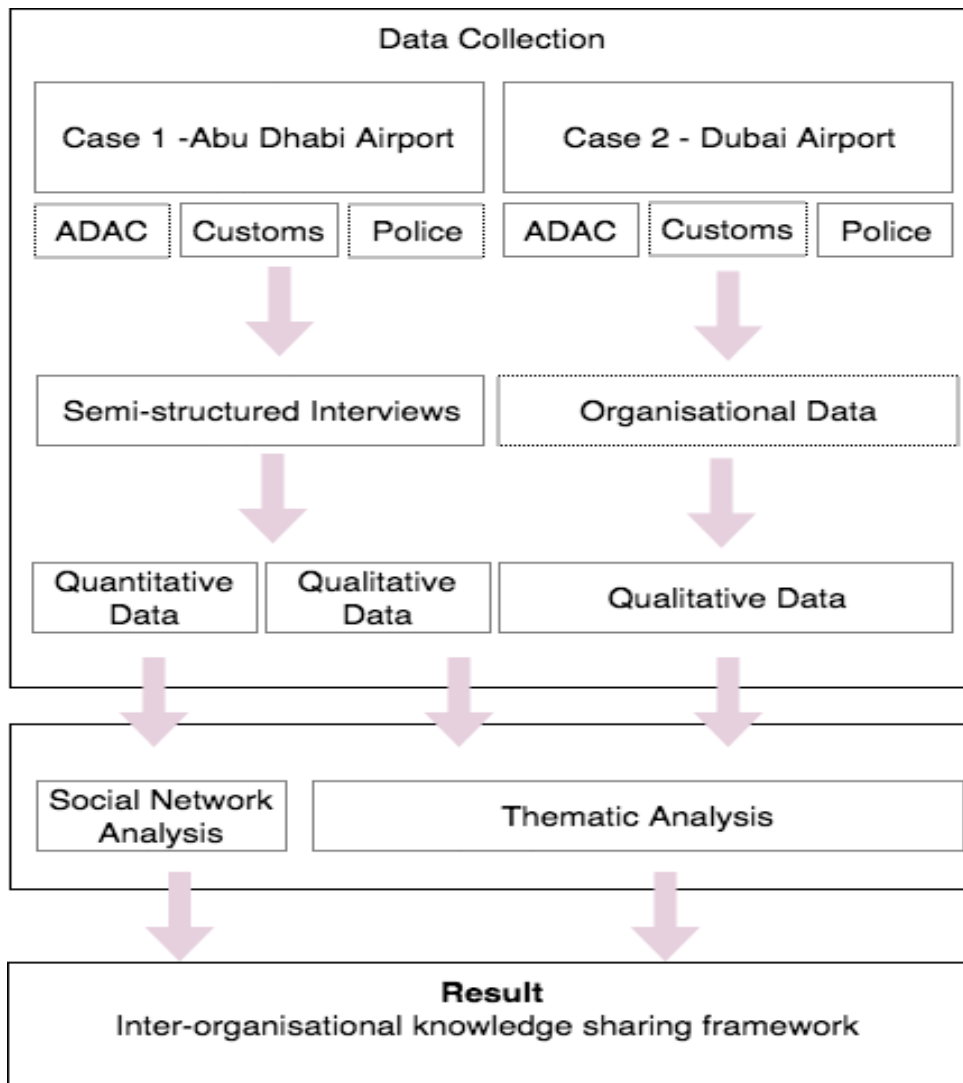
### **4.3 Research Methods**

Two research methods form part of the research strategy to gather qualitative data from the two cases. Figure 4-2 provides an overview of the research process. Data from three organisational units in both cases will be collected using semi-structured interviews and questionnaires (i.e., mixed methods) to gather primary qualitative and quantitative in-depth data on inter-organisational knowledge sharing. The primary data (e.g., qualitative, and quantitative data) is supported by collection and analysis of secondary data from the organisational units including policies and procedures and learning and development records. Prior to the interviews a short online survey questionnaire was sent to participants to gather primary quantitative data on network characteristics for the social network analysis.

#### **4.3.1 Semi-structured Interviews**

Semi-structured interviews were selected to collect quantitative and qualitative data on inter-organisational knowledge sharing practices and characteristics in social media. Interviews are viewed as an effective method

for the gathering of in-depth qualitative data from the perspective of participants within their specific context. Kvale (1983) asserts that use of this method can afford substantial insight into participants' interpretation of the significance and meaning of the phenomena under study.



**Figure 4-2 Research Process**

Saunders et al., (2009) further highlights the utility of semi-structured interviews for establishing new insights, meanings and connections which, given the exploratory nature of this study, can be particularly useful in highlighting novel areas previously unconsidered in the existing research. In particular King (2004) notes the value of this approach in complex organisational investigations involving multiple perspectives.

Adoption of a semi-structured method for interviews was considered important to provide both structure and flexibility implemented through a pre-arranged list of topics which can be discussed informally (Saunders et al., 2009). Furthermore, interviews were the main primary data collection technique in other research studies in KM in the public sector such as Seba and Rowley (2010). This is compatible with the interpretivist epistemology employed in this research (Saunders et al., 2009). This research also seeks to investigate the role of national culture in public sector KM, and according to Gerhart (2008) the best way to measure the national culture variable is via the use of questions to understand opinions and perceptions. Thus, personal interviews represent a key method to allow questions to address the research focus. Further this method supports the collection of qualitative data in relation to knowledge management and the influences of the Arab cultural context.

In particular, personal interviews will be utilised, which will offer broad questions on the topic and allow both the researcher and interviewee flexibility to explore a wide range of relevant issues (Saunders et al., 2009). This method thus provides the freedom to vary the course of the interview based on the respondent's answers, providing the opportunity to explore any significant quality assurance issues which may emerge during the course of the interview (Schuh, 2011). Nevertheless, it is acknowledged that this method relies on effective interviewing skills. Significantly there is strong potential for the presence of the researcher to influence responses or bias interpretation (Cresswell, 2009).

While interviews can be time-consuming to conduct and analyse this method was selected as it offers the flexibility and opportunity to follow up on particular issues or problems identified during the course of the interview and collect data indicating the reality of the interpretations (Saunders et al., 2009). Interviews can further facilitate provision of insights on cultural influences in knowledge management and transfer not available to research involving larger sample sizes and are highly suitable for research situations requiring rich data to reveal actors' attitudes and experiences (Yin, 2003).

The interviews contained open-ended question items based on topic areas identified from the literature to support free-flowing discussion on knowledge management perceptions and attitudes.

#### **4.3.2 Questionnaires**

A questionnaire is a research method comprising a series of questions for the purpose of collecting information from participants. Questionnaires can be considered a written interview. Questionnaire can be carried out face to face, by telephone, online or post.

One of the main advantages of questionnaires is that information about behaviour, attitude, intentions, and opinions can be gathered comparatively fast because there is no need for the researcher to be present when the questionnaires are administered. This is particularly suitable for large populations when interviews would be unfeasible. As this study proposes to use Social Network Analysis it was necessary to collect a large and in-depth information on attitudes at work, opinions, and behaviour of those at different levels in the two airports of Abu Dhabi and Dubai. Questionnaire serves this purpose quite well in that it offers the opportunity to gather the in-depth information needed for Social Network Analysis. A short online survey questionnaire was sent to participants to gather primary quantitative data on network characteristics for the social network analysis. The questionnaires were designed to elicit responses from the various demographic and diverse. This of particular importance given the study's arguments that facts such cultural differences or residence status could have a direct impact on how employees working for the airport are communicating or inter-organisational knowledge sharing.

#### **4.3.3 Secondary Data Analysis**

Secondary data analysis method was additionally selected to collect supplementary qualitative data on the organisational context and practices. This



study has adopted secondary data analysis to gather quantitative and qualitative data to address the research question. Secondary data analysis is systematic analysis of already existing data collected by others to reveal answers to research questions different from those envisaged in the primary research (Johnstone, 2014). Diverse sources can be utilised to obtain both quantitative and qualitative secondary data including previous research, official statistics, reports and archives, Internet information, electronic databases and newspaper articles and books (Easterby-Smith et al., 2012). Secondary data can often be of high-quality enabling access to and utilisation of larger datasets encompassing larger samples and incorporating significant breadth. This further ensures greater validity and generalisability of the findings as larger samples entail higher representativeness of the target population (Bryman and Bell, 2007). Secondary data analysis is valuable in the potential for validation and corroboration of findings allowing data gathered through more subjective methods to be triangulated (Bowen, 2009; Duin and van der Duin, 2006). The ability to replicate, re-analyse and reinterpret existing research provides the opportunity to test new ideas, theories and frameworks and generate new insights from previous analyses (Johnstone, 2014). Given the time constraints of this study a key advantage is the convenience and cost-effectiveness the method provides (Smith, 2008). However, limitations exist in relation to the potential inappropriateness of the secondary data for answering the research question and the lack of control over data quality (Bryman and Bell, 2007). Bryman and Bell (2007) highlight the potential complexity of much official secondary data presenting problems with management. Important variables relevant to the primary research topic under question may also be absent.

In conjunction with other qualitative methods such as observation and interviews secondary data analysis can provide rich data on the context within which participants operate (Mills et al., 2006). A further strong rationale for the use of this method is the potential for corroboration and validation of findings (Bowen, 2009). It can be a highly valuable source for the triangulation of data collected in this study using other more subjective methods such as interviews and observation (Duin and van der Duin, 2006).

#### 4.3.4 Instrument Design

The selection of the interview questions was based on an extensive review of the literature and an evaluation of research approaches and interview design in related studies. To ensure a theory-driven approach to the research the interview questions are developed based on a broad conceptual framework developed in this study drawing on theory, concepts and issues identified in the literature. This was used as the basis for the grouping of questions to address the research questions (Bryman and Bell, 2007). The design of the qualitative instrument for the interviews was theoretically grounded in the literature and drawn or adapted from previously used interview instruments or themes and concepts in the literature. The interview guide was based on the structure outlined in Table 4-2.

The questions for the interview examine different areas with key relevance for inter-organisational knowledge sharing including knowledge sharing, relational, structural and cognitive network relationships, intellectual capital and organisational factors. Some questions are accompanied by relevant follow-up questions and prompts to promote further discussion. Best practice design principles were acknowledged and implemented in the development of the interview questionnaire in order to increase the reliability and validity of the results.

**Table 4-2 Semi-Structured Interview Questions**

<b>Question Themes</b>	<b>Question Areas</b>	<b>Question Numbers</b>	<b>Sources</b>
Social Capital			
Structural	Structural frequency, direction, purpose; SM tools used; knowledge within the network	Q 1-Q4	(Liu and Li, 2012; Lefebvre et al., 2016; Panahi, 2014; Retzer et al., 2012)
Cognitive	Shared vision and goals; ability to discuss differences	Q 5-Q7	(Lefebvre et al., 2016; Chen et al., 2014; Turner, 2011)

Relational	Belonging to group; joint problem-solving; trust	Q13-Q17	(Macke et al., 2010; Chow and Chan, 2008)
Knowledge Sharing	Social media KS; use of shared knowledge; benefits of social media KS; differences with face to face	Q8-Q12	(Al-Busaidi et al., 2017; Razmerita et al., 2016; Panahi, 2014)
Intellectual Capital	Benefits of KS individual; organisational	Q18-Q21	(Dirkmorfeld, 2015)
Organisational	Challenges to social media KS; organisational policies	Q22-Q24	(Panahi, 2014)

Foremost the questions were selected in close alignment with the research objectives as emphasised by Saunders et al., (2009). The design of the questions has further been pilot tested on a number of police officers not involved in the main study, and dependent upon their feedback the questions were adapted accordingly to ensure not only their appropriateness but additionally that the language used within the questions was comprehensible and logical. Pre-testing is a significant element of good design principles and can ensure greater reliability (Bryman and Bell, 2007). In addition, the sequence of the questions was considered and arranged under broad thematic categories which then formed the basis for sections of the interview questionnaire.

#### **4.3.5 Sampling Strategy**

This study samples individuals from six key organisations involved in UAE border control of Abu Dhabi Airports Company (ADAC), Abu Dhabi Police combined unit comprising police and immigration officers and Abu Dhabi Customs, in addition to Dubai Airports Company, Dubai police unit responsible for airport security and Dubai customs. A purposeful sampling strategy is adopted to identify and recruit individuals in key roles that are involved in knowledge sharing and transfer to some degree and where individuals are sharers and recipients of knowledge and information.

The sample is predominantly derived from the Abu Dhabi and Dubai public sector police force centred on Abu Dhabi and Dubai police headquarters. A

specific focus is on the departments managing the security management of airports and ports in Abu Dhabi and Dubai police, as well as additional organisations in order to triangulate results. The security management departments of airports and ports provide a rich backdrop upon which to study inter-organisational relations as such departments deal with many other external organisations.

The initial samples were obtained from key personnel and police officers. A total of 24 participants were included in this study or four participants from each of the 6 units in both Abu Dhabi and Dubai airports for the interviews. The police authorities in both Abu Dhabi and Dubai allowed a limited number of executives to participate in the study for security reasons and as a result the limited potential participants were identified using a selection criterion. In particular, participants with job roles containing duties closely related to KM were considered suitable participants for this study. A further 91 participants were chosen for the questionnaire. All the 91 participants were chosen randomly from the entire population of the three departments in the two airports of Abu Dhabi and Dubai. While participants in the interviews were chosen based on their seniority and how close their duties related to KM, the questionnaire participants were chosen randomly from all the three departments in the two airports. A total 100 employees were selected randomly and questioned. Before the commencement of the analysis, tests of measurement tool (questionnaire) were performed to validate it as the suitable data collection tool. Questionnaire tests, as used in this research, were used to evaluate enquiry of the items contained within, and so obtain the validity and reliability level.

The researcher is an employee of the UAE public sector thus facilitating access and identification of appropriate participants. Neuman (2000) supports the use of expert based sampling as assets in case-based research and asserts that as usually small samples are used these should be as well informed as possible about the subject in order to provide pertinent results. Once key personnel were identified via the network sampling method, they were then asked to further recommend other suitable candidates who may

have insight into the topic area, based on their internal knowledge of the organisation under investigation. This is commonly referred to as snowball sampling (Saunders et al., 2009). The advantages of this method are that it will help to increase the size of the sample nevertheless there is a risk that such a method may yield participants who may not be suitable for the research. In order to minimise this risk, the initial key contacts identified from the network sampling method were briefed accordingly regarding the criteria for those to be recommended as potential participants.

#### **4.3.6 Data Collection Methods**

The data collection method has been implemented in accordance to three key phases as outlined in Figure 4-3. In Step 1 the gatekeepers in each of the six organisations that are part of the inter-organisational networks were contacted. Information was provided about the project and their consent and approval for the research project to be conducted was formally approved. In Step 2 the project was publicised through internal staff communications channels with access to online information about the project and details to register their interest. A shortlist of interviewees was generated, and the interviews were scheduled and participants provided with the interview schedule. In Step 3 the interviews were conducted during which participants are briefed further about the project, their rights and consent was obtained. The interviews were then conducted in accordance with the interview schedule. Table 4-3 provides an overview of participants across the six organisations from the two cases of Abu Dhabi Airport and Dubai Airport.

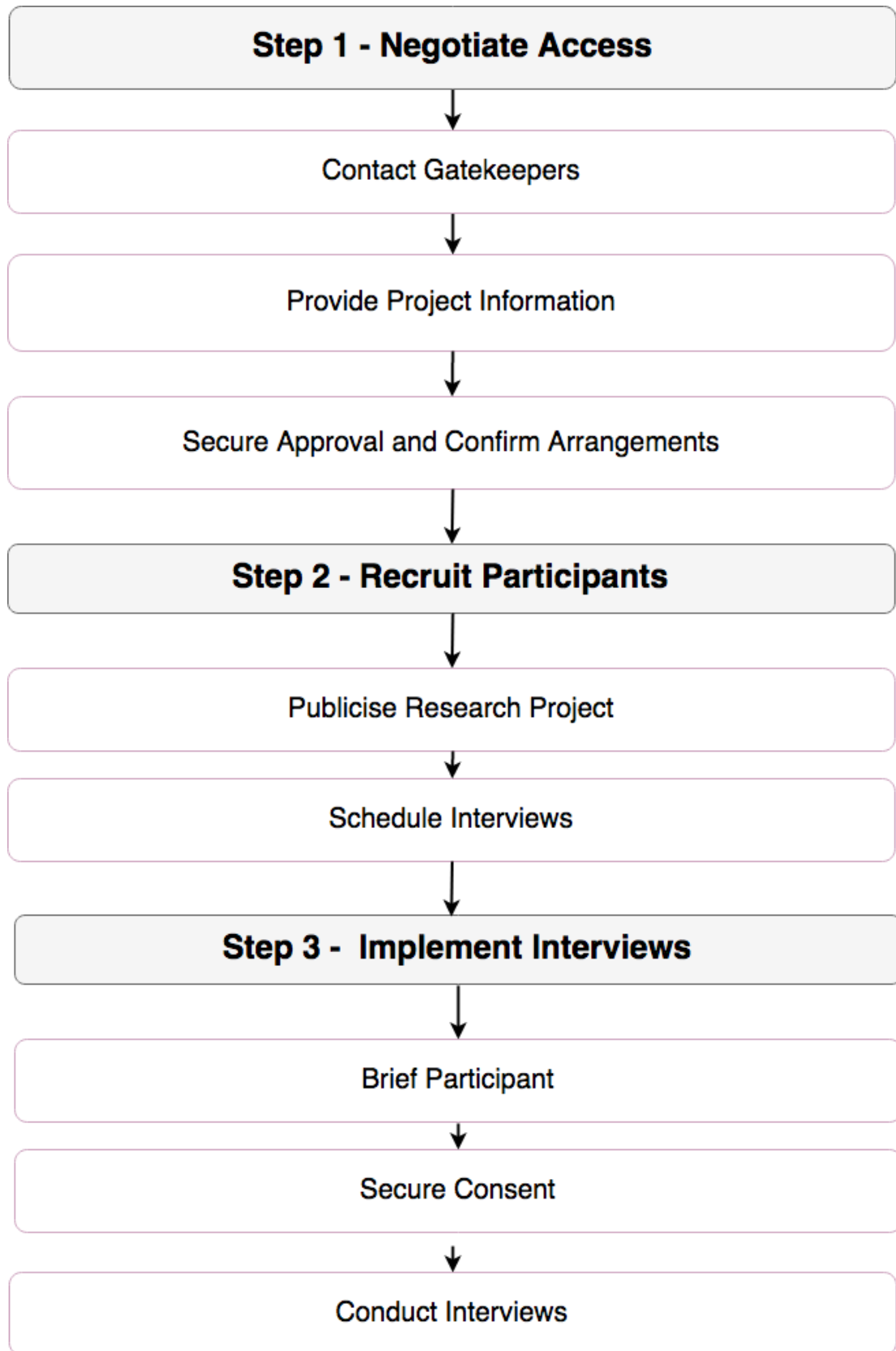


Figure 4-3 Data Collection Steps

**Table 4-3 Interview Participants**

<b>Cases</b>	<b>Organisation</b>	<b>Participants</b>	<b>No</b>	<b>Date</b>
Abu Dhabi Airport	ADAC	Middle Managers/Supervisor	4	July 2018
	Customs	Middle Ranks – Captain- Lieutenant	4	July 2018
	Police	Middle Ranks – Captain- Lieutenant	4	Aug 2018
Dubai Airport	ADAC	Middle Managers/Supervisor	4	Aug 2018
	Customs	Middle Ranks – Captain- Lieutenant	4	Aug 2018
	Police	Middle Ranks – Captain- Lieutenant	4	Aug 2018

Interviews were conducted face-to-face in private meeting rooms within Abu Dhabi police offices in order to reduce inconvenience, ensure that interviewees were comfortable in a familiar environment and further felt free to openly disclose information and views. Interviews were recorded in order to minimise notetaking and enable eye-contact to be maintained with participants in accordance with guidance (Jacob and Fugerson, 2012). A script was formulated for use at the beginning and end of the interview as guidelines suggest that this can ensure the relay of all relevant information for the participant and support the building of rapport (Jacob and Fugerson, 2012). The initial questions were posed non-directively in order to draw out the participants to share their perceptions and experiences and during this stage questions were asked prompting further recollection and more detail to be revealed (Saunders et al., 2009). The materials associated with qualitative research are noted by Denzin and Lincoln (1994) to include interview transcripts, records and notes of observations and recordings. The interviews were recorded with digital audio equipment following which they were transcribed to facilitate greater clarity in analysis and the identification of themes.

### **4.3.7 Data Analysis**

#### **4.3.7.1 Social Network Analysis**

Social Network Analysis is a process investigating social structures using networks and graphs. It characterises networked structures by nodes (i.e., people, individual actors, or objects in the network) and the links, edges, or ties (interactions or relationships) that bond them. Social network analysis is employed in this study to visually map and represent the structural properties and connections of inter-organisational knowledge sharing (McGrath et al., 1997) To analyse potential links, a social network is conceptualised as a digraph (a graph could be used if the association has no direction). Diagrams may be used to present direct mapping of ties showing their clustering. In a digraph, is called a unit whether an individual, a family, a household, or a village. A tie between two nodes implies the existence of the relationship connecting them. Non-appearance of a tie implies non-existence of the relationship. A tie with a direction is called an arc, and a tie without direction is called an edge. (McGrath et al., 1997)

#### **4.3.7.2 Thematic Analysis**

To analyse the qualitative data collected from the various methods undertaken thematic analysis employing coding and categorisation was adopted. Braun and Clarke (2006, p.79) define thematic analysis as: “A method for identifying, analysing and reporting patterns within data”. Thematic analysis is considered a flexible approach enabling a rich and complex description of the data and generating an in-depth, detailed interpretation of the information and insights contained in the themes (Saunders et al., 2009).

Initially interview transcripts will be analysed for key trends and themes on an individual basis. Trends in each organisation will be examined in addition to overall themes and trends emerging in relation to the Arab public sector KM. This thematic analysis was used in Seba and Rowley’s (2010) study and was reproduced in this study based on its relevance and pertinence to this research.



Thematic analysis can be approached from different perspectives; it can be guided by the data, by previous research or by theory (Neuman, 2011). In this case a data-driven approach is adopted using an inductive-deductive process to identify the codes and patterns in the information collected from the interviews and other research situations.

Coding is the first step of the analysis process supporting a shift from particular statements to more abstract interpretation (Charmaz, 2006) beginning with open coding to identify early phenomena and generate a list of relevant themes (Saunders et al., 2009). Codes are attached line by line to words and statements by participants in order to develop concepts and support comprehension of the direction of the data in terms of what it is portraying of the actors' meanings and interpretations of phenomena (Strauss and Corbin, 1998). This helps to expand the text in new and unfamiliar ways supporting the testing of the researcher's assumptions (Strauss and Corbin, 1998). The initial codes were generated from the terms found in the raw data from which meaning was subsequently deducted (Neuman, 2011). Such a coding process based on the data is acknowledged to limit researcher bias whilst increasing the validity and reliability of codes generated and the themes developed (Saunders et al., 2009). The next stage is more focused and highly selective in coding technique involving focused codes applied to sections of the text and supporting verification of the initial themes developed.

Developing themes from the data is a central feature of thematic analysis (Neuman, 2011), achieved by examining, comparing, and carefully categorising the codes (Miles and Huberman, 1994). Themes encapsulate within the data set significant features, patterns, and responses in terms of the research questions (Eriksson and Kovalainen, 2008). Themes were developed from the data set based on their occurrence and relevance, thus becoming a rich description of the data that comprises all its facets (Neuman, 2011). Following guidelines advanced by Charmaz (2006) reflection on categories and subcategories was undertaken to establish relationships and undertake sense-making of the qualitative data determining issues of significance to participants. These issues were ascribed a conceptual label and where a

proportion shared the same or similar characteristics these were collected under a higher order, more abstract category. According to Strauss and Corbin (1998) these can be related together to form the basis for theory.

Rather than centred on a specific standpoint, the present study aimed to generate a thematic framework presenting all the topics of interest that had transpired from the interviews. Its purpose was to find the concurrent and divergent themes within the information gathered. This was achieved by repeatedly reviewing and refining the codes and the emerging categories, and by considering each cycle of analysis as separate from the others (Eriksson and Kovalainen, 2008).

#### **4.4 Validity and Reliability**

A number of measures have been implemented to ensure the reliability and validity of the results. Reliability is essentially concerned with questions of consistency in relation to measures, ensuring that the administration of similar data collection and analysis procedures will yield similar results. In contrast, validity aims at ensuring that the findings genuinely describe what they appear to describe (Easterby-Smith et al., 2012). In constructing the questionnaire instrument, recommended design procedures were followed to maximise the validity and reliability of the results, including piloting the questionnaire following which a number of revisions were made (McNabb, 2004). Issues of internal validity also need to be considered in instrument design to make sure that the questions measure the intended target, and all questions are understood by respondents. To address this issue, as far as possible question items were drawn or adapted from established survey instruments to increase internal validity (Sudman and Bradburn, 1982) based on concepts identified in the literature review.

External validity can be characterised as the extent to which results can be generalised across different social settings. It has been argued that external validity is problematic for qualitative research given the characteristically small samples and general reliance on cases (LeCompte and Goetz, 1982). Nevertheless, this was not considered a significant

dimension in this study as the research aims to explore social processes and organisational factors in knowledge management in a specific cultural context. Further, the multimethod design employed in this study enables a process of cross-checking the results obtained. This is maximised through both method and data triangulation. Triangulation further refers to the use of several methods or data sources to investigate the same phenomenon from different angles and perspectives used to corroborate and substantiate the research question (Bryman, 2006). Decrop (1999) asserts that triangulation can reduce biases both personal and methodological and improve the generalisation of the findings. Two main types of triangulation have been identified and embedded in the design of this study. Data resource triangulation allows for different data sources and materials to be used and collected to achieve triangulation, while method triangulation provides for the utilisation of multiple different methods at different stages to investigate a single research question (Denzin, 1978). According to Lincoln and Guba (1985), triangulation has a significant function in the conduct of mixed methods research supporting the trustworthiness of qualitative methods. Trustworthiness of qualitative findings consists of both internal and external validity, reliability, and objectivity.

#### **4.5 Ethics**

Ethical considerations are the moral values and principles that guide the conduct of research activities (Ghauri and Gronhaug, 2002) through all stages from research design to analysis and publication (Burton, 2000). In this study, an overriding principle of non-maleficence is acknowledged implying that care and consideration has been taken in planning the research design and implementing processes to ensure that participants are protected from any harm. This is broadly defined to include factors such as physical or psychological stress or discomfort, or diverse influences that may adversely impact participants in some way (Drew et al., 2008). Yin (2010) argues that qualitative methods underline adherence to the principle of non-maleficence as the researcher has greater control over the collection, recording and interpretation of data. Therefore, appropriate measures were undertaken to

accurately record and analyse the data on knowledge management perspectives and views as Josselson (1996) highlights that misinterpretation of data collected can result in perceptions of betrayal by participants.

Linked to non-harm is the principle of autonomy, citing the right of an individual to freely determine what activities they wish to participate in. This implicitly requires that an individual understands what is being asked of them and is able to make a choice to participate or not, free of coercive influences (Adams, 2013). The mainstay of autonomy is acknowledged as the informed consent process, in which it is considered imperative that potential participants are provided as much information as possible to make an informed decision (Bryman, 2012). This is appropriately supported in this study through full and truthful disclosure on the nature, purpose and methods of the research, the provision of information on voluntary participation and the right to withdraw at any time during the study, and information on the benefits, risks and alternatives. Participants were provided with multiple opportunities to pose questions before making a choice (Adams, 2013).

A further principle and fundamental right of participants to ensure non-harm is that of privacy (Bryman and Bell, 2007) implying that confidentiality and anonymity are safeguarded in research processes. This is highlighted by Nagy (2005) to represent a significant risk in qualitative studies collecting and analysing sensitive data from participants. Therefore, anonymity has been maintained throughout this study by concealing the identities of participants in all documents emerging from the research through removing identifying details. Strict controls were observed on access to data provided by participants and have further ensured participant confidentiality (Saunders et al., 2009).

The principle of beneficence relates to overall obligations to maximise the benefits of the research for both participants and society (Adams, 2013). In promoting greater understanding of knowledge management in the under-researched context of the UAE, this study provides an important contribution towards a culturally relevant model of inter-organisational information

sharing and knowledge transfer. Furthermore, the findings from the study can provide understanding to inform the enhancement of knowledge management practices and capability within UAE organisations potentially resulting in greater performance.

The research design was developed in accordance with these considerations and the research design and data collection and participant information was assessed and approved by the University of Bradford Ethics Committee.

#### **4.6 Research Limitations**

While providing rich and novel insights into inter-organisational knowledge sharing in the UAE several limitations to this research should be noted. A specific limitation is acknowledged in relation to the overall generalisability of the study. Firstly, the utilisation of a case study strategy is acknowledged as potentially restricting the ability to generalise the findings to broader contexts in other public sectors. Examination of knowledge management within a single organisational context can imply that the particular organisational factors involved may not have relevance in other organisations or sectors (Bryman and Bell, 2007). Moreover, the setting of the study in a single national and cultural context could limit the applicability of the findings to other cultural contexts. Nevertheless, the purpose of this study is to explore the specific cultural factors within the Arab context impacting on knowledge transfer and knowledge management and therefore generalisability is not an explicit objective.

Another limitation relates to the use of a non-probability sampling method on the basis that it may lack representativeness and therefore undermine the validity of the research (Saunders et al., 2009). Nevertheless, gaining access to a representative sample is potentially problematic and time-consuming involving a highly bureaucratic process as highlighted by Skok and Tahir (2010) when conducting research on Arab KM. Therefore, non-probability expert sampling is considered a suitable approach given the challenges of time and access to available personnel.

## **4.7 Conclusion**

This chapter discussed potential research approaches and identified the mixed method approach adopted as the most suitable for achieving the aim and objectives of this study combining quantitative and qualitative methods. The research methodology of this study was developed to investigate inter-organisational knowledge sharing in social media in the context of airport security in the UAE. Two key methods were outlined and justified of semi-structured interviews and secondary data analysis and the data collection procedures used were identified. Next, research procedures in relation to the research instrument and sampling identification were discussed followed by an overview of the techniques adopted to analyse the qualitative and quantitative data. Reliability and validity were then outlined followed by a discussion of the ethical considerations and procedures undertaken to ensure that this research was conducted in an ethical manner. In conclusion this chapter provides a description of a robust research design to effectively examine inter-organisational knowledge sharing to provide an in-depth understanding of the practices, characteristics and factors that shape and influence it.

## **5 RESULTS AND ANALYSIS**

### **5.1 Introduction**

The key focus of this research centres on knowledge sharing practices between organisations using social media. This chapter present the results from the case study analysis of inter-organisational knowledge sharing (IOKS) in social media between the key agencies responsible for airport security in the UAE. Data was gathered from two cases of airport security context comprising of three organisational units in each case consisting of qualitative interviews and quantitative assessment. The results are structured in accordance with social capital dimensions and knowledge creation process based on the SECI model. Further, these dimensions provide the foundation for analysing the risks and barriers of IOKS and the benefits of social media from an intellectual capital perspective. The first section of this chapter presents the structural results of the inter-organisational network using social network analysis drawing on quantitative data on the Abu Dhabi network and the Dubai network. The data is analysed based on a number of social network metrics to investigate social structures, connections and interactions. The remainder of this chapter addresses the qualitative results from a total of 24 semi-structured interviews between the two cases. The data was thematically analysed and key themes were identified on social capital and knowledge creation dimensions within social media and the risks and barriers for intellectual capital.

### **5.2 Structural**

Social network analysis was conducted based on a short survey with members from case organisations in Abu Dhabi and in Dubai. Respondents were asked to provide an indication of their relationships and activity in social media. Members in each organisation completed a structured survey online to indicate social media connections, frequency, direction, purpose and social media applications employed. Structural social capital is the externally perceivable aspects of social groups such as the number of people within a social network or the social engagement patterns (Chan, 2014; Johnston et

al., 2013; Islam et al., 2006). Structural social capital inspects the power of links of association, the density of social associations, and the indicators of social interactions (Johnston et al., 2013; Islam et al., 2006).

### 5.2.1 Social Media Applications

Participants used a range of different social media tools that were employed for professional purposes. Most participants employed Twitter, Botim and Viber tools for fast updates and commenting or discussion and dialogue. LinkedIn was associated by many with finding experts on different topics. According to most of the interviewees Twitter facilitated frequent and instantaneous communication. A small minority of participants noted their use of blogs to find and share knowledge, as these provided more detailed information and enabled some discussion on relevant professional topics. A minority of participants further pointed to multimedia sharing sites such as YouTube and Vimeo, although these were frequently accessed through embedded links in other social media rather than searched directly. Participants suggested there was frequent communication between members and information was shared about security practices or news that was useful.

### 5.2.2 Social Network Statistics

Network analysis was completed in Gephi 0.9.2 using data collected by questionnaire to examine the basic overall structure of organisational and inter-organisation connections in each of the two case studies. Data was collected from the three organisations in the case of Abu Dhabi and the three organisations in the case of Dubai. A total of 91 questionnaires were completed by employees in the three departments of both Abu Dhabi and Dubai airports. Five measures were included in the questionnaire which are: degree centrality, diameter, density, closeness centrality and betweenness centrality.

1. Degree Centrality - Represents the number of links held by each person (node) in the network and assumes that those with many direct connections to others are central in the network (Zhang and Luo, 2017; Cetto et al., 2014).



2. Diameter –A measure of distance between actors in the network, assesses the linear size of the network and the proximity of pairs of actors based on calculating the number of connections for the shortest path between the two most distant members of the network (Milgram, 1967). A high score indicates that greater distance exists between outlying members.
3. Density – A measure of how closely members of the network are interconnected, calculated as the proportion of actual connections relative to the total number of connections possible within the network. High density scores are associated with a more tightly connected social network, while low density scores reflect a more loosely knit community (Mending, 2006).
4. Closeness Centrality – A measure that enlarges the definition of degree of centrality by examining how close a member is to all others in the network based on calculating the shortest number of connections between all nodes. A high closeness centrality score indicates an individual is close to occupying a central position in the network (Cetto et al., 2014; Okamoto et al., 2008).
5. Betweenness Centrality – A measure of the number of times a person acts as a bridge on the shortest path between two other members. A high betweenness score indicates that a member is a regular mediator or broker between other members (Zhang and Luo, 2017).

A social network analysis was conducted for the Abu Dhabi organisations and for the Dubai organisations. Social network visualisation is presented in Figure 5-1 and Figure 5-2. The figures represent the network connections between members in the Abu Dhabi network and the Dubai network comprising police, customs, and airport organisations in each network. Both Figure 5-1 and 5-2 show a high degree of vulnerability signature for specific members of the two organisations, namely Abu Dhabi and Dubai airports. Leonardi and Contractor (2018) argue that although having people who can help move information and insights from one part of the organisation to another is healthy, an overreliance on those individuals can make a company vulnerable. It highlights some weakness in the organisation's knowledge management system. It leaves the organisation extremely vulnerable when the flow of information passes through certain individuals or roles within the organisation. The main idea of inter-organisational knowledge sharing is the exchange of knowledge among

employees or workers which all organisations recognise as a valuable intangible asset. Having knowledge or information cantered around a few individuals within the organisations may limit inter-organisational knowledge sharing. Vulnerability signature can be viewed as a barrier to knowledge sharing management as it hinders knowledge acquisition among workers and employees within the organisation. Results in Figure 5-1 show that P0, P1, C0, C1 and A0 indicate a vulnerability within the organisation knowledge management system. There is overreliance on these employees/roles for knowledge sharing which points to a weakness in the knowledge sharing system within the organisation. Similarly, in Figure 5.2, A6, B2 and A5 show a similar pattern of knowledge concentration indicating a high degree of vulnerability for the organisation.

Results from the network analysis for the two inter-organisational networks of Abu Dhabi and Dubai are presented in Table 5-1 showing the average scores for six measures that indicate the characteristics of the network. Table 5-2 shows the results of the analysis at organisational level. In the case of Abu Dhabi, the scores for degree centrality (3.3) indicate that on average individuals had 3 connections with other members in the network. The higher this figure the more connected individuals are, while a lower score indicates a reduced degree of connectedness. Some members held as many as 13 links, however the average score denotes that only a few individuals are relatively highly connected and have central positions.

The results for diameter indicate that there can be as few as five connections or hops between the most distant members. Low density scores (0.07) signify a loosely connected network in which members were linked only to a small proportion of the total possible network. Modularity scores showed that Abu Dhabi had a total of five distinct communities within the network. For closeness centrality a low score of 0.02 (maximum 1) showed that most members are not central or connected to each other. Scores for betweenness centrality were low (17.3) although for some members this is was high as 180, indicating that a small number of members are highly influential and regularly act as intermediate links or brokers between members.

The results for Dubai show that degree centrality was low with members possessing on average 4 connections. Dubai reflects a similar pattern to Abu Dhabi in that some individuals have a high number of links compared to the average indicating that centrality is concentrated on a few individuals. The diameter measure shows that there can be as few as six links between members. In terms of network density, members had actualised a low proportion of connections relative to the total number possible (0.10) reflecting that the network was loosely connected overall. For modularity, the results indicated that Dubai had a total of four communities. Low scores for closeness centrality of 0.04 indicate that members are not highly connected or central in position to others. In regard to betweenness centrality average scores of 55.82 show that members act as intermediate links or brokers between a moderate number of network members. The highest individual score of 325.41 contrasts significantly with the total average indicating that only a small number of members exhibited high betweenness centrality.

## Abu Dhabi Inter-organisational

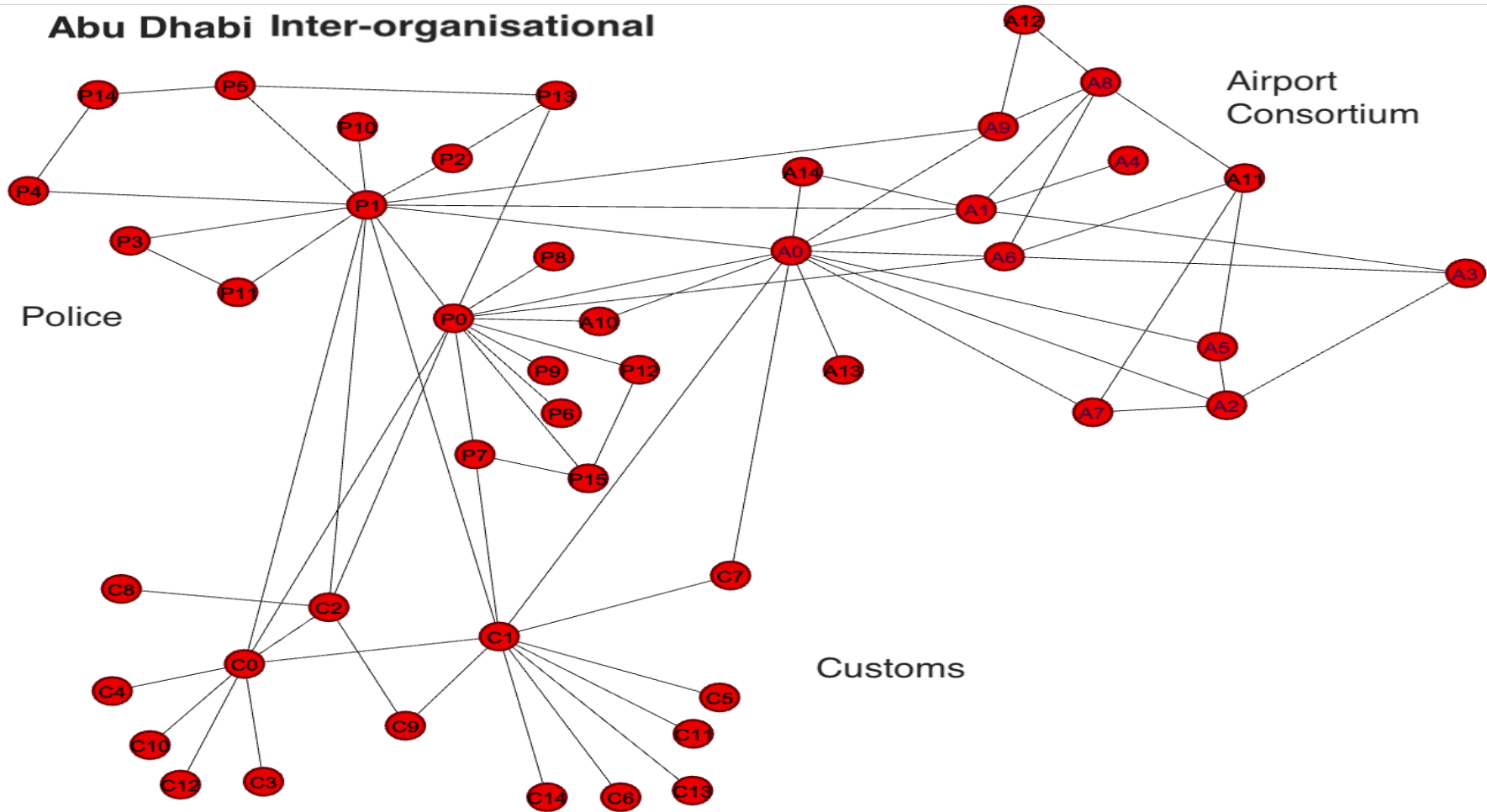
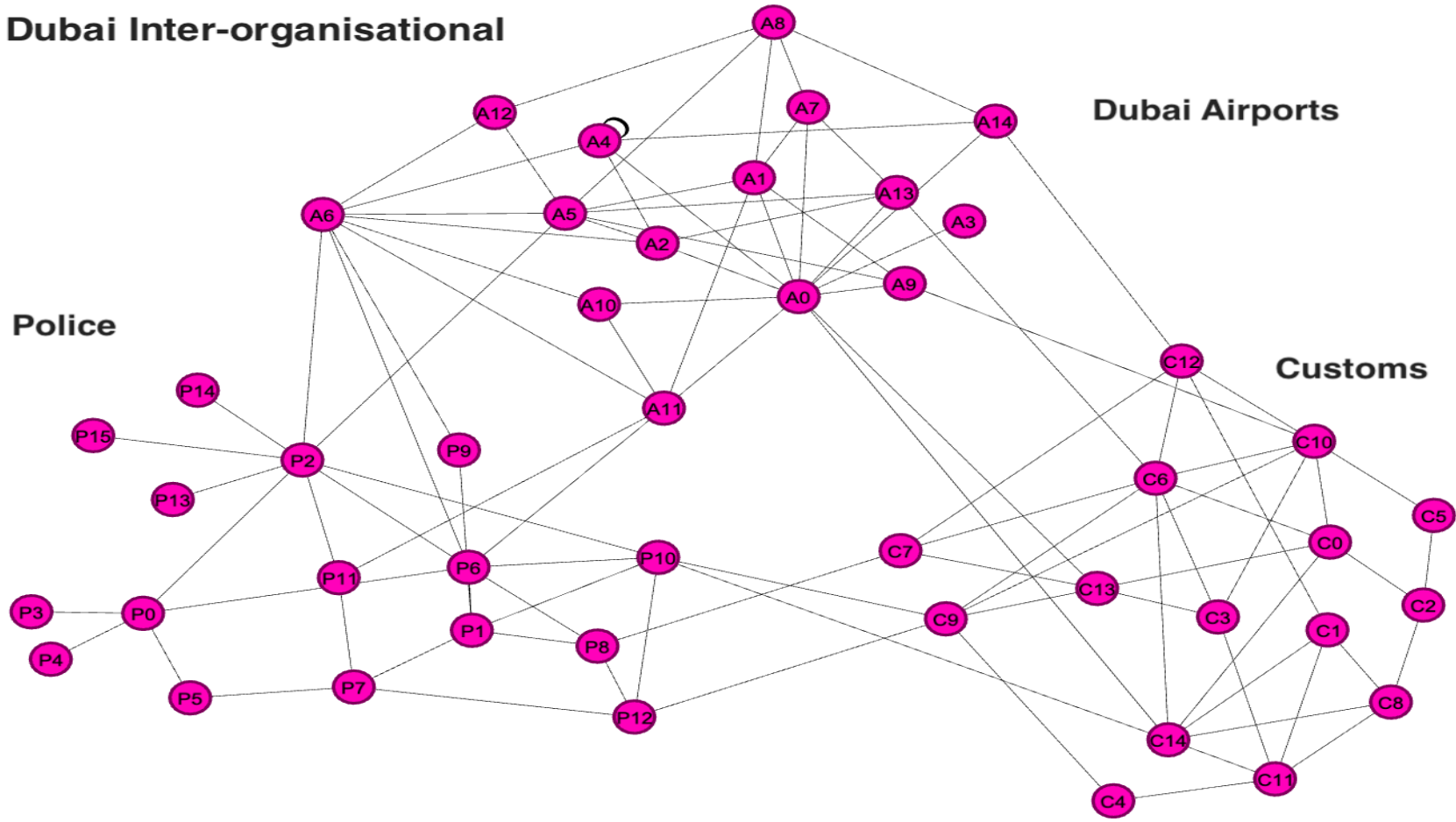


Figure 5-1 Abu Dhabi Interorganisational Network

### Dubai Inter-organisational



### Dubai Airports

### Police

### Customs

Figure 5-2 Dubai Interorganisational Network

**Table 5-1 Network Analysis**

<b>Metrics</b>	<b>Abu Dhabi</b>			<b>Dubai</b>		
	<b>Average</b>	<b>High</b>	<b>Low</b>	<b>Average</b>	<b>High</b>	<b>Low</b>
Degree Centrality	3.3	13	1	4.86	14	1
Diameter		5			6	
Density		0.07			0.10	
Modularity	0.469	(5 communities)		0.503	(4 communities)	
Closeness Centrality	0.02	0.03	0.02	0.04	0.06	0.02
Betweenness Centrality	17.30	180.8	0	55.82	325.41	0

**Table 5-2 Organisational Level Analysis**

Metrics	Abu Dhabi				Dubai			
	IO Network	Police	Customs	Airport	IO Network	Police	Customs	Airport
Degree Centrality	3.3	2.62	2	3.46	4.86	3	4.66	5.06
High	13	8	8	9	14	7	8	12
Low	1	1	1	1	1	1	2	1
Diameter	5	2	2	5	6	4	3	4
Density	0.07	0.08	0.07	0.12	0.10	0.1	0.16	0.18
Closeness Centrality	0.02	0.07	0.07	0.09	0.04	0.08	0.09	0.15
High	0.03	0.08	0.09	0.13	0.06	0.13	0.19	0.32
Low	0.02	0.06	0.06	0.06	0.02	0.06	0.06	0.06
Betweenness Centrality	17.30	0.49	0.53	5	55.82	3.74	1.6	7.53
High	180.8	6.33	7	27	325.41	20	7.5	44.1
Low	0	0	0	0	0	0	0	0

Comparison of the results for the networks show that for nearly all measures Dubai demonstrates higher scores than Abu Dhabi. As shown in Table 5-1 degree of centrality was nearly twice as high showing that Dubai members are relatively more connected to the rest of the network than those in Abu Dhabi. A major difference was indicated in scores for network density, with Dubai characterised by a more closely interconnected network. The closeness centrality and betweenness centrality scores for Dubai support these measures and are as much as three times higher than for Abu Dhabi. Overall members of the Dubai network show a greater degree of centrality and connection to each other and assume mediator roles more frequently.

Qualitative data from interviews provide further evidence of distinct roles within the network across different levels of the organisation. The density, closeness and betweenness measures were higher for senior members. This suggests that members with higher status and position in the organisation demonstrate greater interaction and knowledge sharing than lower status.

There appears to be a relationship between the degree and type of knowledge and social and organisational position of members. This is evidenced by responses from senior personnel, for example a respondent from the police agency in Abu Dhabi explains:

*“I connect widely in my organisation and I try to maintain connections with the other organisations and I share information I receive within my organisation. I act as a bridge and I filter and screen information that is relevant to my organisation.”*

The concentration and control of information flows through key actors is supported by other responses from senior personnel. For instance, in the customs organisation in Abu Dhabi, a senior network member explains: “due to my seniority I am able to gather knowledge more effectively as the network is more responsive to my requests for information”. Another senior personnel



characterised his roles as knowledge broker within and between organisations, explaining that:

*“I work across organisational boundaries, it is more efficient and I have the authority and freedom to make requests, ask questions, share ideas with other senior connections and lower level personnel. I am proactively seeking and searching for information that is useful to my organisation. It is important to co-operate with members in the other agencies and reciprocate and have strong relationships so that we can collaborate positively.”*

In contrast the results from lower level employees indicate more passive roles. The network statistics show that the majority of members hold fewer central positions in the network. Many respondents at this level emphasised their role in terms of observing and learning.

### **5.3 Relational**

The relational dimension captures the qualities and character of the connections between members of the different organisations in social media that literature shows are the foundation for inter-organisational knowledge sharing in social media. Distinct factors, characteristics and antecedents were identified that impacted the nature and quality of relationships between members of the different organisations in the network as shown in Table 5-3 and associated with: hierarchy, trust dependency, differentiated roles, closed culture, communities of practice and informal networks.

The cultural emphasis on hierarchy was one of the most important factors to influence the formation, breadth and intensity of relationships in social media between the organisations. The effects of hierarchical control were linked to strong relations at the managerial level and managerial control of information flows and conversely weak peer ties. Tie strength appears to divide along hierarchical lines as illustrated in Figure 5-3. With lower-level employees senior managers explained that they had strong ties with employees in the network based on the consistent dissemination of information they

shared with them. At lower levels of the network, the results suggest weaker bonds between employees. One member states that:

*“there are two levels for my engagement in social media. At one level I have strong ties to my colleagues in my organisation who are at my rank in the organisation. I receive a lot of information and communication from them.”*

The results showed that members possessed weak connections to members from other organisations. As one interviewee from Abu Dhabi Custom explains: *“I have access to information from other organisations, but I have little direct connection with other members of the police of AD”*.

There was some consensus that much interaction was based on news and information posting or links to content rather than strong peer-peer relation. Several respondents suggested that weak connections between members at equal rank made it challenging to engage in dialogue. As one respondent states:

*“It would be more beneficial to have more in-depth dialogue and discussion with specific actors. At the moment if I have an issue or need to solve a problem, I have to post frequently the same issue and wait a long time for anyone to respond.”*

This is supported by another member stating that:

*“we need to develop stronger connections with diverse people both inside and outside our organisation so that we have a good chance of receiving a fast response instead of waiting weeks or not at all”*.

The view of another interviewee suggests a one-way weak bond with senior members in the network stating that: *“I am significantly more cautious in interacting with members of higher rank or position in the organisation or in other organisations”*.

**Table 5-3 Relational Themes**

<b>Relational</b>	<b>Sub-Theme</b>	<b>Extract of Responses</b>
Hierarchical control	Managerial collaboration	I share information with my counterparts in the other agencies and work together when any opportunity arises.
	Managerial control of information flow	The managers are the main sources of knowledge inside our organisation and between organisations. They are responsible for most of the official information that is shared
		Senior managers have permission and authority to share information outside the organisation Usually knowledge sharing goes towards senior managers in the organisation
	Top-down information flow	Most managers use social media to push down knowledge to lower levels. I disseminate Information from other agencies if it is relevant to my team or other managers in my organisation Most information I pay attention to is from my senior managers and I give this priority.
My manager is responsible for sending me regularly news and events and updates, new policies and training content that is shared in social media. Some of this comes from other agencies that is re-posted.		
	Lack of interaction with their peers	The knowledge shared with my team is one way. Officially, we only have indirect access to information from other agencies.
Trust dependent	Trust in formal sources	There is more trust in official information being shared directly from managers and or the organisation than individuals
	Trust in expertise	There is high level of trust in people in different organisations that have specialist knowledge or expertise
	Trust in competence, reliability, accuracy	The quality of information being shared is a big factor. It is important we trust that the information coming from social media is reliable and accurate It is difficult to determine the level of skills of some people. In social media few people display their profiles and this makes it difficult as their competence is a big factor to help me feel confident about the information they share
		Organisation level mistrust

		Obviously, we have some level of trust with other organisations, but as a manager I do not feel confident about the quality of information. It is dangerous for my reputation for me to share internally if I have this uncertainty.
		Managers from other agencies share information but they often ignore questions about the source of knowledge so it's hard to trust from some units.
		The members in organisations do not show strong care or interest in my work. Mostly they pull information for their needs.
Differentiated roles	Passive observer	Mostly, in social media I read and review content that is shared by managers. I read news updates, policies and training materials such as PowerPoints or videos or simulations about new technologies or security issues
		There is not a lot of chance to have discussion. I do not post information, mostly I read and sometimes ask questions.
		Social media is an informational channel and I use it to keep aware and learn about security issues and developments
	Mediators	Most new content goes through managers. Mostly within my organisations, but also sometimes we share news and information from other organisations. My main responsibility is to review and disseminate relevant material
Closed culture	Internal orientation	We don't exchange information with external agencies regularly. We concentrate on our own projects and this is the priority
		In general information sharing occurs when there is clear purpose or advantage, but mostly in social media we share knowledge internally
	Clandestine attitudes	Privacy of information is critical, so we are careful about what information we post to other organisations in social media. There is little visibility and transparency and not everyone can be trusted in other organisations
	Organisational distance	Information with external agencies in social media is very ad-hoc and infrequent. There is no continuity, and this is affected by regular changes of managers
	Sense of Isolation	In social media it is fragmented and mostly our small groups operate in isolation from those in other organisations. It is difficult to have open dialogue in social even with members of our own organisation
Communities of Practice	Specialist knowledge group	We have formed groups to share knowledge and learn from each other. In this group we have freedom to share information and discuss things openly with people in the same field in other organisations
	Share learning	With people who I already know in the police and in my organisation, we created two groups to

	opportunities	discuss technologies and another to learn from each other about security issues
	Discussion problems in sub-groups	In these groups we can discuss problems and ask each other for help and share out knowledge. Mostly we share stories about security incidents and in relation to our work
Informal network	Trust in Kinship	It is hard to build trust and credibility in social media with people in other agencies. There are too many risks and issues, so I rely on my close relations, relatives and friends for help and sharing knowledge
	Informal trust	I use social media to communicate and share information with friends and colleagues who I trust in other organisations  If I have a problem or question that I know another organisation can help with.... when I consider my boss, then it's not possible to approach them in social media. Also, there is risk of bypassing your boss, so for me I can trust my friends or close colleagues to have some support me and be discrete
	Informal connections	There are no formal mechanisms or agreements in place for social media. But it does provide us with some opportunity to make connections informally  The communication with members in other agencies has not really been formalised in social media so that's a big issue. But social media provides many opportunities to make connections and using my own initiative I am able to get information and have some discussion with those outside my organisation  All of the formal relationships that I have in security networks are so good that they are now informal. Social media gives an informal part of the network that allows me to make instant contact with a person that is my friend or close associate and I ask for support  My personal connections help me when I need help or support from outside my organisation.
	Informal practices	I share information with confidence with a small number of people outside my formal network in other organisations. I can send and receive information and not worry about the politics or my reputation. I have no concerns about repercussions as we know each other and have no hidden agenda.  With certain types of issues and information needs, social media is powerful if you have built up a network of personal and professional relationships, because you can simply post in twitter or chat tool or group and get replies. We can share videos and repost and get opinion and viewpoints  I have access to people in other organisations who I have made connections with either face-face or in social media through my personal connections that I develop during online seminars and workshops  There are challenges but social media provides my team with opportunities to locate those with

---

specialist knowledge or expertise in the other organisations

---

The different tools in social media such as instant chats, and discussion groups means I can communicate frequently and one-one in an informal way

---

In respect of norms evident within the inter-organisational network interviewees emphasised a number of key characteristics. The responses from different interviewees indicated control and dissemination of information by senior managers was the norm. As one explains:

*“all formal information and knowledge sharing originates from senior managers. They are active in requesting and screening information and information requires approval before it can be shared externally even informally.”*

The significance of the central role of senior actors in the network is exemplified in accounts of the difficulty in accessing members in other agencies. As one member explains: *“It can be difficult to reach out across to other agencies. The primary route we can use in social media is indirectly through senior colleagues that have strong connections.”* This is supported by similar sentiments such as:

*“there is concentration around a core person and this member has strong connections with multiples and acts as coordinator of information. However, when a problem is too difficult, or I have an issue or situation then it can be difficult to get the support from the right expert or it can be slow.”*

There is a consensus that establishing or developing stronger relationships is problematic due to cultural boundaries. This view is reflected in one response:

*“It is a challenge to initiate communication with members outside of my organisation without some referral or invitation because in most cases I may need permission.”*

Trust emerged as one of the most significant factors to influence the development of relationships that encouraged knowledge sharing between the organisations. Relationships were trust dependent in a number of ways that related primarily to trust in kinship and close connections and trust in competence, credibility and expertise of the information sharer.

The results suggest that bonds are strongly formed along family, tribal connections and personal contacts. Evidence from respondents suggest trust was a significant dimension to openness and engaging with members in the network. For instance, one member states that:

*“I interact more with members with whom I have close family or personal connections. If they are not from my tribe then I am less open, but it makes a difference.”*

This view is expressed by other interviewees: *“I am cautious and take greater care with persons outside my close group. There are few groups that I feel a strong sense of belonging with in social media.”* This sentiment of distance is expressed by other members of different organisations who explained that it could be challenging to engage and connect within social networks because there was a high level of confidentiality and secrecy.

Findings show that members proactively focus on exploiting their close connections in the network. One stated that it could take time to build strong connections with members or groups in other agencies, and these members had internal opportunities for face-face interaction and to build trust and connection. Another participant expressed the view that:

*“The traditional communication by face-face is vital because it creates an important connection. Those few people I have connection within social media I am able to reach out in twitter get advice and share information. Other connections are basic, and I do not have close relationships. One strategy I have used is to build friendship through my network of family and friends and close work colleagues in Facebook. This has led to better relationships and opportunities to connect more with work colleagues”.*

Results revealed that the trust perceptions of network members were influenced by the extent to which other members were perceived as competent. Several respondents pointed to trust in terms of competence and belief in the quality of information or knowledge provided by members:



*“Formal information or knowledge has usually been cleared and authorised by senior managers. However, information or knowledge from individual members shared informally has low trust unless it is associated with high ranking members or originates from close personal connection.”*

The view emerged that many members were uncertain of other’s abilities, professional competence, and roles and responsibilities which in turn influenced their trust and willingness to share knowledge. In contrast, those participants which had connections based on shared expertise and understanding of each other’s roles and responsibilities were more likely to express trust in the professional competence of network members and willingness to share their knowledge. One member stated:

*“My contacts in the network all work in the same area as me, and therefore we have a pretty good idea of each other’s jobs, and what skills they have and their track record and for me at least that makes me more comfortable, more open to sharing information.”*

While relational aspects of hierarchy and trust influenced knowledge sharing, participants also pointed to several other factors impinging on relationship development.

### **5.3.1 Differentiated Roles**

Results showed that relations in the network were influenced by the roles adopted by different members and the extent to which these were active or passive. Weak ties in the network were characterised by one member in terms of passive roles stating that:

*“I observe a lot in social media through twitter or WhatsApp. Social media provides many opportunities to learn about and see people from various agencies and organisations. It’s challenging however to establish that first contact or to engage into some dialogue. There is no frequent interaction as I thought there might be, much of the activity is informational.”*

Most respondents characterised their relationship in the network as passive, receiving and viewing information from senior managers. Those members with strong ties were largely senior managers that acted as bridges to other networks, as shown in Figure 5-3. Respondents emphasised this perspective with one explaining:

*“we have a senior manager now in the social network who intensively coordinates and disseminates information. They intervene often to post and repost information. In my organisation I can see leaders are proactive in social media they question and request information.”*

The results showed that most senior members perceived a significant duty or responsibility to continuously share information and updates. One senior manager commented:

*“We are the engines of information-sharing and generally the main source of information and updates in the network, so if we didn’t keep posting many people would be completely unaware of important updates and changes.”*

There was a strong belief emerging from interviewees associated with the role of senior managers as information co-ordinators. A majority of interviewees depended significantly on key members in the network that appeared to be responsible for screening and brokering knowledge. One respondent states:

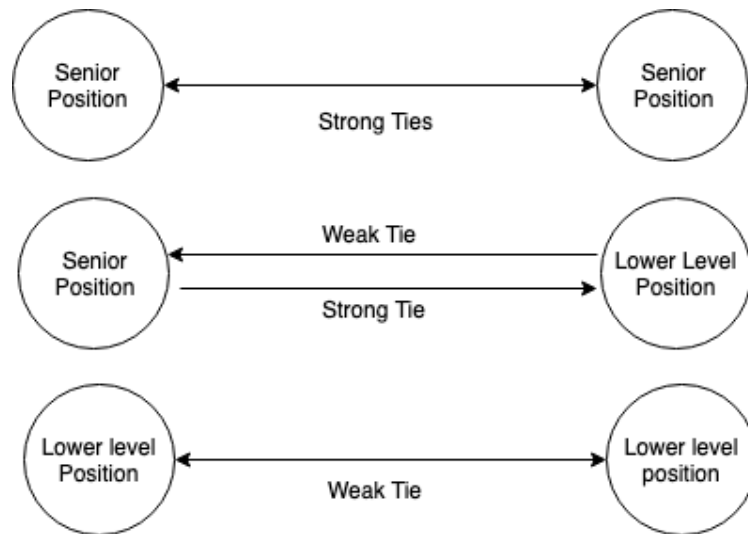
*“I receive a large amount of knowledge and information indirectly from two main sources. They review information from external sources, and they share it in relevant groups. Often, they post all the information organisation-wide, but in some cases they post in relevant social media groups.”*

The role of boundary person is noted in all organisations where the majority have cited that the largest volume of information is external and screen and filtered and then shared. According to a senior network member:

*“we have to understand what the group interests and priorities are and I am proactive to negotiate and learn both about interests in my organisation*

*and interests in other organisations and then from this I can exchange and develop mutual relations. Without this it would be difficult to have a good flow of information between the organisations”.*

Another senior member states: *“it’s a political process and there are very sensitive boundaries and members from each organisation cannot simply connect with other members even at informal level.”*



**Figure 5-3 Network Relations**

The specific role of boundary or knowledge brokers is a key theme with multiple references to the need for key members to have specific skills or knowledge about different organisational domains. This is illustrated thus:

*“There is a big cultural difference between customs and ADAC [the airport authority] and only members with knowledge or authority can engage with external agencies in social media. They act as middle points through which we can connect indirectly with members from other networks.”*

As can be seen from the above quote, the issues of differentiated roles linked to cultural factors that influenced engagement and knowledge sharing.

### **5.3.2 Closed Culture**

The existence of a closed culture among organisations in the network emerged as a key factor influencing the quality of the relationships in social

media. This was associated with an internal organisational focus and weak inter-organisational ties, organisational mistrust and a sense that reciprocation was lacking. The results indicated that inter-organisationally members possessed a small number of strong bonds. Strong ties were focused internally within the organisation, and less with externally. As one respondent explains:

*“I’m part of a close group of professionals on social media who have a very specific set of shared interests, and we are often able to help each other in decision-making, I use the network consistently to obtain advice or other people’s opinions on something I’m working on or thinking about”.*

As a result, the process of ‘working together’ in a closed group is conceptualised as a key part of meaningful communities of practice where workers mutually guide each other through their understandings of the same problems in their area of mutual interest, and this way indirectly share tacit knowledge in the closed group they belong in or they formed within the organisation. The collaborative learning process of ‘thinking together in a closed group’, this study argues is fundamental to knowledge sharing which benefits greatly the organisation activities.

Another member indicates that strong ties can develop through project processes:

*“Where members are engaged in projects or tasks then we have opportunity to develop new connections that we can sustain online and social media tools through LinkedIn, facebook and Whatsapp are very useful to generate awareness about the skillsets and expertise available in the other agencies and we can develop strong relationship from this.”*

Many participants expressed a lack of confidence that contributing and sharing knowledge would lead to mutual contributions in return and that other network members perceived an obligation to return the favour. One interviewee emphasises norms around reciprocation stating that: *“if you share*

*anything useful with any other members externally, I have low expectation that it will be reciprocated*". This attitude is shared by several respondents, for instance:

*"I have posted information and shared articles in the past that I thought would be useful for colleagues, but very few people seem to do the same even though it would clearly have enormous benefit for our community."*

Another participant echoed this theme:

*"It seems to be a small number of people who consistently post information or news while many others have never posted, and I think that can be slightly discouraging as you think why bother if no-one else is?"*

In particular the sharing of knowledge and information was being driven primarily by the senior manager tier within the network. However, results showed that this obligation was not acknowledged at all levels and there was a strong perception among many at senior level that less senior members did not contribute information or knowledge in return. This sentiment was expressed by one senior manager as:

*"without doubt there is a strong expectation that managers will post key updates and information to them on social media and they will always be kept informed, but to be honest I see few others regularly posting useful content or even responding to the queries that people sometimes post"*.

Another manager commented:

*"Currently there is major imbalance between those seeking help and those contributing. It is disproportionate and I am sure the small number of members who collaborate feel burdened"*.

The closed internal focus and lack of reciprocation was a consistent theme across the organisations, nevertheless this pattern was not entirely replicated in all pockets of the network as discussed below.

### 5.3.3 Communities of Practice

Communities of Practice can be defined, as a process of social learning that occurs when people who have a common interest in a subject or area team up over a long period of time, sharing ideas and strategies, find solutions, and make innovations (Lave and Wenger, 1991). Wenger (1998) gives a simple definition: “Communities of practice are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly.” Wenger, 1998, pp.34). Communities develop their practice by a collection of means, including requests for information, problem solving, assets reusing, interaction, pursuing the experiences of others and coordination.

Wenger (1998) perceives learning as a central to human identity. The focus is learning as *social participation* – that is, an individual as an active participant in the practices of social communities, and in the creation of their identity via these communities. People always generate their common identity via involving in and supporting their community practices and activities. The drive to become a more significant member in a community of practice can provide a strong encouragement for learning.

While across organisations ties were generally weak, there is some evidence from data of community of practice where professionals have formed small groups across organisational boundaries. The analysis provided examples of inter-organisational knowledge groups in social media, where one interviewee stated that: *“there is more connection and interaction between member in ADAC, customs and police through social media. The relationship is informal and there is development of contacts between the different organisations”*.

One form of community practice focused on information, for example in one initiative a respondent explained:

*“we created a group that concentrated on the dissemination of knowledge according to specific disciplines or security issues. We share information more efficiently this way.”*

The results also indicated in some cases groups had been formed between different organisations to discuss specific work issues or topic. According to one view:

*“I am part of a small group in my organisation and there are a wide range of staff from different levels. We must develop trust and understanding to take openly and value new information or views from each other. However, this group takes a long time to develop trust and connection.”*

This limited number of inter-organisational groups was an issue noted by one respondent who suggested that the majority of communities of practice exist within organisations rather than across organisational boundaries:

*“I am a member of learning and work groups within my organisation. I want to be part and connected to a more diverse group that have different competencies from different agencies. We do not have enough blogs or social media where there is dialogue or discussion. I think it can be a good way to make contact if we can get more understanding of different people’s views and skillsets.”*

Relationships within these smaller groups were characterised as open and friendly. Some of the participants cited that their relations with other members of the network were generally friendly and open and conducive to the exchange of knowledge. It was noted that the network consisted of a community of professionals with common interests motivated to contribute to the collective good of the network and the organisations involved. A high level of trust was perceived in the network which meant that most members appeared happy to share their knowledge and experiences with other members and ready to help with advice, guidance and tips when called upon. Respondents that were part of these small groups drew attention to the tone and style of communication in the network which was informal and frequently encouraging which meant that they found it relatively easy to build relationships and share knowledge with their contacts. Most participants viewed themselves as firmly part of the group and pointed to often strong rapport with other members of the network. One participant pointed to a significant feeling of group identity and sense of

belonging in terms being part of a community of professionals grappling with similar issues and providing mutual support.

#### **5.3.4 Informal Network**

The informality that characterises the social media network and the connections within it had an influence on the management of relationships for knowledge sharing. Participants pointed to an absence of formal mechanisms and agreements that could provide structure and coherence to communication within the network and facilitate the maximisation of knowledge sharing from relationships in social media. Attention was also drawn to the role of informal trust in connecting to friends and colleagues in other organisations that facilitated the formation of stronger interorganisational ties.

#### **5.4 Cognitive**

The cognitive dimension of social capital relates to particular elements within interpersonal relationships that draw on shared meaning systems, interpretations and representations (Nahapiet and Ghoshal, 1998; van Wijk et al., 2008). Cognitive social capital can take the form of shared interpretations and systems of meanings (Cicourel, 1974), common languages and codes (Monteverde, 1995), and shared narratives (Orr, 1990) among parties. A number of themes emerged that influenced or undermined the effectiveness of cognitive social capital for facilitating inter-organisational knowledge sharing as shown in Table 5-4. These included the extent that there were shared goals and different interests or ambiguity and uncertainty as well as challenges of interoperability.

Findings suggest that in relation to specific aspects of inter-organisational knowledge sharing in social media there was a common vision and shared goals. On the other hand, differences in interpretation and understanding between organisational levels were identified that impacted on inter-organisational knowledge sharing.



There was a consistent view from interviewees surrounding attitudes and perspectives towards continuous innovation and vigilance in security awareness. As one explains:

*“there is strong belief in all the organisations that we must co-operate with other agencies and ensure frequent interaction and sharing of information to help us improve our operations.”*

There is consensus from interviewees around this view: *“there is a positive attitude that security performance depends on a high level of contact between all the key organisation tasked with security of the airport”*.

A common understanding between members of the network was also noted in terms of the desire to share information and knowledge on security issues to help and assist colleagues and enhance the knowledge and practice of all network members. Some perspectives noted a shared purpose towards an overall goal, as one explains:

*“across all the organisations we have like-minded professionals from different locations and backgrounds who all shared a common interest in the security sector and being vigilant and working to high standards.”*

However, respondents were highly conscious of differences in terms of purpose and vision of social media by senior management. Findings show that managers at one level view and utilise social media as an informational system. This interpretation is shared by respondents from all three organisations. Lower level employees offer examples of this explaining that senior managers are mostly focused on disseminating information and ensuring new content is posted and available to all staff to see through social media. This differed from the interpretations of lower level employees who tended to view social media as an opportunity to learn and develop by accessing expertise and gaining new knowledge from other organisations. According to one employee:

*“We want to learn and have dialogue and discussion, but social media is used mostly for posting information about new policies procedures rather than to provide support.”*

This was supported by another interviewee:

*“A lot of staff wants to have more interaction and discussions with different members, but so far we are not encouraged to do this or have opportunities to do so.”*

One participant specifically identified the differences between managers and employees:

*“I do not think that everyone in the network has the same vision that we can use social media to co-operate or solve problems. Senior managers use it as an information channel, and many others use it to maintain connection with close personal contacts.”*

In addition to differences in understanding between workforce levels, participants identified there was ambiguity and uncertainty in relation to organisational differences in goals that impacted on inter-organisational knowledge sharing. Several interviewees emphasised ambiguity in respect of cultural differences between the police and ADAC that influenced different priorities and goals and led to uncertainty in relation to what information should be shared.

**Table 5-4 Cognitive Themes**

<b>Shared</b>	<b>Themes</b>	<b>Sample Extract</b>
Shared vision	Shared Goals	Different priorities and objectives than other organisations We have understanding with colleagues in other agencies about what we are trying to achieve, but this is limited to a small number of contacts
	Ambiguity	I am not sure how to act or approach others because I am uncertain and that makes it difficult to develop an understanding There is a lot of misunderstanding of the purpose and value of information being shared. A high volume of information is shared that is dealing with many different goals There are many different interests, and this makes it difficult to build connection because of the uncertainty surrounding members' activities and priorities
	Benefit of shared vision	Social media improved my awareness of the work of other organisations and I have been able to develop better connections with other actors and this has provided me access to a higher volume of information from the other agencies
	Interoperability	We have different standards and protocols to other agencies
	Community of Practice	There is common understanding between some members in each of the organisations and they join to share knowledge in specific work areas I use social media for learning with other members on different topics and we share our experiences and have good discussions about work issues
	Different interests	I have a much greater sense through social media and with the other agencies we have a common goal to have the highest security standards
	Barrier	The lack of understanding between the agencies is a major barrier to relevant knowledge exchange The groups provided me with better access to relevant information

Some participants indicated that this in turn impacted their engagement and information-sharing behaviour within the network. A police interviewee summarised this issue thus:

*“I’m not aware of ADAC’s priorities, what they are focused on or what is relevant for them so I don’t tend to engage much as I really don’t know if I would post something that’s useful or not.”*

The suggestion was made by several participants that in their experience network members lacked understanding of the priorities of other members and organisations and were more concentrated on their own activities and goals. For one participant this meant that: *“if we are just focusing inward on our own concerns then we are not exploiting the full potential to work together in social media”*. A minority of participants were more positive in relation to the extent of shared vision among network members, noting that from their experience stronger connections were more common between those undertaking more specialist roles. This was perceived to emerge from a combination of shared expertise and understanding of role responsibilities as well as a sense of belonging to a particular area of expertise.

Participants identified a number of interoperability challenges that could impact on shared understanding and goals. Issues surrounding shared understanding with other agencies in respect of etiquette, language and narratives emerged. In the words of one participant: *“It is extremely different communicating in social media than face to face. I am very conscious how to phrase my words or when to interact”*. Another participant noted:

*“I find it difficult to understand and follow the different lines of discussion that exist. The communication in social media has jargon and technical terms I am not accustomed to and not everyone uses understandable terms or explanations.”*

A key theme emerging from the results was the impact of different interests in holding back the network from achieving strong shared vision. One respondent explains that:

*“there is opportunity for Police and customs and Dubai Airport authority to be more integrated and work more closely together, but there are differences in rank, culture and formality that exist. There needs to be better collective sense and vision and support to create a tighter network.”*

This sentiment is shared by another respondent who states that:

*“in my experience is that we are not communicating effectively in social media because of the cultural issues and that means groups and people maintain their distance instead of understanding and supporting each other”.*

Some respondents emphasised the value of achieving shared vision stating the importance that members in all the organisations had clear focus and support in using social media. According to one respondent:

*“We should embrace it as a channel for learning and for creating better connections between relevant personnel across organisations. Additionally, we need to make space for discussion and co-operation rather than only using it as an information channel.”*

Findings suggested that the extent that the network was characterised by openness influenced the development of shared vision and understanding between organisations and members. Participants pointed to a strong general belief that social media was a transformational mechanism, however interacting with people in this new channel was complex and challenging: *“I am unable to build a deeper sense of specific goals or priorities of members in other organisations because I am limited to who I can approach and how to present myself”*. Different perspectives emphasised the closed nature of the culture as a contributing factor. For instance:

*“it is difficult to have strong connection with groups or individuals in the other agencies because of the lack of personal contact. This has deteriorated in past years because we are expected to make strong use of social media for information and communication.”*

Another participant remarked:

*“While we are security conscious and confidentiality is important, between the organisations we don’t share the same goal to have open communication and share frequently. Some members can be secretive and competitive rather than helpful and co-operative. It is difficult to say we share experiences or goals because there are many issues that prevent this due to fear, lack of trust.”*

While these perspectives point to issues in the cognitive dimension, views were more positive in relation to the potential of knowledge sharing on social media.

## **5.5 Knowledge Sharing**

Participants perceived multiple benefits for the organisation in the sharing of knowledge in social media focused on knowledge flows, social capital and innovation. Emphasis was placed on the ability to break down or negate the effect of organisational silos by being able to reach out to and maximise their colleagues as knowledge resources. It was noted that network members could locate experts and identify knowledge sources external to their normal work communities and different organisational communities could be connected to ensure that knowledge could flow across boundaries and a diverse knowledge base could be uncovered. The extension and reinforcement of both strong and weak relationships through the use of social media was perceived to be beneficial for the organisation overall. Finally, it was believed that sharing knowledge in the network could be a source of new ideas and innovations that could generate more innovation within the organisation itself.

The SECI model provided a structure for investigating participants’ social media knowledge sharing practices based on four modes of socialisation, internalisation, combination and externalisation. These allow examination of knowledge conversion and transfer processes related to tacit and explicit knowledge and how these are converted and transferred within the networks.

To provide insights into the extent that these processes are currently being exhibited participants’ usage and purposes for engaging in knowledge

sharing in the social media network were investigated. A number of different purposes for the use of social media tools to share knowledge were revealed. A key reason related to the desire to stay connected with current colleagues, with participants noting that through social media these relationships could be maintained and deepened. The ability to network and create new relationships was emphasised in which social media played a key role in allowing members to talk and get to know each other and participants could widen their network of contacts. Beyond providing direct contacts, different forms of social media were seen as instrumental for both supporting strong ties and converting weak to strong ties, providing access to greater depths of knowledge. Respondents stressed that conversations on social media could help to form early associations that could later develop into a stronger offline relationship.

Emphasis was also placed on job-related learning and development in terms of staying updated on the latest security news, information and events which was viewed as the most rapid way to stay current. Accessing current knowledge through traditional mechanisms was cited as difficult and time-consuming and less effective for busy professionals, while knowledge in the network tended to be highly current, relevant and reviewed and filtered by peers and trusted sources. Some participants alluded to the dissemination of professional knowledge in which in-depth discussions on issues and topics in the field, tips, practices, and new and different ways of doing things could be distributed and shared.

The primary reasons cited for participation in the network were varied and diverse and fell into three main categories of relationship-building, knowledge-sharing, and personal professional benefits. In terms of relationship-building, participants pointed to the chance to network, and be part of a community and socially integrate with colleagues. A sense of belonging and connectedness with colleagues and integration in the work community was cited. Participants also noted the desire to reach out to a wider audience and discover and develop relationships with like-minded members from different backgrounds to promote communication and networking across

organisations and even countries. In terms of knowledge sharing, the desire was expressed to take advantage of the opportunities provided through being part of the network to share and obtain knowledge and in particular experiential and practical knowledge that they were enthusiastic to learn. Attention was drawn to pressured work environments and the need to resolve problems rapidly and effectively which meant that sharing of this type of knowledge through networks was highly valued. Some participants noted that potentially they could immediately refer to colleagues for assistance, to answer questions or to obtain feedback on problems and issues.

In terms of socialisation and externalisation there was a strong overall consensus that the dominant mode of knowledge sharing was focused on externalisation and the dissemination of explicit forms of knowledge. This was evident in the analysis of responses where information focused on how to implement policies and sharing external knowledge on security developments. Social media was used intensively as an information dissemination channel, primarily by senior managers. Interviewees confirmed the high volume of information dissemination as the norm, which was often reposted and re-shared between organisations. Senior managers emphasised the value of social media for information dissemination. A manager in the Police stressed that:

*“the key reason for sharing knowledge on social media is to disseminate updates to policies, procedures and guidelines as this is the fastest way to share modifications and new guidance with necessary people especially if this is important.”*

Another stated that:

*“even though this creates a large volume of information to examine, for me its beneficial because it increases the chances employees have exposure to information more than once. Social media is valuable for raising awareness and understanding of new security tools, technologies, concepts and developments in the industry.”*



The orientation towards the dissemination of information is further supported by the explicit kind of knowledge that participants identified is predominantly shared between organisations consisting of up to date reports, videos and news and reviews on security issues, security incidents and events, new technologies, and the sharing of links to other sources of information.

Participants identified disadvantages in the sole focus on sharing explicit information: *“I found the information can be lacking in useful information because a large amount is reposted and lengthy and it can be time-consuming to review”*. Meanwhile the results showed that socialisation processes were being exhibited among a small number of senior individuals where tacit knowledge was being shared through dialogue and problem solving. Attention was drawn to the highly limited pool of members who were engaging in forms of tacit knowledge sharing: *“On the one hand a small number of members are communicating and sharing ideas, while on the other the majority of members are observing and listening”*.

Respondents identified that conversion of tacit knowledge to explicit knowledge was challenging due to cultural constraints that limited the degree of externalisation:

*“If information is shared by trusted senior person in our organisation then it is more likely that it used in face-face training sessions or meetings. However, any content that is posted from other organisations is not integrated into work practices.”*

Another respondent noted:

*“Often I want to share and repost information from external groups but the problem is that I am uncertain of asking questions or having dialogue with members from another organisation.”*

However, there was some evidence that small groups or communities of practice existed among which there was a greater degree of socialisation and tacit knowledge sharing. This was explained by one participant:

*“I have developed connections with member in the customs and the police and in this group we share and discuss many things about work. We are at the same level and we feel comfortable to share information. We created a group called learning for security and share information.”*

While these perspectives provide a general overview of knowledge-sharing practices the following sections provide a more detailed exploration of the specific practices and issues related to the four dimensions of the SECI model.

## **5.6 Knowledge Sharing – SECI**

The knowledge sharing between organisations was analysed in line the four dimensions of the SECI model: socialisation, externalisation, combination and internalisation.

There was evidence of various types of tacit knowledge shared between organisations. Senior managers indicated some co-operation with their counterparts providing security opinions and discussing new technologies or giving guidance. However, this was limited to senior members that have developed long-term trust relationships and have strong kinship or personal ties with members in other organisations. In these cases, knowledge sharing characterised informal discussions about security cases, experiences and lessons learned.

*“I have one-one discussions and discuss security procedures and share stories or recount security events from around the world. We discuss best practices and areas that can be improved.”*

Employees in social media were extremely cautious in engaging with members outside their organisation. Some reluctance was noted to ask questions or discuss content with external members for example. Therefore, socialisation between organisations at lower levels of the organisations was extremely limited.

Attention was also drawn to cultural factors and to the carefulness of employees in Arabic organisations in approaching senior members. Participants explained that employees are used to following rules and prefer to have explicit guidance and direction who they can engage with and what information they can share.

Results indicated that externalisation of knowledge did occur between the organisations and was exhibited in terms of practices such as documenting lessons learned and the outcomes of discussion and brainstorming as shown in Table 5-5. A major focus was the creation of explicit content such as PowerPoints, reports or visual content such as frameworks or diagrams. These were used to raise awareness and share information and knowledge on diverse aspects such as best practices, new procedures or priorities and emerging threats. Such practices extended to generating collaborative reports and content on discussions and dialogue between organisations and counterparts. There was some emphasis also on annotating and commenting and asking questions in social media:

*“The managers are proactive in adding comments to discussions in social media and asking questions. Where the topic and the information is perceived to have high value, then we create a PowerPoint.”*

The organisational factor impacted significantly on externalisation because it limited lower level members from the different organisations from creating and sharing codified content. There was a strong perception that this role belonged to senior level members and primarily senior managers were the sole actors. From their perspective creating new materials was highly time-consuming in terms of sifting, locating and verifying quality information, especially in social media.

There was strong consensus that the social media network was not being used to its full potential for knowledge sharing and collaboration but was utilised more for communications and keeping the network informed than facilitating an active exchange of knowledge between members. One participant noted the implications:

*“If we rely on existing relationships then we have the same ideas and we do not have access to new information or knowledge. We need to create new ideas and have better interaction with a broader range of people with different knowledge, not only information posting, but dialogue and discussion about problems and issues.”*

Combining explicit forms of information to create new explicit information was one of the most consistently noted practices for inter-organisational knowledge sharing in the network. A major theme among managers was the production of learning materials for wider dissemination aimed at raising security awareness and updating knowledge. These were sourced from inter-organisational discussions with counterparts, content added by other agencies, PowerPoints and reports and videos, and then enhanced by managers through review, summarisation, annotation, expanding or adding new content and consolidation. By these means managers clarified and improved the final content and were able to contextualise it and enhance the relevancy for their specific organisation or domain. For one participant social media had some benefits for combining content:

*“Before I disseminate new content, I obtain feedback from other managers or colleagues and we can improve the final result. Social media is a fast way to identify gaps, add new information and verify.”*

There were some limitations to this process, primarily in terms of a lack of tools to sort, add, and categorise explicit content posted in social media. As much information was fragmented this meant that it was complex and time-consuming to access explicit knowledge. There were further limitations in an overall lack of responsiveness and reciprocity between members which was believed to undermine the potential quality of combined knowledge.

**Table 5-5 Knowledge Creation in Social Media**

<b>Theme</b>	<b>Sub-theme</b>	<b>Extracts</b>	
Socialisation	Imitation and practice	The video clips and software demonstrations shared from different agencies can be useful. I learn and try to apply the practices such as security simulations	
	Observations	I learn by reading and listening to discussions between senior members in different organisations, and the views of experts from different departments.	
	Giving examples	We attach a lot of value to video-based content to provide examples, that I share with my counterparts in the other agencies if I think it is relevant.	
	Retelling security events and incidents	There are many stories about incidents and security situations or events. People have greater freedom here to share experiences, using pictures and videos.	
	Visual storytelling	We share events, incidents, video content from abroad and managers from different organisations post lessons and interesting incidents from international sources	
	Expert discussion	We use video chat when I discuss special issues or topics with experts in other organisations	
	Reading posts and comments	We all learn from reading from postings and comments by senior staff about new lessons and practices	
	Learning in groups		I am part of a group and that includes members from the police and customs, and we share information, stories and have discussions
			In a special group we can ask, and answer questions connected with security issues and there is a good level of trust to share experiences and have freedom to talk openly.
Externalisation	Documenting best practices and lessons learned	The most common explicit content are notes that I create PowerPoint slides and documents to describe best practices using material and external content	
		I develop frameworks or diagrams to show new procedures and practices or lists for high priorities for security awareness and training	
		I write reports and summaries, discussions, and information in social media for new training priorities, threats connected with different security areas	

	Brainstorming and discussion	I collaborate with counterparts with specialist knowledge through social media. We write papers with recommendations and analysis of new technologies or innovations
	Annotating and commenting	The managers are proactive in adding comments to discussions in social media and asking questions. Where the topic and the information is perceived to have high value, then we create a PowerPoint.
Combination	Integrating information	Discussions in social media with counterparts, we generate ideas for what we can integrate and consolidate to create learning materials useful for security awareness
		Often the content in social media is highly fragmented and a major task is monitoring and assimilating information
		Before I disseminate new content, I obtain feedback from other managers or colleagues and we can improve the result. Social media is a fast way to identify gaps, add new information and verify.
		I always try to enhance new content by adding or expanding new content contributed by other agencies. I support my colleagues to review and edit new works
	Updating	Security is always changing, and I continuously work with my counterpart to identify new knowledge and then update a wide range of procedures
		My colleague shares with me new PowerPoints or reports on travel documents; I always add to this and update from the police perspective
	Summarising	There is a high volume of information posted, so I summarise, to make shorter and clearer so it can be easily accessed and understood
Internalisation	Audio/visual multimedia	I learn a lot from the video content and simulations posted by managers. Usually they add comments and provide additional clarification through annotations or diagrams or checklists
	Becoming interested in a topic	The information and discussions that I see from other organisations makes me interested and gives me more understanding of issues in other agencies or new technologies.
	Reinterpreting individual experiences	Often information from other organisations is useful and I try to use the ideas in my work
	Professional development	The information that is shared from other organisations in social media gives new insights about what skills and knowledge are important and I can develop new development goals

There was internalisation of the shared knowledge within the network associated with a number of key practices. Reusing and reinterpreting ideas gained from information and discussion across the organisations represented a major practice. There was also strong perception of the usefulness of multimedia content such as videos and simulations for learning and development particularly when combined with further curation or annotation by the sender that helped to facilitate absorption and integration within the participant's own knowledge. These practices led to increased awareness and insight into broader issues in the security field and how they intersected with their own domains as well as greater understanding of trends and developments and current know-how in specific job-relevant areas.

## **5.7 Benefits**

Participants identified a range of benefits for knowledge sharing in the social media networks, centred on the affordances it provided for informality, location of expertise, knowledge accessibility, professional development, and learning, and raising personal profiles. Most participants identified that the ability for recourse to the informal social media network represented a significant benefit of engagement. Value was placed on this resource particularly in the case that formal networks were unable to respond adequately or in a timely manner. Respondents emphasised that the personal relationships characteristic of informal networks were the basis for their perceived benefit, as these afforded several advantages in terms of enabling formal or bureaucratic structures to be bypassed, rapid identification of who to contact, and the existence of established trust that expedited knowledge sharing. Some attention was drawn to the ability to leverage informal networks for personal or professional benefit, in the case that participants sought useful information or knowledge that would generally fall outside of their regular domain.

Significant importance was ascribed to the informal social space afforded by the social media network and the benefits this provided. Social media provided a more open environment where members could discuss security

issues and events and share critical knowledge with each other. Value was perceived in the freedom it provided from formal structures and cultures enabling dialogue and communication in an informal capacity and more informal ways. Several participants noted lesser adherence to stricter forms of formal communication characteristic of the Arab physical workplace and face to face encounters with seniors in particular. The view was consistently expressed that the increased informality of social media was linked to greater openness of seniors to engagement or questioning than would normally be apparent or visible in physical situations. One participant stated that:

*“while we are still a traditional culture and you can see that still in the workplace, it is noticeable that on social media things are much more casual and you can communicate with people and in ways that you just wouldn’t do otherwise.”*

Another perspective stressed how the virtual environment provided freedom from the constraints of the physical work environment in terms of time and space and provided a workspace for incremental discussion and reflection.

The ability to rapidly and efficiently locate necessary expertise among members of the network was a consistently cited benefit of engagement. Many participants referred to characteristics of social media that enabled effective search and identification of experts or knowledge holders for assistance with queries and projects. A major theme was the visibility and transparency of social media which in the view of some participants helped to increase their awareness of others’ skills and aptitudes. Rich information on skills and expertise was held within social media, informed by project updates, profiles and interactions. They noted that:

*“it’s much easier to develop your awareness of different people and skills both inside and outside of the organisation and it helps me to see what help could be available.”*

Another participant affirmed:



*“Social media is highly valuable because the topics and people’s communications are much more visible online. I can observe interactions with people from different units and external organisations. The communications are extremely helpful to know who I can contact for knowledge. Offline this visibility does not exist.”*

In particular the potential availability and searchability of member profiles and professional and educational backgrounds and achievements was frequently underlined as a key feature that advanced visibility and enabled rapid expert location. The ability to locate knowledge promptly was further linked to the capacity to raise questions in visible forums and communities that would elicit expert responses and enable connections that enhance awareness of colleagues. This was expressed by one participant as:

*“I have sent out a simple tweet and had responses from people in other organisations that have enabled me to see that ah, this is the person I need to talk to.”*

Another view noted that questions and queries could be brought to the attention of those communities and individuals with similar or aligned professional interests and focus. The findings show that members perceived that social media could resolve the ambiguities connected with knowledge gaps to supplement formal inter-organisational arrangements:

*“Having connection through social media with members in the police or customs provides a fast channel to escalate an issue and get clarification that will take significantly longer through traditional channels. Within social media we can post a question to a wider pool of staff and gain a faster response.”*

There was further consensus on the benefit of the network as a repository of knowledge that could support professional roles and operational activities. From this perspective its usefulness as a knowledge base was strongly linked to the real-time nature of social media in which updates and knowledge can be posted live and instantaneously. According to one

participant security policies, procedures and training materials could take time to update however social media provided a direct and immediate channel to access the latest changes. On the other hand, attention was drawn to the permanent availability of all types of files including multimedia on social media which provided the possibility to access and review information anytime and anywhere. A minority further noted the ability afforded to share information multiple times by different members which was perceived to increase the visibility and accessibility of the knowledge. More important information was more likely to be repeatedly shared providing appropriate exposure and greater opportunities to comprehend the information. There were also perceived benefits in being able to keep up to date and current with colleagues' work and projects that provided the potential for collaboration and cooperation and input into participants' own work.

A majority perspective emerged on the capacity afforded by the informal network for professional development and job-related learning. There was strong consensus that social media enhanced knowledge and awareness of the security context. The network provided the opportunity to remain up to date with the latest news and information of what was happening in the field and to remain aware of new advances. The ability to discuss and share information and personal experiences on job-specific issues and challenges was cited as a key benefit where there was not much evidence or best practice to solve the problem. Another advantage was the possibilities for feedback from colleagues which was perceived to positively connect into work-related learning. This related to the potential for adopting new practices and solutions through being able to discuss, watch, observe and imitate through materials shared on social media. Participants cited the potential to establish relationships and collaborate with people from different professional backgrounds and disciplines and viewed as advantageous for obtaining diverse input into problems and issues. One perspective cited the potential to learn about new trends, practices, and opportunities in the security industry.

Respondents identified multiple different personal benefits from sharing knowledge in the network including the development of relationships and raising their own personal professional profile. The development of relationships with colleagues and like-minded professionals that would not have been possible through traditional communication channels was cited as a benefit. Active participation in the network had for several led to professional face to face meetings and resulted in increased opportunities for cultivating and transforming weaker associations into stronger relationships. Multiple views indicated beneficial opportunities for personal and professional promotion, as social media could be used to disseminate their own specific experiences and knowledge as a means for gaining professional acknowledgement and affirmation, enabling the development of further professional contacts in addition to collaboration and work opportunities. Mention was made of reputational rewards from participation in networks, and the desire not to be seen as left out of colleague networks.

Another perspective argued that the value of the knowledge and information shared on social information was high given that it was frequently based on members' professional experiences in similar or recent situations as well as knowledge gained from external sources and professional development.

For a small number of participants benefits accrued from the ability to network not just internally but also externally with other organisations and relevant bodies. Reference was made to increased awareness of pertinent professional events and networking opportunities that could support organisational as well as personal professional development. Another benefit cited was the greater facility and ease with which experiences and knowledge from a broad range of people could be shared. The point was made that everyone could contribute something providing access to varied perspectives, thoughts and knowledge according to the experience of each. It was noted that social media provided an open environment where professionals from all security backgrounds were able to openly discuss security issues and

events and easily socialise and share their critical knowledge with each other.

## 5.8 Risks

Regarding the risks of knowledge sharing in social media a number of themes emerged of information security, reputational risks, and risk of overload. One of the most consistently cited risks centred on information security and the potential to disclose sensitive or confidential information to external organisations. Participants underlined the strong requirement for confidentiality that existed between the security organisations as members could be party to highly sensitive information such as ongoing investigations. Several participants noted that the rapid and spontaneous character of social media provoked a risk that information could be shared that had not first been reviewed or filtered. It was noted that inadvertent or ill-judged publication could attract consequences on a professional and organisational level. Another noted the consequences for knowledge sharing in social media:

*“Social networking can be high risk in terms of information security. Members of the network are strongly conscious of information security and this can hold back benefits of social media if personnel are afraid of compromising security.”*

There were strong perceptions of risk that engaging in knowledge sharing with external organisations in social media could result in damage to personal and professional reputation. This was associated with the potential to make mistakes or reveal incompetence or lack of knowledge outside of their own organisation, which in turn would broadly undermine their personal and professional credibility and possibly their career. Some participants suggested that this held them back from engaging in knowledge sharing such as responding to a posting or asking a question. According to one perspective:

*“Even though social networking helps us to be better aware of security situations there are many barriers that mean we are not making best use of*

*this mechanism. It is very biased because you unless you have the right connections or you are willing to risk your reputation it can be difficult to learn or access deeper knowledge.”*

Another participant remarked:

*“At the moment it is not possible to promote real collaboration even though the potential is great. Making connections or initiating or creating discussion is difficult between organisations because people are trying to preserve their reputation and not put themselves at risk.”*

Risks to professional credibility could also emerge from the potential to inadvertently offend or breach interpersonal protocols:

*“You have to be careful when commenting or critiquing something posted in the network or if you’re having a discussion about a procedure or a specific operation for example, as you could unwittingly offend someone and they may perhaps be a superior or someone influential in the agencies.”*

Participants stressed two key risks associated with the informal character of the social media networks. Firstly, there was a consciousness that they were strongly dependent on the personal relationships of the members:

*“these personal relationships and networks have value for an organisation, but this value is tenuous and can quickly be lost should that person leave the organisation or move to another unit or department.”*

Another perspective underlined that informal networks did not reflect the same levels of accountability as formal networks in which traceability and documentation were the norm. This participant perceived some risk in a lack of formal recording of requests for information and its subsequent passage.

Some emphasis was further placed on the risk of information overload from the significant volume of posts within the network. These were perceived to hamper the ability to filter and absorb important messages and information,

or to establish connections between the "bigger picture" and the details of a situation.

## **5.9 Barriers**

Several barriers and challenges impacted on interorganisational knowledge sharing in social media networks. Significantly these barriers influenced the extent to which members have trust and there are effective mechanisms to share information with each other. Interoperability, resources, trust and organisational culture emerged as consistent themes.

### **5.9.1 Interoperability**

Interoperability was identified as a major barrier for inter-organisational knowledge sharing in social media linked to a perceived lack of standardised policies and protocols that could facilitate it. A significant perception existed that the agencies had different information control processes and mechanisms, and procedures had yet to be clearly defined that allowed members to confidently share information across the whole network and with members of different organisations. Participants were unaware of any explicit documentation or guidelines that specifically addressed interorganisational knowledge sharing on social media. As a result, some ambiguity was perceived in relation to the role of social media for inter-organisational knowledge-sharing based on uncertainty in relation to what should or could be shared. One interviewee expressed reservations in relation to how far social media could be used to interact about security issues with customs or ADAC.

Participants further identified that management direction or support for the development and dissemination of standards appeared to be lacking:

*“Although leaders are keen for this to work effectively, we need more focus on how this translates into practice. We need to establish common systems and procedures that remove unnecessary obstacles and give people clear guidance about what to share and how it can be shared.”*

Some frustration was expressed towards the absence of formal protocols as this hindered the utilisation of the network to its fullest potential. According to one:

*“I think it can be powerful to reach out to discuss work-related problems with other organisations but there is no guidance or structure for this.”*

### **5.9.2 Resources**

The results identified resources as a key barrier to interorganisational knowledge sharing in respect of two main dimensions: time and technological tools. There was strong consensus among respondents that pressures in the workplace limited the amount of time that could be committed to engagement activities. Responses identified different factors and features associated with social media which negatively impacted on time. A key aspect was the complex and time-consuming challenge of locating information and knowledge within the network. One participant explained:

*“On the one hand it offers the richest and most diverse range of topics and security issues, but at the same time it can be challenging to effectively locate, acquire and organise this information. For example, if I want to search and aggregate information about a topic, it can be a very time-consuming process. At best I can only have the time to gain a snapshot view or a small stream of a longer discussion.”*

Time pressures further hindered relationship-building and the ability to fully maximise the social networking benefits of social media: *“It can be very hit and miss and requires a lot of effort to locate knowledge, I have a broader network of contacts but this has taken time”*. This was supported by another participant: *“We rely heavily on existing contacts because forming new contacts is difficult due to time.”*

There was also emphasis on technological processes and systems which hampered engagement with the network. The most cited factor was an absence of appropriate technological tools and features to document and make accessible group interactions and decisions. This resulted in a lack of

knowledge repositories and challenges to store and retrieve information for members to review and explore. As one participant noted:

*“Social media is a continuous stream of information, and it’s very fragmented and chaotic which makes it difficult to keep track of threads of discussion in the Whatsapp groups. It’s easy to overlook an important comment or point.”*

An implication was noted in the impact this had on the ability of new members of the group to learn about previously discussed topics and group decisions which in turn impeded their incorporation and integration into the network.

### **5.9.3 Trust**

The role of trust as an impediment to inter-organisational knowledge sharing in social media emerged as a key theme. Firstly, participants identified a lower level of confidence in the quality of information and knowledge shared on social media by other organisations. This resulted primarily from weaker and fewer ties between members of different organisations that meant that they were less inclined to accept information quality at face value as there was uncertainty in relation to the source. Having fewer relational ties with other organisations influenced the ability to adequately evaluate the source or potential recipient of information and knowledge, as a participant explained:

*“Before sharing certain kinds of information in social media I have to be very sure about who it is being shared with, and generally I know who they are, what they do and at what level they are. However, I have very few contacts in the networks outside of my organisation and don’t know a lot about their professional profiles, which makes it unlikely that I would share much with them.”*

This was further linked to a reduced ability in social media to assess the credibility of the sender of the knowledge. Specifically, the non-physical nature of social media meant that network members could not “see” from whom



they were seeking knowledge or receiving information. This presented difficulties as it was challenging to gauge how to receive the information or interact or respond appropriately, as one participant underlined:

*“I know there are experts in the different organisations that are highly knowledgeable, and I used social media to locate these people and try to develop connection. It’s frustrating because it is difficult to approach and contact members without knowing their position.”*

The issue of trust was also evident in concerns expressed over the potential for information to be misused by external entities. This was not directed at the organisational level but rather focused on the potential for individuals in other organisations to inadvertently misuse or disclose sensitive information shared on social media. The openness and accessibility of social media was perceived to be a major factor in this regard that reduced control over how the information could be used and disseminated. Attention was drawn to the lack of policies and guarantees against misuse between the organisations.

#### **5.9.4 Organisational Culture**

The results pointed to organisational culture as a major barrier in relation to specific aspects of rewards and incentives and power dynamics. There was some consensus that a lack of rewards or incentives to encourage engagement in knowledge sharing in social media represented an obstacle and to some extent undermined the overall goals of the network. This was because without clear incentives many members were reluctant to engage in knowledge sharing and perceived greater risks than reward. One interviewee stressed that:

*“By sharing your knowledge in social media in a way you’re drawing attention to yourself and making yourself vulnerable to public scrutiny. For many this is a big step and not having any kind of incentive system that rewards this is a serious omission in promoting an effective knowledge sharing network.”*

Participants viewed rewards as a positive influence that would act as a clear signal of desired behaviour:

*“I think some sort of an incentive system is essential that can help nudge people in the right direction and shows them that this is something they should be paying attention to.”*

Another participant noted a key implication:

*“There is no system of recognition for sharing knowledge in the network and I think this can impact on the quality of information shared.”*

For some participants power relations represented an obstacle to wider knowledge sharing between organisations. There was a perception that people’s expertise and specialist knowledge provided them some status and social influence within the network, and as a result they may be unwilling to potentially reduce a source of power by sharing their knowledge. One participant summarised this thus:

*“Knowledge is a valuable asset and there is a sense that people could contribute more within the network but are sometimes withholding their knowledge. Possibly they may feel that to share their expertise with all members may devalue it as it is now common knowledge.”*

Another participant suggested that the reciprocal benefits in sharing skills and knowledge across organisations were uncertain, and as a result member may be unmotivated to do so.

## **5.10 Conclusion**

This chapter presented the results of the case study analysis investigating inter-organisational knowledge sharing practices within social media. Firstly, the social structure and relations of the Abu Dhabi network and the Dubai network using social network analysis were examined. This provides a quantitative assessment of both networks in terms of centrality and distance of actors between the organisations and density and betweenness centrality. This analysis was supported by qualitative analysis of interviews of members in each of the organisations in the network. The data was thematically analysed and key themes were identified on social capital and knowledge creation dimensions within social media and the risks and barriers for intellectual capital. These findings will be discussed in the next chapter to address the research aim and in accordance with the key research objectives of this study.

## 6 DISCUSSION AND ANALYSIS

### 6.1 Introduction

This research investigated inter-organisational knowledge sharing in social media and the contribution to intellectual capital. In respect of this goal the research considered three key objectives:

- To identify the key characteristics of knowledge sharing using social media that results in enhanced intellectual capital in security awareness and threat intelligence
- To evaluate the impact of inter-organisational knowledge sharing on security situation awareness that results in a novel taxonomy of factors
- To develop an inter-organisational knowledge sharing framework that is underpinned by guidelines to support effective integration of knowledge sharing with social media

This chapter discusses and summarises the findings related to each of the above research objectives. The first part of this chapter discusses the findings on inter-organisational knowledge sharing in relation to the three dimensions of social capital: structural, relational, and cognitive. The discussion addresses the knowledge creation process from the perspectives of the SECI model which assesses the nature of knowledge sharing in each of the four dimensions: socialisation, externalisation, combination, and internalisation. The third part of this discussion addresses the different barriers and risks associated with inter-organisational knowledge sharing within social media. Finally, this chapter integrates the findings from these strands of research to evaluate the impact on intellectual capital within the specific context of security situational awareness.

### 6.2 Structural Characteristics

Network analysis was conducted to investigate the structure of organisational and inter-organisational connections in each of the two case studies of Abu Dhabi and Dubai. Five measures were examined of degree of centrality, diameter, density, closeness centrality and betweenness centrality that identify the structure of social interaction between network members, their access

to other actors and the channels for the flow of resources and information (Hazleton and Kennan, 2000; Tsai and Ghoshal, 1998). Few members were highly connected or central in position to each other and even fewer occupied influential mediator positions between members.

The findings for degree of centrality show that the majority of members had a small number of links in the network, on average between 3 to 5, indicating that few were highly connected to each other. This suggests that many members are not integrated and are more difficult to access. Cross et al., (2002) argues that this represents a source of untapped knowledge and information for other members. In both cases some individuals had a much higher number of connections or as few as 1 connection, therefore on balance only a few people occupy central positions. This has an implication for the effectiveness of the dissemination of knowledge. Social network theory suggests that the position of an individual in intra-organisational networks can impact their likelihood to engage and interact and ultimately transfer knowledge and other resource to other members (Coleman, 1988). Actors who are centrally positioned have a higher number of contacts, and as a result can more easily obtain and gather external knowledge (Monteiro et al., 2008). Moreover, there may be impacts on the quality of shared knowledge, as there is a significant correlation between individual degree of centrality and knowledge quality (Sedighi and Hamed, 2016). This is because for central individuals there is a greater quantity of knowledge links which facilitates easier access to valuable knowledge than for those located more on the periphery (Adali et al., 2014; Estrada, 2011).

The results for betweenness centrality ranged between a low score for Abu Dhabi to a moderate score for Dubai. The findings showed that only a small number of members were highly influential in terms of acting as intermediate links or brokers between members. In the knowledge management and innovation literature there is significant consensus on the overall importance of mediator and broker roles in knowledge communication processes (Muller-Prothmann, 2007). According to Tasselli (2015) those assuming gatekeeper or broker roles are more likely to have access to valuable

knowledge and to be able to help the transfer of knowledge between different professional groups and divides in the network. The small number of members undertaking these roles in the case networks suggests that there is significant scope for supporting a wider number of members into mediator roles if the network is to be fully optimised. Moreover, high betweenness centrality can also represent a burden for some members which could be magnified if falling on the shoulders of a few only and potentially reducing their effectiveness to perform their roles. Arya and Lim (2007) show that centrality can negatively impact on individual development and objectives as expectations and obligations may entail significant investment of their own resources in comparison to other members of the network. Furthermore, members may have to face several hops before they locate needed knowledge or expertise which may decrease the rapidity of knowledge sharing within the network. This conclusion is supported by research which shows that a limited number of central connectors can result in bottlenecks building in the network so that both information dissemination and bridging activities for other members are slowed or diminished (Chan and Liebowitz, 2006; Cross et al., 2002).

Abu Dhabi and Dubai both had low scores for closeness centrality showing that the majority of members were not highly connected or central in position to others. The reduced levels of closeness centrality in the case networks are likely to undermine the extent of knowledge sharing in the network and the mutual behaviour that promotes engagement and knowledge sharing. Literature shows that high closeness centrality scores for knowledge network members correlate strongly with those who are also givers and matchers. This means that central members are significantly more likely to be active users and contributors to any knowledge base of explicit materials generated by the network and to engage in direct messaging, communication, and dialogue (Cetto et al., 2016).

On the other hand, in the inter-organisational context there may be caveats to promoting strong levels of network closeness centrality. Inter-organisational networks with high closeness centrality are able to rapidly disseminate

information within the network through their trust-based development of relationships, however networks with low closeness centralisation demonstrate better ability to generate new information and build on diversity (Yessis et al., 2013). This points to implications for the design of knowledge sharing networks in terms of achieving a moderate level of centralisation that is optimised for different facets and processes of knowledge sharing.

The findings show that in both cases network density was low, indicating loosely connected networks in which members had only linked with a small proportion of possible connections. This result points to a network in which few members are in direct contact with each other and members are generally isolated and relatively distant. The implication is that direct communication and reciprocity in knowledge sharing are undermined. According to Bouzdine and Bouzdine (2004) these aspects of knowledge networks are partly reliant on high network density and trust. Again, literature points to the necessity for maintaining a balance for organisations in promoting effective network structure and design. High density networks focused on specific professions or functions have been shown to have costs in terms of more pronounced isolation from other groups and professions (Tasselli, 2015).

Diameter results show that the network size was relatively small and members on average had a limited number of links to reach the most distant members. There may be advantages to a smaller network diameter, as some literature suggests that a smaller network distance between outlying members means that information is disseminated more accurately and in a timely manner, while conversely long distances can slow transmission and lead to distortion (Cross et al., 2002).

These findings indicate an overall lack of structural diversity that reflects a low level of cross-network connections. The density and centralisation statistics for both the Abu Dhabi and Dubai networks bear out this dependency and emphasises the influential role of senior managers. Managers are responsible for sourcing and disseminating that is consistent with the view of

social media as an information channel. The direction of the relation is significant in emphasising a directed relation where information flows from senior members. This effectively limits the scope for feedback and sharing of knowledge creation based on collective knowledge of the whole network. Moreover, this situation points to major dependency on a small number of actors to facilitate knowledge sharing between organisations. It could be argued that this in effect constrains the effectiveness of knowledge sharing to the strength and number of ties these actors possess with members in other organisations. Research emphasises the importance of diverse cross-network connections and the role of boundary spanners and brokers in facilitating knowledge transfer (Hustad, 2007).

This issue is characterised in the literature as a structural problem, which identifies an absence of social connection between different parts of either intra or inter-organisational networks (Burt, 2017; Ahuja, 2000). Such holes are common in fragmented networks and organisations and can challenge the ability of network members to connect with and benefit from other members as knowledge resources (Gulati, 2007).

Thus, the characterisation of the existing social network has significant scope for greater integration to facilitate increased access to different expertise between networks that would enhance security situational awareness across the network as a whole. This centralisation issue is noted as major in Arab contexts with low levels of delegation, and lack of power of autonomy of lower level employees (Al-Rasheed, 2001). These results suggest a major burden on managers to source and screen information that in turn limits the time that managers can allocate to relational practices such as providing leadership and support, encouraging dialogue, and organising and developing ties. One advantage of centralised relations and hierarchical control evidenced in these networks is the level of control over the number and type of connections. However, this places significant dependency on the particular skills, capabilities and attitudes of these actors which influences quality of relations, perception of priorities and therefore the level of trust they possess with other actors that in turn impacts on the level of inter-organisational



integration and collaboration. The implication is that actors positioned in central roles need to be carefully selected to maximise the effective dissemination of information and capable of developing relations. This places focus on ensuring both relational and trust aspects as well as technical and digital capabilities. Furthermore, this centrality creates a high level of vulnerability when there are changes in personnel and such actors are relocated.

### **6.3 Relational**

The low level of relational capital evident from the findings can be associated with the different facets of Arab culture. Firstly, the high level of power distance in Arab cultures is consistent with the authoritarian approach and acceptance of superior members' influence within social media. The results of the relational dimension revealed that inter-organisational knowledge sharing is significantly hierarchical and managerially controlled.

It is evident that social media is utilised for scan and searching and exploring explicit information. However, the relational capital at the lower levels is limited and this means that tacit knowledge generated at the individual level remains there. The relations between members are tentative and coalesce around a small number of senior level members who are mediators of knowledge flow between organisations. Lower levels of the organisation have considerably less influence in knowledge flow between the organisations and there is clear distinction in roles. At higher levels the findings suggest that managers are responsible for sourcing and dissemination of information internally and between organisations, while lower-level personnel consume information in their role as passive observers. In countries with high power distance Arab cultures there is acceptance on this reliance and role between managers and subordinates (Obeidat et al., 2012). Based on this context, the evidence indicates a higher level of relational capital in the senior ranks among key actors or specialists and therefore social media enables greater interactions. However, tacit knowledge development requires a two-way interaction whereas the results suggest few opportunities or visibility of progression for passive observers to become active participants.

While aspects arguably also relate to intra-organisational knowledge, the organisational distance and differences between organisation creates greater challenge for members to connect beyond organisational boundaries in social media. The findings suggest that relational capital is limited due to clandestine nature of knowledge-sharing practices that was identified as associated with a tendency for secrecy and closed culture between organisations and individuals that made it challenging to openly share information. This is consistent with research in other studies which have shown that Arab culture is intensely closed (Attiyah, 1996; Mohamed et al., 2008). The findings further point to low relational capital in respect of the level of organisational and individual trust between members across organisations. Research has shown that long-term trust is a critical factor in knowledge sharing (Al-Esia and Skok, 2015).

The findings furthermore suggest that other aspects of Arab culture constrain open dialogue and limit opportunities for members to connect between organisations. In these cases, trust appears to be critical in Arab organisations dependent on different trust factors: trust in formal sources, trust in kinship, trust in expertise, and trust in quality of information. In many studies mutual trust has been found to be central to knowledge sharing between professionals on social media (Panahi, 2014; Hosein, 2013; Zhang and Dawes, 2006). The concern about quality is consistent with Arab research that showed low perceptions of the quality of collaborative problem solving (Al-Esia and Skok, 2015) and trust.

It was expected that social media would provide strong bricolage rather than the distance and low level of socialisation identified in the two inter-organisational networks. However, the literature shows that trust in Arab cultures is a significant precondition for interaction (Weir and Hutchings, 2005). Before feeling confident and secure Arabs need to develop a strong sense of security before sharing their knowledge (Weir and Hutchings 2005). It is evident that social media presents a unique social space that provides a new dimension of complexity and challenge in building trust.

In this case study there is major reliance and trust in the information shared by senior managers but less in terms of trust in peers in the network. This may be the function of different factors that converge to make it challenging for members at different levels and across organisational boundaries to openly and frequently engage with members in social media. **The findings are in line with the study by Muhammed and Zaim (2020) who found that employees' engagement in knowledge sharing behaviour with their peers and their managers leadership support exert a positive impact on organisation's knowledge management success.** This aspect is found to be critical as trust is argued to have an increased effect on the readiness to share tacit knowledge as it expands the participants' willingness to assist each other and understand external knowledge (Lane et al., 2001). Nevertheless, the results point to the closed nature of the network that inhibits opportunities for members between organisations to develop trusting relations. This issue is reflected in the low interaction and centralised and low interconnectedness of the network. The literature suggests that the regularity of communications exchange is key to establishing the trustful communication that can encourage knowledge sharing (Hosein, 2013).

Relational capital is focused on trust in kinship through family ties and close connections. This characteristic is consistent with collectivist cultures such as the UAE that are based on trust and loyalty in strong/close groups (Hofstede, 2001). This means inter-organisational knowledge sharing is only effective where members are able to identify and establish relationships with kin or close relations in the other organisations. Given that inter-organisational knowledge-sharing flows through a small number of key individuals then the issue is more constraining as it depends on individuals having kin ties. Social media was viewed as a visible platform where one's behaviours and communications can be scrutinised and held to account which was reflected in the perceived risks. For members in the Arab network the findings suggest that trust is a protectionist mechanism where members rely significantly on close and strong relations. Additionally, trust in experts or those that demonstrate high level of expertise and competence is a key relational aspect of social capital. This means that the availability and accessibility of

experts in the network can support knowledge sharing within social media across boundaries.

However, the lack of transparency and visibility of members that has been noted creates challenge for locating experts. The cultural context further limits the scope for members to locate and engage with experts in other organisations. The ability to identify and explore connections beyond boundaries appears to be limited by the willingness or motivation to engage in knowledge share more widely. This can be associated with the sense of ambiguity and uncertainty suggested by respondents and strong perception of risk in engaging beyond their established close ties. To some extent this may be attributed to the absence of clearly defined formalised protocols and mechanisms for knowledge sharing in social media which creates significant uncertainty or fails to provide assurance. The literature suggests that trust is enforced when organisations establish highly embedded social relational pathways (Chen et al., 2014). Respondents cited limited open interaction with members in other organisations which is a finding that may be explained by the unique Arab cultural context. The UAE is characterised as highly uncertainty avoidant which maintains a rigid code system. The strong sense of caution to communicate outside rigid codes of conduct means that the process of trust building and understanding and learning is undermined. Without the confidence to communicate openly within the inter-organisational network members have less opportunity to ask questions and provide support and locate and share resources. There is less scope for members to displace their knowledge and expertise for fear of damage to their reputation or prospects.

The sense of isolation and disconnectedness from other organisations is consistent with the inward perspective suggested by the findings. This is borne out by findings that suggest relational capital is concentrated with closed communities and reinforced by other Arab cultural traits. This was characterised in terms of organisational mistrust, and low trust of reciprocity by other organisations. This can further be reinforced by a sense of secrecy and power dynamics of Arab organisations resulting in control and

management of knowledge when it best suits specific goals. In the public sector and security sector the factors impacting knowledge and information sharing are more challenging and diverse when different government agencies and organisations are involved (Yang and Maxwell, 2014).

The wider information privacy and perceived security risks evident in security organisations further reinforces this independence between the three organisations in the inter-organisational network. The implication is that within the closed culture the level of integration between organisations within social media is limited to ad-hoc co-operative information sharing. This literature suggests that the presence of transparency and honesty are key influencing factors in the creation and maintenance of trust (Carlos and Candido (2013).

The literature emphasises the importance of trust for improved inter-organisational collaboration and knowledge sharing (Chen et al., 2014) and its key role in enhancing communication and efficiency of information sharing (Willem and Buelens, 2007). However, these findings show that cultural factors create significant impediments for members to engage openly in social media. The uncertainty and perceived risks associated with more open dialogue limits the ability for members to establish connections, explore and communicate to develop ties and trust. Thus, it may well be that the risk factors and the trust dependency discourage members from engagement beyond organisational boundaries due to the generation of negative consequences. This is consistent with evidence from the literature that identified significant uncertainty avoidance in respect of knowledge sharing between co-workers who generally evidenced a cautious approach (Al-Esia and Skok, 2015). Cultures with high uncertainty avoidance are characterised by management that is formalised and an environment in which innovation is limited by rules (Hofstede, 2001). At the very least it limits the frequency and intensity of communications between different members and promotes passive connection with the managers. This may explain the focus on explicit information dissemination in the face of challenges. As the literature suggests tacit

knowledge is highly subjective, based on experience, and difficult to convey and communicate (Hau et al., 2013).

It seems that social media from the relational perspective revealed the formation of sub-communities where individuals were able to identify and establish relations around specific interests across networks. The sense of identity and group belonging is consistent with the perspectives identified in other studies. Extensive cross-organisational survey evidence from Bharati et al., (2015) points to strong mutual support and group identity among users in their professional social media networks. Jarrahi (2017) underlines a strong sense of rapport within such networks facilitated by social exchanges.

In these communities there was strong commitment to learning and sharing expertise. This result aligns with Jarrahi (2017) who shows that within networks smaller, trusted groups with more focused, shared professional interests are frequently relied on for advice and guidance, while on the other hand there was also reliance on the network as a whole when seeking solutions to problems. Notably, in both the Abu Dhabi IKO and in Dubai, in most of the small number of communities of practice identified, there existed already strong interpersonal connections. Such context more easily enables tacit reciprocal exchanges to be widespread (Smedlund, 2008).

The formation of informal connections is a related finding emerging from this research. The result suggests that employees where possible establish informal cross network connections. This can be argued as a backchannel for knowledge sharing that mitigates the constraints placed by cultural aspects. The literature shows that means of informal social activities and coordination and communication can be fostered while the aspect of reciprocity develops trust and in turn advances the flow of resources (Hsu, 2015). The tendency for members to explore informal opportunities suggests an important role for such informal mechanisms and the value and structure of informal networks in cross network knowledge sharing where formal procedures or culture may restrict communications. In this study,

members pointed to security and trust in sharing information with colleagues in discussion groups.

## **6.4 Cognitive**

Perspectives and attitudes in relation to shared meanings and interpretations between organisations and members in the network were explored. The findings indicated the strength of cognitive capital varied across dimensions of shared understanding and levels of the organisation.

Firstly, the findings revealed a shared inter-organisational understanding of and commitment to the overall vision and goals of the network. There was a strong sense of vision shared by the majority of respondent about the commitment to excellence, innovation and continuous learning. These values are consistent with the strong national and organisational visions. Many respondents further shared a strong vision on the significance of security and vigilance and high level of security awareness. The role of social media was associated with information sharing between professionals and between organisations to achieve the highest levels of security. The finding aligns with studies which highlight that professional social media networks are frequently characterised by a shared vision and common interests (Rathi et al., 2014; Panahi, 2014; Caldas and Candido, 2013). Panahi (2014) highlights that a key value of social media is the building of networks of professionals from different places with similar interests.

There was a strong sense of shared vision between senior level actors who were able to provide some sense of the general organisational goals and priorities. However, there was less understanding of more specific goals and interests of other organisations. This finding was most notable with lower level of organisations where the findings suggested less of a shared sense from the majority of employees on the key goals of other agencies. The findings show that there is an established, widely shared view on the key strategic and over-arching goals focused on the importance of continuous improvement and innovation and vigilance in security awareness.

Further, this finding indicated different perceptions between senior managers and those of subordinate levels in terms of how social media is adopted and used to achieve these goals. For senior managers there was a focus on social media as an information system or mechanism for disseminating information and explicit content that updated members' knowledge and awareness of security issues and policies. In contrast, among more junior levels there was an alternative view that social media should be used as a tool for learning, self-development and problem-solving, purposes that were being neglected in current usage.

These differences may be explained by the low level of relational capital and structural capital discussed earlier. The low level of social interaction implied by the findings undermine the development of shared understanding that help shape a common set of visions, goals and values (Tsai and Ghoshal (1998). These relational aspects of social capital mean that while members are exposed to explicit knowledge from different organisations, they are limited in terms of their ability to become aware of new alternatives that they can apply to their internal context. The findings on cognitive capital suggest the potential for misunderstanding and less bonding around shared visions. The literature shows that this is key in stressing the relevance of shared goals that promotes the exchange of information and resources and a sense of solidarity (Atuahene-Gima and Murray, 2007). This lack of shared vision may also be one of the contributing factors that hampers the development of trust. This is consistent with Chen et al., (2014) who finds that shared goals play a critical role in trust-building.

Ambiguity surrounded knowledge sharing practices and the specific practices of interacting and communicating with members externally. This may be explained by the lack of protocols and guidelines that provide clarity and consistency in knowledge sharing in social media. This is consistent with issues identified in the literature that underlines complexities in knowledge between organisations related to culture and value differences, definition of procedures and mechanisms and organisational boundaries and awareness



about what can and cannot be shared (Gil-Garcia et al., 2007; Pardo et al., 2009; Pardo et al., 2004).

The results further identified that discrepancies existed in terms of shared language and meanings across different network participants that impacted the achievement of shared vision. This was influenced by factors related to a lack of common understanding of terms, expressions and concepts or their inconsistent use across the organisations and which were shown to impede effective communication. The literature suggests that the presence of shared vision, and in particular shared language, enhances intentions to communicate tacit knowledge (Göksel and Aydintan, 2017; Yang and Farn, 2009). Shared language and narratives within organisations not only facilitate knowledge sharing and communication but also provide a structure for members to perceive and interpret knowledge, and supports the development of novel concepts and new forms of knowledge (Nonaka and Takeuchi, 1995; Berger and Luckman, 1991).

Findings revealed that development of a shared language and narratives were further undermined by cultural differences in communication styles and etiquette which could create distance and hampered open communication. Members were considered to be lacking detail and to be abrupt in communications and postings. Most respondents indicated negative views that their efforts would be consistently reciprocated outside their close network. The literature shows that expectations and obligations are key with trust viewed as the most critical asset generated by a relationship (Nahapiet and Ghoshal, 1998). The existing relational and structural dimensions may not be sufficiently reflective of the trust and interdependence needed to promote regular interactions between members across networks. This is consistent with other research that shows that a high level of interconnectedness and frequency of interaction is necessary for reciprocation.

## 6.5 Knowledge Sharing Practices

The knowledge sharing between organisations was analysed in line with the four dimensions of the SECI model: socialisation, externalisation, combination, and internalisation.

The findings show that knowledge creation and sharing within social media is more developed in some dimensions than others. In respect of the socialisation dimension, it was expected that due to the value placed on socialisation by Arabs the findings would reveal intensive socialisation practices (Weir and Hutchings, 2005). The results however revealed some socialisation within social media which was significantly constrained and imbalanced. For instance, while socialisation and the sharing of tacit knowledge was evident in some form between organisations this occurred within specific cultural boundaries. It was concentrated around senior members that have developed long-term trust relationships and have strong kinship or personal ties with members in other organisations. Socialisation between organisations at lower levels of the organisations was extremely limited. The findings suggest that cultural factors generate a closed culture that limits the ability and willingness for members to engage in sharing experiences. The literature emphasises the configuration of networks to be conducive to open exchanges. The provision of an open environment for discussion and socialisation and knowledge sharing supports a range of research which highlights that these characteristics are key components of the appeal of social media for knowledge sharing (Jarrahi, 2017; Panahi et al., 2014; Caldas and Candido, 2013). The findings suggest that social capital influences the degree of socialisation. In this study the cultural context within social media appears to limit the development of relational and cognitive capital that facilitate socialisation processes. Caldas and Candido (2013) highlight participants' views that all members can have a voice on social media. However, the findings in this study show that socialisation processes between organisations fail to leverage a wide range of opportunities that social media presents for sharing experiences. The sharing of tacit and experiential knowledge supports evidence from multiple different studies

which point to the significant prevalence of this type of knowledge sharing over social media. Jarrahi (2017) finds that social media is increasingly used as a source for obtaining and sharing informal information. Further, the literature points to the use of social media to share professional opinions and views, framed experiences, stories, best practices, unusual cases, and solutions to problems (Rathi et al., 2014; Panahi, 2014; Zhang et al., 2010; Jackson et al., 2007; Efimova and Grudin, 2007).

The passive nature of knowledge sharing influenced by hierarchical control, organisational mistrust and risk aversion are major factors that reduce the freedom of members in the network to speak openly and share experiences. Socialisation seems to be problematic within social media if the cultural nuances are not addressed. The evident tension that is typical in Arab cultures between managers and employees and between organisations creates a polarised network which may serve to undermine cohesiveness and confidence to participate proactively. Another issue relates to the attitude towards knowledge where it is not fully viewed as an open asset but rather something that is exchanged for value at the right time for a specific purpose. Further, the hierarchical context creates a top-down knowledge sharing context where information is pushed out and members in other organisations have less opportunities to question or discuss, with either other members or senior members, the high volume of explicit knowledge being disseminated. The strong sense of risk aversion both at organisational level and individual level furthers creates a situation that creates reluctance to engage openly in social media and reinforces a clandestine, inward focus to knowledge sharing, which influences close sub-communities with those with whom they hold the strongest ties. Thus, it is proposed that the key impediment to knowledge sharing between organisations rests on leaders' awareness and attitudes to knowledge and the ability to promote an open culture that is sensitive to Arab values and norms.

In terms of externalisation there was evidence of intensive practices between the organisations which was exhibited in terms of practices such as documenting lessons learned and the outcomes of discussion and

brainstorming. However, there was a strong perception that this role belonged to senior level members and primarily senior managers were the sole actors. Findings on the sharing of explicit knowledge on the security sector are consistent with multiple studies which reveal that this is a key type of knowledge shared (Panahi, 2014; Zhang et al., 2010; Efimova and Grudin, 2007). Panahi (2014) finds that contents are shared from public literature and research in addition to news and events, while Zhang et al., (2010) highlights the sharing of work-related news and updates on products and technologies.

Thus the scope of tacit to explicit knowledge is concentrated at the top level of the organisation between a small number of personnel that are able due to their positions to engage in key practices. Externalisation is associated with the conversion of tacit knowledge to explicit. In this way the internal knowledge achieved from experience and observation is captured and able to be shared with others (Nonaka and Takeuchi, 1995). A range of externalisation techniques have been identified in the literature. Examples include writing notes or brainstorming or recording the outcomes of dialogue and discussion (Byrne and Bannister, 2013; Easa, 2012). However, such practices inter-organisationally are limited to senior level members that have sufficient relational and structural capital and are positioned centrally. More generally, externalisation is limited because at lower levels of the organisation members of the network lack the opportunities to engage in essential dialogue and leaders are constrained from facilitating such dialogue.

A more issue to externalisation is the focus on sharing explicit knowledge that creates major information overload. This places significant time burden on members to reflect and engage in dialogue which is critical for externalisation. These further places pressure specifically on knowledge brokers capacity to externalise context and generate more comprehensible material in other formats such as metaphors, diagrams or visualisations that are more accessible in Arab cultures. There is evidence that social media is applied to disseminate metaphorical and conceptual representations. Managers that have sufficient levels of capability and expertise and are in central positions

in the network generate conceptual models and frameworks that results in sharing of diagrams and frameworks as best practice tools. (Lai, 2005). This practice is limited to select senior members. This may be influenced by the level of abilities in converting tacit to explicit knowledge as well as low level relational capital. The literature shows that the challenge of externalisation in verbalising and framing tacit knowledge places emphasis on metaphors and analogies for externalisation (Bloodgood and Salisbury, 2001). However, the low-level relational capital acts as a major impediment because the literature shows that codification is critically reliant on complex processes involving dialogue, commenting, question and answering. This may explain why Arab studies show that externalisation is limited to specific events such as training or seminars or to documenting the results of discussions (Easa, 2012). More widely the process of externalisation would require addressing the issues of trust, risk-aversion and secrecy. This runs counter to some findings on national culture. According to Glisby and Holden (2003) collectivist cultures possess social advantages in relation to the externalisation of tacit knowledge as a result of individuals' group orientation and the tendency for high-context communication. This suggests that social media fails to exploit this advantage and suggests a more nuanced understanding of the dynamics of socialisation for Arabs within social media. Research suggests that even in collectivistic cultures there can be hierarchies and different groupings which can reduce or eradicate the trust necessary for externalising knowledge between groups. Trust is found to be a decisive factor between management and subordinates in learning organisations reliant on knowledge sharing and transfer (Retna and Bryson, 2007).

Enhanced externalisation within social media requires a shift that is identified in the Arab context, to create conditions that build on the advantages of collectivism when communicating (De Long and Fahey, 2000). The literature shows this to be a particular issue in Arab cultures as while different groups or levels within an organisation can have their own in-groups there can be minimal trust between members of an organisation. Notably, Weir and Hutchings (2005) contend that while externalisation in Asian cultures

realises the expected social benefits of collectivism, this does not appear to be the case in Arab cultures.

Combining explicit forms of information to create new explicit information was one of the most consistently noted practices for inter-organisational knowledge sharing. Knowledge combination is associated with standardisation at an operational level (Nonaka and Takeuchi, 1995). The findings pointed to a major practice among managers in the production of learning materials for wider dissemination aimed at raising security awareness and updating knowledge. Managers clarified and improved the final content and were able to contextualise it to enhance the relevancy for their specific organisation or domain. There was a strong sense of co-operation and shared vision that managers were responsible for planning and co-ordinating the standardisation and this dimension of knowledge creation emerged as most intensive within social media. There was greater co-operation between managers in central positions between organisations focused on sharing codified content to integrate for internal dissemination. This is partially consistent with evidence that points to two key ways in which combination and standardisation is commonly initiated: top-down approaches linked to planning processes, and bottom-up that arises from the needs identified during processes of knowledge externalisation (Lis, 2014). The findings in this study provide limited evidence regarding bottom-up processing at lower levels. There is little evidence that members between organisations more widely participate openly in the combination process of knowledge creation. The implication is that bottom-up knowledge and the wider experiences of employees from different organisations are not exploited and the explicit knowledge reflects the influence of a small number of key individuals rather than the collective assets. The expectation is that due to risk aversion and high uncertainty social media would stimulate wider engagement. This would be consistent with broader evidence which suggests that in cultures linked to high uncertainty avoidance, there can be greater emphasis on group decision-making, cooperation between members and a more consultative management style (Hofstede and Hofstede, 2005). In addition, the centralised nature of the networks suggests there is a time constraint on the small

number of individuals acting as mediators or knowledge brokers which would potentially constrain their ability to engage in dialogue with members in other networks. Nonaka and Takeuchi (2005) emphasise that externalising tacit knowledge is one of the most challenging and time-consuming stages of the SECI model and underline the significance of collective commitment towards achievement.

There was internalisation of the shared knowledge within the network associated with several key practices. The knowledge internalisation process is the transformation of explicit knowledge into tacit by means of direct experience (Nonaka and Takeuchi, 2005). The cases revealed that inter-organisational knowledge sharing within social media was associated with reusing and reinterpreting ideas gained from information and discussion across the organisations. The main conduit for this is predominantly intensive sharing of explicit video content and summarised conceptualisations and standardisations of new practices or explanations of new technologies. Video content or screen captures simulating use of software reflected the primary mode of communicating new values or procedures. This is consistent with research that suggests different ways internalisation can be accomplished and shows that in some countries an efficient environment for internalisation has been created based on widespread acceptance of experiential learning. In these cases, airport security simulations and visual media are intensively disseminated between organisations and therefore individuals across the network have access to organisational knowledge from all three organisations. Social media appears to provide a rapid flow of experiential knowledge through video that can be easily accessed and instantly reviewed and applied to work situations. A key impediment to internalisation is the high volume of explicit content in less accessible formats in attachments such as pdf and dense documents that are reposted. Respondents suggest these impacts on their ability to locate and identify material that is relevant to their work. This places a focus on the format and interoperability of communications to ensure that explicit content is more accessible.

Finally, the findings suggest that internalisation is limited by the ability to explore and search across domains that addresses the individual needs of employees. This also relates to the location of potential mentors or coaches beyond their organisation to support their development. The literature proposes that mentors are critical in supporting individuals to interpret and develop contextual understanding of knowledge. The evidence suggests that inter-organisational knowledge provides a high level of awareness about development and learning priorities and supports prioritisation of professional development plans. However, more in-depth support appears limited due to the low social capital which in turn constrains the opportunity to interact and build relationships that enable them to continuously learn from other experiences and enables actualisation of explicit knowledge.

## **6.6 Risks**

The findings revealed a strong sense of risk in relation to engaging in social media for knowledge sharing. More specifically three key risks emerged of information security, reputational risks, and risk of overload. The findings identified risk to reputation as a major factor for knowledge sharing across the organisations in social media. There was a strong fear that mistakes could be made, or professional weaknesses or incompetence revealed in discussions or questions that could undermine broader personal and professional credibility and even career. The results support a number of studies in which a perceived lack of personal competence is identified as a key barrier to knowledge sharing (Panahi, 2014; Ardichvili et al., 2003). Ardichvili et al., (2003) reveal that a major challenge is employee hesitancy to contribute as a result of fear that contributions may be inaccurate or irrelevant. The result is further consistent with Richey (2016) who shows that knowledge sharing was inhibited by risks that social media postings would cause upset or offence. The role of trust in the network may be a key factor in this result. Knowledge sharing situations are associated with multiple sources of vulnerability that could be at risk in terms of reputation, self-esteem, and personal values and which mean that the development of trust is a critical issue (Newell and Swan, 2000; Meyerson et al., 1996).



Maintaining information security was identified as a key risk for knowledge sharing between the organisations, not an unexpected result given the sector within which the participants operated. More broadly, this is consistent with the literature which shows that the inappropriate sharing of knowledge represents a key risk which can have major consequences (Hackney, et al., 2008). Majchrzak (2004) notes that in the case that two or more organisations share information there is always the potential for security breaches to arise. As a result, there may be reluctance to exchange knowledge for fear of losing control (Ensign and Hébert, 2009).

Findings indicate that confidentiality was a key issue in occasions when the decision was made not to share knowledge in social media. There is evidence to show that this can be a critical consideration which influences knowledge sharing on social media. Hosein (2013) shows that for older generations of workers concerns in relation to the confidentiality and sensitivity of organisational information leads to reduced comfort with work-related postings on social media. Many organisational social media policies similarly reflect concerns in relation to the disclosure of confidential information (Hosein, 2013).

Another major risk was that of information overload resulting from the significant number of postings in the network. This supports the literature which highlights information overload as a key factor negatively influencing knowledge sharing within organisational social media networks (Razmerita et al., 2016; Sajeva, 2007; Paroutis and Al Saleh, 2009). Al-Busaidi et al., (2017) finds that information overload is one of the most cited technical barriers to using social media for knowledge sharing within professional communities. The risk of information overload can significantly impact the ability of members to fully maximise the network for learning and development as well as undermine the networks' goals. Oosertervink et al., (2016) show that where information overload is a factor, participants tended to prioritise internal goals and priorities in knowledge-sharing behaviours. The ability of members to validate the information may also be constrained, which

could influence perceptions of uncertainty in its legitimacy (Oosertervink et al., 2016).

## **6.7 Barriers**

The findings identified a range of barriers at individual and organisational levels that impacted the extent to which knowledge was shared between the organisations in social media. Obstacles focused around four key themes of interoperability, resources, trust and organisational culture.

### **6.7.1 Interoperability**

The interoperability of control processes and mechanisms to enable and facilitate interorganisational knowledge sharing emerged as highly problematic. The agencies had diverse information policies and protocols, and these had yet to be clarified and standardised for the context of interorganisational knowledge sharing to allow for efficient information exchange on security issues. Moreover, there were limitations in regard to the extent to which management support and attention was perceived to be focused on development of appropriate standards. This points to a potential lack of organisational understanding on the most effective way to promote knowledge sharing on social media in organisational policies. There is some consistency with the literature as multiple studies evidence similar perceptions among members that organisations may lack understanding of the value of social media and how to leverage organisational policies to ensure productive knowledge sharing (Panahi, 2014; Hosein, 2013; Caldas and Candido, 2013).

The findings showed that this constraint undermined knowledge sharing between members of different organisations due to the resulting uncertainty. A lack of standardised policies further appeared to influence a minority belief that social media may not be the most appropriate medium to engage in interorganisational information sharing on security issues. The evident weakness in commitment by management to ensuring interoperability of information protocols may help to shape such beliefs. Evidence from Al-Esia

and Skok (2015) suggests a broader lack of management commitment to knowledge management policies and strategies within the UAE. Potentially this sends a signal to employees in the different agencies that interorganisational knowledge sharing is not a key priority. On the other hand formal authority in this area can support consensus building between organisations and the involvement of key actors that helps to generate an environment for the development of effective and suitable strategies (Yang and Maxwell, 2011). Management support is found to be essential to provide the guidance, vision and resources that can initiate and sustain information sharing across boundaries (Akbulut et al., 2009; Li and Lin, 2006).

A lack of optimisation in this area has implications for the effectiveness of the social media networks for knowledge sharing. Research shows that policies and standards can promote relationship building and trust development as well as risk reduction in the case that specific guidance is provided (Perri et al., 2007; Gil-Garcia et al., 2007a; Gil-Garcia and Pardo, 2005).

### **6.7.2 Resources**

The results showed that resources represented a key barrier to interorganisational knowledge sharing primarily centred around two aspects of time and technological tools. In addition to general workload pressures, there were specific aspects of social media that added to the burdens on time resources: locating information and knowledge within the network was difficult and time-consuming, and initiating and developing contacts could be a lengthy process resulting in the inability to fully maximise the social networking benefits of social media.

The challenge presented by workload is consistent with results from literature (Panahi, 2014; Caldas and Candido, 2013). Vuori and Okkonen (2012) find that workload is one of the most significant factors influencing the motivation to share knowledge while Panahi (2014) shows that sufficient time to use social media is a major barrier to engaging in social media discussions. The findings in relation to social media further support the literature. In a study by Abedin et al., (2019) online interaction was identified as a time-

consuming process and represented a significant obstacle to acquiring a social network in which mutual value exchange could take place.

In this study time pressures could explain to some degree the underutilisation of the social media network for relationship-building and for more tacit forms of knowledge sharing such as dialogue and discussion and the sharing of experiences. If members of online networks find actions time-consuming or if they do not possess sufficient time to engage, research shows that they are unlikely to participate in social media knowledge sharing communities (Turner and Pennington 2015; Leung and Bai 2013).

Study results also indicated that knowledge sharing in social media was significantly hampered by a lack of appropriate technological tools to structure and facilitate key processes and practices. Gaps were perceived in the capabilities of the networks to support adequate knowledge repositories that would provide a basis for ongoing learning and development. In particular group interactions and decisions lacked accessibility as there were few features available that would allow them to be documented, stored and retrieved for review and exploration. This result is consistent with literature which shows that the user-friendliness of social media tools can significantly impact the use of social media within organisations for knowledge sharing (Wahlroos, 2010).

### **6.7.3 Trust**

The findings showed that trust was a major factor influencing knowledge sharing in multiple ways. Different aspects of trust were identified to impede the sharing of information and knowledge in social media between organisations. This finding supports the literature which emphasises that inter-organisational information sharing is significantly contingent on trust building between organisations (Akbulut et al., 2009; Canestraro et al., 2009).

Trust in the quality of the information shared by members of other organisations emerged as a key limitation. A measure of distrust linked to greater relational distance in the network than between members of the same

organisation and consequent insecurity in relation to the source. Findings showed that specific characteristics of social media added to this uncertainty and in particular a lack of visibility of the source impeded evaluation of their potential trustworthiness. To some extent this contrasts with the literature which points to the potential of certain features characteristic of social media for establishing professional credibility which in turn helps to build trust. These include the ability to display profiles, work interests and achievements (Panahi, 2014). This suggests a number of possibilities for further exploration. It could be that there is a lack of tools in the social media networks to effectively display work profiles and interests and current projects or achievements. Alternatively, it is possible that either members are not investing the time to review colleagues' profiles and/or members are failing to appropriately update profiles. A lack of visibility and the impact on trust may link to low levels of direct personal contact that are evident in the network. Sardjoe (2017) shows that despite the widespread sharing of information on social media platforms, many respondents cited the importance of seeing and speaking to other members.

Findings also revealed a trust impediment in concerns over the potential misuse of shared information with other organisations. This result aligns with the literature which shows that there is a negative impact on trust when there is apprehension over possible misuse of information by external organisations (Zhang et al., 2005; Bellamy and Raab, 2005; Faerman et al., 2001). A lack of trust in this study may link to the absence of appropriate policies and protocols identified that could provide guidance and structure to information sharing between organisations. Literature shows that a lack of regulatory support to define confidentiality and privacy borders can hamper cross-boundary sharing of knowledge and information in the public sector (Perri et al., 2007; Gil-Garcia and Pardo, 2005). Moreover, there are particular characteristics of social media that, without appropriate guidelines, may impact the willingness of participants in this study to share information given the sensitivity inherent to the security sector. Social media is associated with open participation, a minimal publishing threshold, searchability, and the rapid and widespread dispersion of information through a broad range of

linking and feedback systems (Aula, 2010). This attracts the potential for unintended and undesired consequences.

Furthermore literature shows that inter-organisational knowledge sharing in the public sector can be negatively impacted by policies which prohibit agencies from sharing regulated or sensitive information, particularly in national security and public safety sectors (Zhang et al., 2005; Gil-Garcia et al., 2007a; Gil-Garcia and Pardo, 2005). In addition, a high degree of pre-definition in information-sharing policies in terms of boundaries and goals can generate information-sharing barriers (Pardo and Tayi, 2007). This may add to employees' fear of sharing information inappropriately and underlines the imperative for the development of balanced policies that exercise reasonable control while providing flexible but clear guidelines.

#### **6.7.4 Organisational Culture**

This study identified key aspects of organisational culture which limited and undermined effective interorganisational knowledge sharing across social media. Specifically, there was an absence of organisational incentives that promoted and encouraged members to share their knowledge, information and experiences in social media. Thus, in this case theory suggests that not of all the options available to promote interorganisational knowledge sharing are being maximised, of which incentives and rewards play a key role (Pardo and Tayi, 2007). The lack of an incentive system that promotes knowledge sharing across the network could be having significant impact on the motivation to actively engage in knowledge exchange. A perception has been found to exist among some public agencies that having invested resources in staff and the network to collect and build knowledge, there is a reluctance to share their knowledge in the absence of appropriate compensation (Pardo and Tayi, 2007; Chau et al., 2001). It is reasonable to assume that this may also be applicable to knowledge sharing at the individual level.

Findings revealed that the fear of reducing a source of power and professional status through the dissemination of specialist knowledge formed a key barrier for interorganisational knowledge sharing in social media. There was

a strong sense that knowledge represented a valuable asset that members could be unwilling to relinquish. This is largely consistent with the literature which emphasises that ownership of information and knowledge is a key basis for power in organisations (Marks, et al., 2008; Ardichvill et al., 2003; Pfeffer, 1981) and can be used by owners to protect and enhance their own professional and personal status (Jarvenpaa and Staples, 2001; Constant et al., 1994). Conversely sharing information can be regarded by organisational members as entailing a loss of power and influence (Connelly and Zweig, 2014; Marks, et al., 2008; Ardichvill et al., 2003). This may be particularly applicable to the Arab knowledge sharing context. Consistent with the results of this study, research suggests that knowledge is used as a power card for the purpose of achieving status and power (Al-Esia and Skok, 2015). This is supported by Seba et al., (2012) who argue that knowledge is shared only when of advantage to the individual.

The influence of individual power relations was compounded by the uncertainty of receiving reciprocal benefits from members in other organisations. This points to a dilemma for members of the network in terms of balancing personal status and risk. Waldstrom (2003) argues that reciprocity is inherent within interpersonal social relations and therefore sharing of information stems partly from personal ego. On the other hand, if information is linked to power then information sharing logically reduces the power of the ego. Waldstrom (2003) suggests that the duality present within network relations is key to consider in terms of the role of weak and strong ties.

The association of power with information has implications for the network as the greater the extent that power relations influence knowledge sharing behaviours, the less that knowledge and information sharing takes place (Willem and Buelens, 2007). Some emphasis has been placed on overcoming such barriers through institutional pressure and embedding a culture of information stewardship over information ownership (Pardo et al., 2004; Dawes, 1996).

## 6.8 Intellectual Capital

Intellectual capital “refers to the knowledge or knowing capability” of a collective (Nahapiet and Ghoshal 1998, p245). In terms of inter-organisational knowledge sharing it refers to the network of organisations. For this study intellectual capital is evaluated in terms of the knowledge related to security situational awareness. As has been discussed an evaluation of social capital suggests a low level of structural, relational, and cognitive capital. This suggests that the interconnectedness or cohesion of the three organisations in the Abu Dhabi or the Dubai network constrains the level of knowledge sharing practice within social media due to limited socialisation that has been associated with different cultural factors such as leadership, trust, risk aversion and secrecy.

The level of intellectual capital is further constrained when assessed in terms of knowledge creation dimensions of the SECI model. This is related to social capital dimensions as the limited number and diversity of connections identified and the focus on centralisation limits the level of interaction and dialogue between organisations. Social capital and knowledge creation are critically dependent on the ability to aggregate and make accessible collective knowledge and knowing. This implies addressing the necessary conditions to facilitate trust and dialogue and on-going communication between different parts of the network. The reinforcement of social capital as an organisational benefit is consistent with a body of literature which highlights the critical importance of employees’ social capital to organisations in multiple ways: as productive organisational resources (Coleman, 1988); central to the development of intellectual capital (Nahapiet and Ghoshal, 1998; Adler and Kwon, 2000; Hazleton and Kennan, 2000), and to organisational knowledge transfer (Sherif and Sherif, 2008).

There was strong perception from interviewees that social media could facilitate access to professional knowledge and expertise from other domains, to a responsive and accessible knowledge resource, to mechanisms for feedback, learning and development and to enhance the speed and range of knowledge sharing. A range of benefits for sharing knowledge using social



media between the organisations were identified: location of expertise, informality, knowledge accessibility, professional development and learning, and raising personal profiles.

A major finding was the affordance of opportunities to develop new relationships beyond the formal culture. The findings show that the public sector stands to benefit from informal knowledge sharing, and that both a permissive organisational culture and the provision of clearly demarcated 'knowledge sharing spaces' are fundamental in this respect. In an Arab context this provides a back channel to intellectual capital.

Social network theory reflects the importance of adopting a broader perspective of human capital beyond education and technical skills to account for social relationships and connections as a measure of human capital (Subramaniam and Youndt, 2005). Employee capability is a sub-dimension of human capital. In terms of knowledge sharing the notion of absorptive capacity and disseminative capability can in themselves be viewed as a source of intellectual capital (Davenport and Prusak, 1998). The concepts of absorptive capacity and disseminative capacity are key aspects of knowledge sharing processes. For instance, absorptive and disseminative capacities influence the four modes of knowledge conversion. At the same time these can be viewed as measures of human capital in terms of employee capability as they reflect a form of collective knowledge. The ability to quickly acquire and share knowledge in the police and security sector is a particularly significant capability given the fast-changing security context. This represents a vital form of intellectual capital that security agencies have prioritised to enhance employees' capability to develop dynamic capabilities and responsiveness to the challenging and ever-changing security context.

The easier location of expert knowledge aligns with evidence across several studies which underline that searching for and finding experts relevant to a particular work issue or problem is a widespread practice within social media networks (Jarrahi, 2017; Panahi et al., 2014; Hosein, 2013). The use of social media in contrast to use of email, phone or other more conventional

methods provides opportunities for other professionals to make their knowledge, behaviours and preferences visible to others in the network, creating the unique affordance that increased knowledge of colleagues' areas of expertise can minimise the effort necessary to identify experts for a particular knowledge problem (Treem and Leonardi, 2012; Boyd, 2010).

The findings on informal networks further align with multiple studies which evidence significant perceived value for the development of relationships that lead to knowledge sharing (Garcia-Sanchez et al., 2017; Hosein, 2013; Rejeb-Khachlouf et al., 2011). Garcia-Sanchez et al., (2017) demonstrates that social contacts enable access to expanded sources of information and further enhance the relevance, quality, and opportunity of that information. The personal nature of social media has been found to have significant relevance as socialisation and individuals' personal networks have been cited as a key factor in knowledge sharing within inter-organisational networks (Rejeb-Khachlouf et al., 2011). Hosein (2013) indicates that workers leverage their network relationships to access the knowledge necessary for their work.

The emphasis in this study on knowledge accessibility and the enabling of knowledge flows as a key benefit supports multiple studies in which this is an important theme (Ellison et al., 2015; Hemsley and Mason, 2013; Majchrzak et al., 2013). Social interaction within structures are viewed as key channels for the flow of resources and information (Tsai and Ghoshal, 1998).

The advantages of social media knowledge sharing for raising personal profiles support several studies which underline the perceived benefits of social media knowledge sharing for enhancing personal professional branding (Panahi, 2014; Kucharska, 2017). Cross-sector evidence shows that enhancing personal profiles is a key aim of tacit knowledge sharing across networks and is a factor which can be used to design incentive schemes to promote knowledge sharing (Kucharska, 2017). Panahi (2014) finds that a key reason attracting medical professionals to use social media is the opportunity for augmenting professional profiles, viewed to enable them to develop

further professional contacts and more opportunities for collaboration and work.

## **6.9 Conclusion**

This chapter presented a discussion of the quantitative and qualitative findings of an investigation into inter-organisational knowledge sharing within social media. The discussion was structured in line with the theoretical framework based on the concepts of social capital, knowledge creation processes and intellectual capital. The discussion identified the key characteristics of knowledge sharing between organisations within social media. By utilising a social capital perspective, the analysis of structural characteristics within knowledge sharing shows a highly centralised and polarised network and low intensity in knowledge sharing. The evidence revealed that social capital was constrained at a relational level due to cultural factors of trust, risk aversion and power distance that influenced a closed culture and reduced the scope for tacit knowledge sharing practices as well as low level cognitive capital. The key barriers to knowledge sharing were identified and associated with trust, organisational culture, resource constraints and interoperability factors. These factors emerged as the key inhibitors to trust development and dialogue between members of the organisations. The findings also discussed the conditions and benefits of social media for inter-organisational knowledge sharing. Social media was perceived as a critical component of intellectual capital as a mechanism that has the potential to facilitate access to a responsive and accessible knowledge resource, to mechanisms for feedback, learning and development and to enhance the speed and range of knowledge sharing. A key finding was the use of social media as an informal networking mechanism and back channel which facilitated more open communications beyond the formal cultural boundaries. These findings will inform the development of a novel framework and guidelines and development of recommendations in the next chapter that promotes inter-organisational knowledge sharing within social media, and which addresses Arabic cultural factors. Such a framework will enable organisations to optimise the use of social media both formally and informally

and enhance its effectiveness in raising intellectual capital at an inter-organisational level.

## 7 CONCLUSION

### 7.1 Introduction

Social media has increasingly become a key knowledge sharing mechanism within enterprises and created unprecedented opportunities for diverse and intensive knowledge communication. The purpose of this study has been to investigate inter-organisational knowledge sharing in social media. The dynamic and rapidly changing environment and the high-risk security context has placed ever more importance on knowledge sharing between organisations. Social media represents an emergent mechanism for enterprise knowledge management in providing a real-time dynamic mode of communication that crosses multiple boundaries in time and space. Further this thesis presents novel research into the role of social media in enterprise knowledge sharing from the inter-organisational perspective and its impact on intellectual capital. The central premise of this research is that inter-organisational knowledge sharing relies on social and relational dimensions and the knowledge creation processes. The balance and alignment of these elements influences the development and growth of intellectual capital within social media. Thus this study applied the theoretical lens of social capital to contribute an understanding of the level of cohesiveness of the inter-organisational network within social media and in strength of structural, relational and cognitive dimensions as they relate to knowledge sharing between key agencies. The conceptual framework for this study integrated the SECI model of knowledge creation to evaluate the knowledge creation processes.

In respect of this goal the research considered three key objectives:

- To identify the key characteristics of knowledge sharing through the use of social media that results in enhanced intellectual capital in security awareness and threat intelligence
- To evaluate the impact of inter-organisational knowledge sharing on security situation awareness that results in a novel taxonomy of factors

- To develop an inter-organisational knowledge sharing framework that is underpinned by guidelines to support effective integration of knowledge sharing with social media

## **7.2 Summary of Key Findings**

### **7.2.1 Key Characteristics of Knowledge Sharing**

The first objective of this research was to identify the key characteristics of knowledge sharing through the use of social media that results in enhanced intellectual capital in security awareness and threat intelligence. Based on social network analysis and qualitative interviews several key findings were revealed in relation to the different dimensions of social capital and inter-organisational knowledge sharing on social media. Analysis revealed the key characteristics of the structural dimension of knowledge sharing point to a highly centralised network with a low degree of interconnectedness between organisations. The level of connection and degree of closeness between organisations was limited and highly reliant on a small number of centralised positions. Knowledge sharing was characterised by top-down asymmetrical flow. The development of structural social capital was impeded by high hierarchical control, centralised roles and lack of formal standards that constrained the development of ties and diverse structures.

The evidence showed that social capital was constrained at a relational level due to cultural factors of trust, risk aversion and power distance that influenced a closed culture and reduced the scope for tacit knowledge practices. The relational dimension was characterised by a lower level of trust between organisations and between individuals in different organisations resulting in a low level of relational social capital across the network. Knowledge sharing activity is predominantly restricted to those relations with high levels of trust and is mostly exhibited within hierarchical and close circles of family, kin, and long-term personal ties. The barriers identified reduced opportunities for socialisation and open interaction at different levels and across organisational boundaries.

At a cognitive level the moderate level of shared understanding found in the study underlines the challenges in open participation between organisations in social media. The findings indicated the strength of cognitive capital varied across dimensions of shared understanding and levels of the organisation. A strong sense of shared understanding and commitment between organisations was evident regarding the overall vision and goals of the network. In respect of other elements of cognitive capital, the network indicated distinctions and ambiguity both hierarchical and between organisations towards purpose of social media and goals of different organisations and groups and use of language and etiquette. The development of cognitive capital was impeded by factors such as ambiguity, a clandestine culture and secrecy and interoperability.

Analysis of the four dimensions of the SECI model for knowledge creation revealed that knowledge and the process of knowing was impacted by cultural distinctions that constrained socialisation, externalisation, combination, and internalisation processes. Examination of the dimensions revealed an emphasis on specific patterns of knowledge creation and sharing. The results showed that socialisation within social media was significantly limited and imbalanced. Socialisation was focused on senior members and their long-term trust relationships and kinship or personal ties with members in other organisations. Socialisation between organisations at lower levels was highly limited and influenced by several constraining factors. These included cultural aspects which restricted dialogue and sharing experiences, limited mentoring and experiential opportunities and closed specialist or top-level sub-groups.

In terms of externalisation findings indicate that the process of converting tacit knowledge to explicit codified knowledge was top-down driven, predominantly conducted by a small number of senior members with limited participation at lower levels. A range of factors were found to constrain externalisation including cultural characteristics and risk aversion, ineffective systems and mechanisms for creating explicit knowledge, and information overload which impeded efficient access to relevant knowledge.

In respect of the combination dimension there was a culture in social media of top-down driven integration and combining of codified knowledge sources to create new knowledge. This was one of the most intensive practices identified by the findings and was predominantly focused on the production of best practices, guidelines and checklists and creation and dissemination of documents and video content. The results showed that effective knowledge creation and sharing through combination was impeded by a range of barriers including a lack of transparency, visibility and persistence of information and content in social media, exacerbated by weak technical resources for storage, search and classification.

The findings show that in terms of internalisation members transformed explicit knowledge into new tacit knowledge by using and learning from the explicit sources within the network. This was predominantly associated with reusing, reflecting on and reinterpreting ideas gained from information and discussion across the organisations and audio-visual video content and simulations. Findings identified several impediments that hindered internalisation associated with a lack of appropriate technical resources to facilitate access and information overload and time constraints on reflective activities.

Findings showed that intellectual capital in terms of security knowledge and situational awareness is formed and generated within the network. Social media was perceived as a critical component of intellectual capital as a mechanism that has the potential to facilitate access to a responsive and accessible knowledge resource, to mechanisms for feedback, learning and development and to enhance the speed and range of knowledge sharing. A key finding was the use of social media as an informal networking mechanism and back channel which facilitated more open communications beyond the formal cultural boundaries. Results identified a number of constraints to the development of intellectual capital associated with low levels of social capital and knowledge creation dimensions of the SECI model influenced by different cultural factors. This hindered the interconnectedness and cohesion



of the organisations within the networks and limited socialisation and dialogue between members.

### 7.2.2 Impact of Inter-organisational Knowledge Sharing

The second objective of this study was to evaluate the impact of inter-organisational knowledge sharing on security situation awareness that results in a novel taxonomy of factors. These were specifically focused on the barriers and risks underpinning knowledge sharing and knowledge creation in social media. Findings identified several barriers that impacted on social capital, socialisation and knowledge creation and inter-organisational knowledge sharing in social media related to trust, organisational culture, resources, and interoperability. The results show a low level of trust between organisations and between peers in the network which formed a major barrier as trust was found to be a significant precondition for knowledge sharing. Trust was shown to be critically dependent on different trust factors: trust in kinship and close ties, trust in formal sources, trust in expertise, trust in quality of information, and trust that information would not be misused. **The findings are in line with the research by Karagoz et al., (2020) who investigated knowledge sharing practices in some public sectors in Australia and found that there are specific barriers that apply in the public sector ICT project environment, demonstrating that context matters.**

Organisational culture was found to impede knowledge sharing in relation to strategic and individual level aspects. There was an absence of clear rewards or incentive systems to encourage and motivate members to engage and participate in knowledge sharing in social media. Power relations hindered wider knowledge sharing as expertise and specialist knowledge was associated with status and social influence and a perceived reluctance to relinquish a source of power by sharing knowledge within the network.

Findings identified resource constraints to the development of social capital and socialisation and externalisation processes associated with two key aspects of time and technological tools. Relationship-building and locating information and knowledge were complex and time-consuming linked to an

absence of appropriate technological tools and features. Interoperability issues were associated with a perceived lack of standardised policies, procedures and guidelines that could facilitate inter-organisational knowledge sharing in social media.

The research identified that certain risks impacted on social capital and socialisation and knowledge sharing. Findings showed a high level of risk aversion among members overall associated with the uncertainty avoidance of Arabic cultures. This constrained members' motivation and willingness to participate and there was a strong perception of risk in engaging beyond established close ties. The evidence identified several specific factors that underpinned or contributed to members' sense of risk. These included risk to reputation and the fear that engaging in knowledge sharing in social media could result in damage to personal and professional status; information security risk and the potential to unintentionally disclose sensitive or confidential information in the immediate environment of social media; and the risk of information overload from the significant volume of posts within the network which hampered the ability to filter and absorb important messages and information.

### **7.2.3 Inter-organisational Knowledge Sharing Framework**

The final objective of this research was to develop an inter-organisational knowledge sharing framework that is underpinned by guidelines to support effective integration of knowledge sharing with social media. Based on the analysis and discussion of the findings a framework is constructed for enhancing inter-organisational knowledge sharing within social media. This is presented in Table 7-1 in the following section which sets out specific guidelines and recommendations that address the cultural and organisational barriers impacting on the development of social capital dimensions and knowledge creation processes within social media.

### **7.3 Recommendations and Framework**

Based on the analysis and discussion of the findings a framework is constructed in Table 7-1 for enhancing inter-organisational knowledge sharing within social media. This summarises the key findings of this study in respect of the key dimensions. The characteristics of social capital dimensions provide an indication of the strength of structural, relational and cognitive capital and knowledge creation and affordance in terms of intellectual capital. The key barriers identified reflect factors that constrain the development of social capital and creation of knowledge within social media. It is evident that unique characteristics of Arab culture exert significant influence in knowledge sharing practices between organisations. The third column addresses the limitations of cultural factors suggested by the findings and presents culturally sensitive guidelines for optimising dimensions of social capital, knowledge creation processes and intellectual capital. While this framework and the recommendations address the conceptual distinctions of social capital and knowledge creation process there is a complex interplay and overlap between the different dimensions.

The research from this study supports the importance of a nuanced understanding of inter-organisational knowledge sharing and the role of culture on social capital and knowledge creation. Analysis of knowledge sharing in terms of social capital and knowledge creation through the SECI model provided key insights into characteristics of knowledge sharing between organisations and the impact of key barriers and influence of cultural factors.

The table provides an overarching framework that summarises the characteristics of knowledge sharing from the perspective of different dimensions. The key barriers are mapped against each dimension in conjunction with proposed guidelines and recommendations that specifically address the issues identified. In terms of the structural characteristics a number of recommendations may be proposed that broaden and diversify the number and types of connections between members in each organisation and foster a cohesive and less polarised network.

**Table 7-1 A framework for Enhancing Inter-organisational Knowledge Sharing in Social Media**

	<b>Key Findings</b>	<b>Key Barriers/Issues</b>	<b>Guidelines and Recommendations</b>
Structural	<ul style="list-style-type: none"> <li>• Highly centralised</li> <li>• Low closeness between members</li> <li>• Asymmetrical knowledge flow</li> <li>• Polarised network</li> <li>• Small number of sub-communities</li> <li>• Structural holes</li> </ul>	<ul style="list-style-type: none"> <li>• Hierarchical/managerial control</li> <li>• Centralised roles</li> <li>• Lack of standards on structures/processes and technical</li> <li>• Lack of visibility/profiling of members</li> </ul>	<ul style="list-style-type: none"> <li>• Formalise procedures and guidelines</li> <li>• Managerial training to support delegation and broad KS roles</li> <li>• Diversity of knowledge sharing roles in social media in each department/organisation</li> <li>• Creation of cross boundary special interest groups</li> <li>• Enhance visibility of members through personal profiling</li> </ul>
Relational	<ul style="list-style-type: none"> <li>• Trust dependent</li> <li>• Relational dependent</li> <li>• Specialised/expert orientated</li> <li>• Differentiated roles</li> <li>• Organisational mistrust</li> <li>• Low levels of interaction</li> </ul>	<ul style="list-style-type: none"> <li>• Power asymmetry</li> <li>• Trust in formal sources/close relations</li> <li>• Clandestine culture</li> <li>• Risk aversion</li> </ul>	<ul style="list-style-type: none"> <li>• Formalise structures and mechanisms to promote visibility and traceability</li> <li>• Managerial attitudes</li> <li>• Social media training for managers</li> <li>• Structure opportunities for open dialogue and inter-organisational interactions</li> <li>• Offline face-face seminars</li> <li>• Develop mentors and champions</li> <li>• Implement reward system</li> </ul>
Cognitive	<ul style="list-style-type: none"> <li>• Shared understanding of overarching goals</li> <li>• Shared vision at senior level</li> <li>• Misunderstanding of organisational goals</li> <li>• Different perceptions of SM</li> </ul>	<ul style="list-style-type: none"> <li>• Interoperability</li> <li>• Ambiguity</li> <li>• Clandestine culture</li> <li>• Differences in organisational culture</li> </ul>	<ul style="list-style-type: none"> <li>• Communicate consistent organisational and team goals</li> <li>• Reinforce values for reciprocation and sharing interests</li> <li>• Encourage formation of diverse communities of practice</li> </ul>
Socialisation	<ul style="list-style-type: none"> <li>• Low socialisation</li> <li>• Imbalanced towards senior levels</li> </ul>	<ul style="list-style-type: none"> <li>• Cultural factors constrain dialogue and sharing experiences</li> <li>• Limited experiential and mentoring opportunities</li> </ul>	<ul style="list-style-type: none"> <li>• Create opportunities for discussion</li> <li>• Reward system</li> <li>• Train mentors and moderators</li> <li>• Clarify procedures and KS values</li> </ul>

		<ul style="list-style-type: none"> <li>• Closed specialist or top-level sub-groups</li> </ul>	<ul style="list-style-type: none"> <li>• Create diverse mechanisms of feedback</li> </ul>
Externalisation	<ul style="list-style-type: none"> <li>• Top-down dependent</li> <li>• Low participation</li> </ul>	<ul style="list-style-type: none"> <li>• Culture constrains broad participation in sharing of tacit knowledge</li> <li>• Emphasis on high volume and information overload of explicit content</li> <li>• Information overload impedes access to relevant knowledge</li> <li>• Risk aversion to externalise tacit knowledge</li> <li>• Technical systems and mechanisms for explicit knowledge creation</li> </ul>	<ul style="list-style-type: none"> <li>• Guidelines and training on codification options</li> <li>• Standardise externalisation processes</li> <li>• Define criterion for codification to improve relevance</li> <li>• Evaluate externalisation tools and mechanisms</li> <li>• Reduce information overload to improve time resources</li> <li>• Reward system to encourage codification</li> <li>• Encourage peer-peer interactions</li> <li>• Create opportunities for bottom-up content creation.</li> </ul>
Combination	<ul style="list-style-type: none"> <li>• High volume of explicit content dissemination</li> <li>• Top-down driven</li> </ul>	<ul style="list-style-type: none"> <li>• Interoperability</li> <li>• Transparency and visibility of content</li> <li>• Technical resources - weak storage, search classification and integration tools</li> <li>• Centralised top-down</li> <li>• Low organisation-wide engagement</li> <li>• Lack of persistence in social media</li> </ul>	<ul style="list-style-type: none"> <li>• Standardise integration mechanisms and tools</li> <li>• Improve efficiency and effectiveness of content storage and classification and search systems</li> <li>• Foster bottom-up participation in creating content</li> </ul>
Internalisation	<ul style="list-style-type: none"> <li>• Reflection on video content/simulations</li> <li>• Reflecting on professional development</li> <li>• Development of new interests</li> <li>• New ideas relevant for work</li> </ul>	<ul style="list-style-type: none"> <li>• Culture limits individuals' access to tacit knowledge</li> <li>• Technical resources impede access to relevant knowledge</li> <li>• Information overload constrains time for reflective activities</li> </ul>	<ul style="list-style-type: none"> <li>• Develop guidelines for mentoring within social media</li> <li>• Train mentors</li> <li>• Generate feedback</li> <li>• Create opportunities for question and answers</li> </ul>
Intellectual Capital	<ul style="list-style-type: none"> <li>• Informal network for learning</li> <li>• Access to codified content</li> <li>• Access to experts</li> <li>• Security news</li> <li>• Information system</li> <li>• Good practices</li> </ul>	<ul style="list-style-type: none"> <li>• Formal guidelines and mechanisms</li> <li>• Centralised networks</li> <li>• Clandestine</li> <li>• Technical resources impede access to knowledge assets</li> <li>• Persistence of knowledge</li> </ul>	<ul style="list-style-type: none"> <li>• Maximise access to collective knowledge through tagging, bookmarking, signposting, connections and ranking</li> <li>• Enhance expert locating</li> <li>• Improve content retrieval search and classification</li> <li>• Structure IC into visible communities of practice</li> <li>• Develop persistence systems</li> </ul>

Firstly, the development and formalisation of policy, procedures and guidelines can establish greater clarity on the roles, structures and processes of knowledge sharing within social media. This aspect can reduce the uncertainty and ambiguity identified by members and provide the boundaries and norms that can generate more diverse connections and formation of groups.

The structural dimension can be further enhanced within an Arabic context by strong leadership to proactively support the creation of communities of practice that includes members from different organisations. This could involve specific groupings so that knowledge sharing is more targeted within specific communities of interest and would support increased and specialised relations among participants. Top-down leadership would provide direction therefore leaders should be encouraged to join groups and publicise within social media while champions could be created for different topics and interest groups. Arab culture supports participative decision-making under certain conditions. Officially sanctioned groups and communities of practice can be modelled according to the Diwan governance structure, which provides a forum for discussion that has respect for authority and status and participation. This can be reinforced by training for central managers to support delegation and the broadening of knowledge sharing roles among members that will help to decentralise the network. Finally, structural capital can be enhanced further by improving the profiling and visibility of members' relevant information to other members. Ensuring completion of personal profiles in social media platforms that details level of expertise, interests and preferences can support development of weak ties in gradual and subtle ways. This addresses the issue of fear of approaching or reaching out to members by providing greater clarity about status and preferences.

In respect of the relational dimension the findings point to the need to enhance relational capital in the networks that fosters trust building. The framework provides an indication of a number of tools and measures to address the influence of cultural factors: trust dependency, close ties, interpersonal contact and uncertainty avoidance. Relational capital development can be enhanced by managerial training to enhance abilities to facilitate

and lead dialogue and tacit knowledge sharing. Respect for authority and status and the centralised top-down role in this context places managers in a strategic position to promote positive engagement. Managers and organisations should seek to create openings for the creation of diverse and multiple connections across different contexts and promote relationships between organisations at different levels and across hierarchical and organisational boundaries. Establishing clear structures and mechanisms to promote the visibility and traceability of communication will reveal diverse possibilities for interaction and developing new ties. Managerial attitudes should be proactively encouraged that a) refocus on knowledge sharing in social media as a primarily social activity that should actively engage all levels of the organisations b) signal the importance of participating and sharing knowledge in the network and its benefits both for organisational and professional development.

Examination of the technical context that influences the development of relational capital can focus on improving the efficiency and availability of knowledge storage, search and retrieval, classification, and categorisation. This could be strengthened by communication tools to promote the high context interactions valued in Arabic cultures that create opportunities for real-world, face to face communication and socialisation that can establish linkages and relations which can then be developed virtually. Social media events such as group-based events and seminars, group chats, quality circles, videos and podcasts can help to address this need and create a foundation to progress relationships within social media. Implementation of formal reward and incentive systems can address lack of reciprocation and foster openness and trust development. Reward systems can be individual or team-based and focus on intrinsic rewards that provide recognition, feedback, satisfaction, enjoyment, or reciprocation for contributions. Incorporating such measures address barriers to knowledge sharing in Arabic culture associated with uncertainty avoidance and reputational fears or secrecy.

To promote stronger cognitive capital in the network measures can be introduced to enhance shared understanding and goals between organisations and between different levels of the organisations. Firstly, formulating and clearly articulating key objectives and goals of social media can support harmonisation of attitudes and perspectives towards the medium. Secondly, by optimising structural and relational dimensions in the culturally sensitive manner outlined in the measures above, shared understanding and cohesive interpretations can develop that reinforces cognitive capital. Clear communication of organisational expectations for the use of social media for knowledge sharing, and the visible support and modelling of desired behaviours by senior management may be important in this respect. This could help to reduce employee fear and uncertainty by signalling top-down commitment towards tacit knowledge sharing activities.

Measures can also focus on maximising the interoperability between members, processes, and resources. Definition of processes for creating communities of interest can support interoperability by comprising members from each organisation with shared collaborative goals. Semantic terms and descriptions can be defined with relevance to the members within these communities. In addition, enhancing technical interoperability that specify data formats, processes of data sharing between organisations, use of taxonomies and linkages may help to promote shared interpretation. Addressing skills competencies in social media could further enhance interoperability between members with an emphasis on training and guidelines to help shape social media etiquette and reduce ambiguity and promote shared languages. Training can assist in reinforcing values and norms for reciprocation and sharing interests.

This framework also addresses the characteristics and key barriers associated with different knowledge creation processes. Regarding socialisation the framework identifies measures and solutions to overcome cultural factors and issues that impede socialisation within the network. These are supported by social capital measures in developing conditions for open communication and opportunities for dialogue. These measures can be supported by



creating diverse mechanisms of feedback, such as likes, ratings, surveys. These would support increased opportunities for interaction and help to provide greater visibility of member interests.

In respect of externalisation and the cultural constraints to broad participation identified in the findings several solutions are advanced in the framework. Guidelines and training on codification options would provide clarity and address risk aversion. This could be reinforced by standardised externalisation processes, both of which would promote the externalisation of tacit knowledge and supported by a range of measures that provide greater clarity and boundaries for knowledge creation.

Externalisation is acknowledged as a complex and challenging process, and its efficiency can be enhanced by addressing the issue of information overload and reducing both the burden of managers in disseminating knowledge and employees in reviewing vast amounts of information. This can be supported by training moderators and development of criterion for selecting and classifying and targeting information that is relevant to different groups and practices. The development of relational capital can foster greater trust building while exploring culturally sensitive approaches to promote bottom-up participation in content creation would be valuable. Arabic use of technology is still maturing and there should be evaluation of technical capabilities within social media to support development of personalisation and codification strategies.

In respect of combination processes the framework proposes a number of solutions and tools. Firstly, the standardisation and integration of mechanisms and tools across the network could enhance efficiency and reduce uncertainty. Improving the efficiency and effectiveness of content storage and classification and search systems would further promote the visibility and transparency of knowledge. Finally, given the dominance of audio-visual mediums for sharing knowledge and associated traceability challenges a structured system is needed that categorises and tags audio-visual content so that it can be more easily searched and retrieved by members.

Regarding internalisation, the framework addresses a key challenge in accessing support in terms of mentoring or coaching in applying knowledge to work practices. Members may need to feel confident and safe to approach members to obtain clarification or seek help. To address this, guidelines could be developed for mentoring and coaching within social media to support the need for high context approaches and that provide safe forums for members. This can be supported by training for mentors as well as developing culturally acceptable and risk-free measures for generating feedback, critiquing, asking questions, and requesting help.

To enhance intellectual capital the framework proposes a number of tools and measures designed to address the specific cultural barriers that challenge this goal. Social media is perceived as an information channel, space for learning and informal network that impacts significantly on members' level of security awareness. The strengthening of structural, relational, and cognitive capital is linked to the development of intellectual capital. Intellectual capital can be maximised by improving access to collective knowledge through tagging, bookmarking, signposting, connections and ranking, and expert locating; by improving content retrieval, search, and classification; and by developing persistence systems. Network members should be supported to extend their weak ties and helped to cross boundaries that can facilitate their location of knowledge sources and identification of experts outside their regular boundaries. Opportunities should be generated for social and communal learning in which community members have the chance to be both facilitator and learner within learning activities. The development of a diverse network in respect of work domains, job roles, organisational levels, expertise, experience and interests is key. This will help in enabling network members to reach out and source ideas, solve problems and learn from other members with similar experiences.

#### **7.4 Research Contribution**

This study makes several contributions to theory and practice in the field of inter-organisational knowledge sharing in social media. Firstly, there is a theoretical contribution on the relationship between social capital dimensions

and knowledge sharing. This identified characteristics of structural, relational and cognitive capital and the impact on inter-organisational knowledge sharing within social media. The strength of these social capital dimensions can be related to the quality and intensity of knowledge sharing.

A contribution was further made in respect of dimensions of the SECI model and the characteristics of knowledge-sharing within social media in relation to socialisation, externalisation, combination and internalisation processes. This identified the role of knowledge sharing activities in social media and the process of knowledge creation and knowing.

This study adds to knowledge on the antecedents of inter-organisational knowledge sharing, particularly in the Arabic context. Contribution was made in identifying several barriers that inhibited the development of interorganisational connections and relations and the flow of knowledge between organisations. Factors such as trust, organisational culture, resources and interoperability impact on the quality and strength of relations and tacit interactions and creation of explicit knowledge. Key insights were contributed in relation to cultural barriers that impacted on the development of social capital and knowledge creation. This research identified specific barriers which influenced the development of relational, structural, and cognitive capital related to the role of national culture. Analysis of knowledge creation processes further provided insight into impediments to socialisation, externalisation, combination, and internalisation processes.

The study contributes an understanding of the relationship and interaction between social capital dimensions which reveal inter-dependent elements that optimise social capital overall. The effectiveness of knowledge creation and knowing within social media is characterised both in terms of distinct processes and by the interaction between them. A key insight is that even though the SECI model identifies four processes in knowledge creation the process of socialisation is critical and influences all processes.

Finally this study develops and presents a framework for inter-organisational knowledge sharing that sets out specific guidelines and

recommendations that address the cultural and organisational barriers impacting on the development of social capital dimensions and knowledge creation processes within social media.

## **7.5 Implications for Theory and Practice**

The study findings point to several implications for theory and practice for the development of inter-organisational knowledge sharing that positively impacts on intellectual capital, security awareness and threat intelligence. An overarching implication is the configuration and development of structural, relational, and cognitive capital to strengthen knowledge sharing in social media. For organisations there is a need to consider how configurations can be optimised towards promotion of knowledge sharing in social media across boundaries. Furthermore, there is a need to address the design of socialisation, externalisation, combination and internalisation processes and the selection of practices and activities that maximise knowledge creation in social media and in inter-organisational networks. Managers should give serious consideration to understanding the relationship between knowledge sharing activities and how they contribute to the different dimensions of knowledge creation and knowing. This should impact the design of organisational processes and personalisation of measures relevant to the needs of organisations and individuals.

There is also a theoretical and practical implication in terms of sensitivity to organisational and national culture aspects. These underline the design of practices and processes which take account of cultural factors and integrate them in ways which maximise the impact on knowledge sharing in social media. This links to the need to understand the effectiveness of different culturally oriented structures such as hierarchical in the use of social media for sharing knowledge, in particular tacit knowledge. In particular how hierarchical structures in the network can be reconfigured in the Arabic context to promote bottom-up knowledge sharing that is modified and balanced so that it enables diversity in connections and creates opportunities for developing trust. There are implications for training and development of those key actors in central positions within the network as well as leaders to facilitate tacit

knowledge sharing and diverse socialisation and trust building. Additionally, HR practices may be evaluated to ensure mentoring and coaching capabilities within the network to encourage knowledge creation and learning.

This study implies focus on different organisational structures, roles and responsibilities and their impact on knowledge sharing between organisations. Practitioners may need to consider optimisation of governance structures to facilitate inter-organisational knowledge sharing. Further research may investigate the relationship between different governance styles and the development of social capital and influence on knowledge creation processes.

From a theoretical perspective the findings point to consideration of different social capital dimensions and how they impact on each other. There are complex interactions between the different dimensions of social capital that imply a focus on understanding of the dynamic relationships. There is a further implication for managers to consider how to promote structural, relational and cognitive capital and to design and implement measures that allow these dimensions to reinforce and support each other.

The barriers identified underline a need for managers to consider the specific conditions and the barriers that impact on social capital and knowledge creation processes. **The findings are in line with the research by Karagoz et al., (2020) who investigated knowledge sharing practices in some public sectors in Australia and found that there are specific barriers that apply in the public sector ICT project environment, demonstrating that context matters. The study highlights the relationship between knowledge sharing and managers and the role it plays in project delivery in public organisations.**

Specifically, this research points to addressing barriers associated with trust, organisational culture, resources, interoperability, and risk aversion. There are implications for the technical systems and processes to improve the visibility, traceability and storage and retrieval of content in social media. Moreover, there is a critical need for the dedication of time and resources among the organisations engaged in the network. Organisational

engagement and commitment is implied to support the expansion of the network in terms of promoting the new connections and ties among members that can lead to achievement of knowledge sharing goals. From a theoretical perspective there are implications for the investigation of the antecedents, barriers and enablers to social capital dimensions and knowledge creation processes that impact on knowledge sharing in social media.

## **7.6 Limitations**

The findings of this study provide valuable insights and expand understanding of inter-organisational knowledge sharing in social media and the role of virtual networks in knowledge management. However certain limitations should be acknowledged in respect of the design of the research and methods adopted that may have implications for broader application of the findings and overall validity. The multiple case-based strategy focuses on the sole context of UAE inter-organisational networks within a single sector of security. Firstly, this could constrain the generalisability of the findings to other sectors within the country: the security sector is distinct in terms of information-sharing constraints which the findings show have an impact on knowledge-sharing within social media. These conditions may not be reflected in other sectors that may have different information and knowledge sharing needs and protocols. Secondly, caution should be exercised in applying the findings to other Arab contexts or countries in the region which may operate within different organisational structures or formats or have varied levels of technology infrastructure and resources and social media adoption.

Moreover, the study findings are largely dependent on a small sample of key personnel and police officers purposefully sampled for job roles containing duties related to KM. This potentially limits the representativeness of the sample as this did not include all job groups or functions and specialisations.

Another limitation is associated with the choice to explore knowledge sharing in social media overall rather than focusing on specific social media types or tools such as microblogs (Twitter) or wikis. This design underpinned a

more holistic perspective and understanding of the role of social media for sharing knowledge and for proposal of a framework for inter-organisational knowledge sharing. However, the approach also constrained investigation of the specific features, functionalities and conditions of each tool that could facilitate or impede knowledge sharing. There is some scope for future research to enhance the representativeness of these findings through more detailed exploration of the different features and attributes that may impact on knowledge sharing in social media networks.

## **7.7 Future Research**

The study findings suggest critical new avenues for research in the domains of inter-organisational knowledge sharing and social media. In particular the research points to the existence of cultural factors in the UAE and Arab context that can impact on knowledge-sharing across social media. Further case-based studies in different Arab and regional contexts could help to provide greater insight on the antecedents and conditions necessary to promote and enhance tacit knowledge sharing in virtual networks, as well as the role of social media networks in facilitating and encouraging knowledge sharing and collaboration in these settings. Studies across the region could add to these findings providing greater insight into the cultural factors and influences on knowledge sharing in social media.

More broadly there is a need for future research to explore the important implications that the widespread introduction of social media into the workplace has for inter-organisational knowledge sharing and the achievement of individual and professional goals. This place focus on study, evaluation and design to address the different ways in which the use of social networking tools is rapidly changing knowledge sharing and knowledge management as organisational practices. There is further value in exploring the qualities and affordances of different social media platforms for knowledge sharing and to understand how these affordances can be employed within platform environments.

The growing recognition of the importance of informal networks for tacit knowledge sharing in organisations provides a strong basis for future research and the development of tools to map knowledge flows. There is a need for greater research to understand how to evaluate current levels of inter-organisational knowledge sharing and to map and audit knowledge flows to assess the intensity and frequency of knowledge exchanges between organisations. In this study social network analysis was shown to be an effective tool that enabled identification and visualisation of structural elements that contributed to or inhibited knowledge sharing. New computational and statistical models could be developed that facilitate easier network analysis and advance the visualisation, interactivity and portability of analysis reports.

Furthermore, there is a need for greater research to understand how to precisely measure the strength of ties in social networks. While some research has assigned numerical weightings to determine the strength of ties (Chan and Liebowitz, 2006) or, as in this study, investigate such relational aspects using qualitative methods, future research could focus on the creation and development of more accurate and quantitative measures such as interval/ratio scales.

This links to a wider issue of measurement of the three dimensions of social capital: structural, relational, and cognitive, which presented conceptual and practical challenges in this study as each aspect is closely related to the others however has unique characteristics. Only a limited number of studies have investigated all three types of social capital (Nahapiet, 2008). There is a strong need for future research that develops improved, empirically valid measures and metrics that take account both interrelations and the specific attributes of social capital dimensions. Future research could focus on developing scales and measures that evaluate the more detailed and granular sub-constructs of which the three dimensions are composed.

Another avenue for further research is the growing role of informal communication in knowledge sharing and how informal aspects can be



integrated within theoretical frameworks analysing the relationship between knowledge sharing and social capital. Informalities are increasingly becoming critical for a holistic perspective of how knowledge sharing takes place in contemporary organisations. Informal aspects are associated with structural, relational and cognitive dimensions of social capital and contribute significantly to the occurrence of knowledge sharing, emphasising an imperative for further exploration.

The findings of this research were based on a cross-sectional case study that reflected the social media network at a specific point in time. A longitudinal study could help to bring greater clarity to the role of socialisation and related aspects such as trust and close social relations and how these develop in the online network and their impact on knowledge sharing. More broadly, emphasis could be placed on strengthening understanding of how social capital forms and develops online and how the different dimensions of social capital dynamically interact and evolve over time within social media.

## References

- Abu Dhabi Police GHQ, (2013). "About us". [online] Available at: <<https://www.adpolice.gov.ae/404/index.htm?aspxerrorpath=/en/Site/Portal/about.adp.aspx>> [Accessed on 01 May 2015]
- Accenture, (2013). "Preparing police services for the future: Six steps toward transformation". [online] Available at: <<http://www.accenture.com/us-en/landing-pages/Documents/13-1583/download/preparing-police-services-for-the-future.pdf>> [Accessed 01 May 2015]
- Acquaah, M., Amoako-Gyampah, K., Gray, B., Nyathi, N.Q., (2014). "Measuring and valuing social capital: A systematic review". Network for Business Sustainability South Africa, pp.1-96.
- Adalı, S., Lu, X., Magdon-Ismail, M. (2014). "Local, community and global centrality methods for analyzing networks". Social Network Analysis and Mining, Vol. 4 No. 1, PP. 1-18.
- Adams, J., (2013). "Collaborations: The fourth age of research". Nature, 497(7451), pp. 557–560.
- Adler, P.S., Kwon, S-W. (2000). "Social capital: the good, the bad, and the ugly". In E.L. Lesser (Ed.), Knowledge and social capital: foundations and applications (pp. 89-115). Boston, MA: Butterworth-Heinemann.
- Adler, P.S., Kwon, S.W. (2002). "Social capital: prospects for a new concept". Academy of Management Review, 27(1), pp. 17-40.
- Ahmad, N., Daghfous, A. (2010). "Knowledge sharing through inter-organizational knowledge networks: Challenges and opportunities in the United Arab Emirates". European Business Review, 22, pp. 153-174.
- Ahmed, Y.A., Ahmad, M.N., Ahmad, N., (2009) "Social Media for Knowledge-Sharing: A Systematic Literature Review". Telematics and Informatics. Vol 1. pp.14.34.
- Ahuja, G., Katila, R. (2001). "Technological acquisitions and the innovation performance of acquiring firms: a longitudinal study". Strategic Management Journal, 22 (3), pp. 197-220.
- Ahuja, G., (2000). "Collaboration networks, structural holes, and innovation: A longitudinal study". Administrative science quarterly, 45(3), pp.425-455.
- Ajzen, I., (1991). "The theory of planned behaviour". Organizational Behavior and Human Decision Processes, 50(2), pp. 179-211.
- Akhtar, J., Bjørnskau, T., Veisten, K., (2010). "Assessing security measures reducing terrorist risk: inverse ex post cost-benefit and cost-effectiveness analyses of Norwegian airports and seaports". J. Transport. Secur. 3 (3), 179–195.
- Al'Alawi, A. I., Al'Marzooqi, N. Y., Mohammed, Y. F., (2007). "Organizational culture and knowledge sharing: Critical success factors". Journal of Knowledge Management, 11(2), pp. 22-42.

- Al-Adaileh, R. M., Al-Atawi, M. S. (2011). "Organizational culture impact on knowledge exchange: Saudi Telecom context". *Journal of Knowledge Management*, 15, 212–230.
- Alavi, M., Leidner, D.E. (2001). "Review: knowledge management and knowledge management systems: conceptual foundations and research issues". *MIS Quarterly*, 25(1), pp. 107-36.
- Al-Bastaki, Y., (2013). "Building a competitive public sector with knowledge management strategy". IGI Global.
- Albors, J., Sweeney, E., Hidalgo, A., (2005). "Transnational technology transfer networks for SMEs. A review of the state-of-the art and an analysis of the European IRC network". *Production Planning and Control*, 16(4 SPEC. ISS.), 413–423.
- Al-Busaidi, K.A., (2013). "A framework of critical factors to knowledge workers' adoption of inter-organizational knowledge sharing systems". *Journal of Organizational Knowledge Management*, 2013, p.1.
- Al-Busaidi, K.A., Ragsdell, G., Dawson, R., (2017). "Barriers and benefits of using social networking sites versus face-to-face meetings for sharing knowledge in professional societies". *International Journal of Business Information Systems*, 25 (2), pp. 145-164.
- Algesheimer, R., Dholakia, U.M. and Herrmann, A. (2005). The social influence of brand community: evidence from European car clubs. *Journal of Marketing*, 59(3), pp. 19-34.
- Ali, A., Nor, H., Nor, R., Abdullah, R., Azmi Murad, M.A., (2016). "Developing Conceptual Governance Model for Collaborative Knowledge Management System In Public Sector Organisations". *Journal of Information & Communication Technology*, 15(2).
- Al-Khouri, A.M., (2014). "Fusing Knowledge Management into the Public Sector: a Review of the Field and the Case of the Emirates Identity Authority". *Journal of Knowledge Management, Economics and Information Technology*, IV, 3, pp.1-89.
- Alrawi, K., Hamdan, Y., Al-Taie, W., Ibrahim, M., (2013). "Organizational culture and the creation of a dynamic environment for knowledge sharing". *International Journal of Management and Innovation*, 5, 1.
- Al-Salti, Z., (2011). "An investigation of knowledge transfer in information systems (IS) outsourcing (Doctoral dissertation", Brunel University Brunel Business School PhD Theses).
- Alserhan, B. A., Forstenlechner, I., Al-Nakeeb, A., (2010). "Employees' attitudes towards diversity in a non-western context". *Employee Relations*, 32(1), pp. 42-55.
- Amabile, T., Conti, R., Coon, H., Lazenby, J., Herron, M., (1996). "Assessing the work environment for creativity". *Academy of Management Journal*, 39, 5, 1154-1184.

- Amesse, F., Cohendet, P., (2001). "Technology transfer revisited from the perspective of the knowledge-based economy". *Research Policy*, 30, 1459–1478.
- Amidi, A., Jusoh, Y. Y., Abdullah, R. H., Jabar, M. A., Khalefa, M. S. (2015). "An overview on leveraging social media technology for uncovering tacit knowledge sharing in an organizational context". In: 9th Malaysian Software Engineering Conference (MySEC), pp. 266-271. IEEE.
- Amuah, H. B. (2013). The impact of the standardization and localization strategies on advertising. *SSRN Journal*.
- Anantatmula, VS., Stankosky, M (2008), 'KM criteria for different types of organisations',
- Anantatmula, VS., (2005b), 'Outcomes of knowledge management initiatives', *International Journal of Knowledge Management*, vol. 1, no. 2, pp. 50-67.
- Andreeva, T., Ikhilchik, I., (2011). "Applicability of the SECI model of knowledge creation in Russian cultural context: theoretical analysis", *Knowledge and Process Management*, 18(1), pp.56-66.
- Andreeva, T., Kianto, A., (2011). "Knowledge processes, knowledge-intensity and innovation: a moderated mediation analysis". *Journal of Knowledge Management*, 15(6), pp.1016-1034.
- Andriessen, H., Van Gulijk, C., Ale, B.J.M., (2012). "Human factors in layers of defense in airport security". In *PSAM11 & ESREL 2012: 11th International Probabilistic Safety Assessment and Management Conference and the Annual European Safety and Reliability Conference*, Helsinki, Finland, 25-29 June 2012; Authors version. Curran Associates.
- Andriessen, H., van Gulijk, C., Ale, B., (2011). Decision making in airport security. In Kluin, M. & Lin, P.H. eds. *The Research Agenda of Risk and Design Anno 2011*. Delft: Delft University of Technology.
- Antal, A. B., Lenhardt, U., Rosenbrock, R., (2001). "Barriers to Organizational Learning". In M. Dierkes, A. B. Antal, J. Child, I. Nonaka (Eds.), *Handbook of organizational learning and knowledge* (pp. 865-885). Oxford: Oxford University Press.
- Ardichvili, A., Page, V., Wentling, T. (2003). "Motivation and barriers to participation in virtual knowledge-sharing communities of practice". *Journal of Knowledge Management*, 7(1), 64-77.
- Argote, L. (1999). *Organizational learning: Creating, retaining and transferring knowledge* (pp. 1–212). Boston: Kluwer.
- Argote, L., Ingram, P. (2000), "Knowledge transfer: a basis for competitive advantage in firms", *Organizational Behavior and Human Decision Processes*, Vol. 82 No. 1, pp. 150-69.
- Argote, L., Ingram, P., Levine, J.M., Moreland, L. (2000). Knowledge transfer in organisations: learning from the experience of others. *Organizational Behaviour and Human Decision Processes*, 82(1), pp. 1-8.

- Argote, L., McEvily, B., Reagans, R. (2003). "Organizational learning curves: A method for investigating intra-plant transfer of knowledge acquired through learning by doing". *Management Science*, 49(4), 571–582.
- Arnold, J.A., Arad, S., Rhoades, J.A., Drasgow, F., (2000). "The empowering leadership questionnaire: The construction and validation of a new scale for measuring leader behaviors". *Journal of Organizational Behavior*, 21(3), pp.249-269.
- Arya, B., Lin, Z., (2007). "Understanding collaboration outcomes from an extended resource-based view perspective: The roles of organizational characteristics, partner attributes, and network structures". *Journal of management*, 33(5), pp.697-723.
- Asrar-UI-Haq, M., Anwar, S., (2016). "A Systematic Review of Knowledge Management And Knowledge Sharing: Trends, Issues, And Challenges". *Cogent Business and Management*, 3, 1127744.
- Attiyah, H., (1996). "Expatriate acculturation in Arab Gulf countries". *Journal of Management Development*, 15, pp. 37-47.
- Australian Bureau of Statistics (ABS) (2009). "Not-for-profit Organisations, Australia", 2006-07, cat. no. 8106.0, ABS, Canberra.
- Australian Council of Social Service (ACOSS) (2010). "Australian Community Sector Survey Report 2010" viewed 27 April 2010, <[www.acoss.org.au/images/uploads/ACOSS\\_-\\_Australian\\_Community\\_Sector\\_Survey\\_2010\\_Final.pdf](http://www.acoss.org.au/images/uploads/ACOSS_-_Australian_Community_Sector_Survey_2010_Final.pdf)>.
- Autio, E., Laamanen, T., (1995). "Measurement and evaluation of technology transfer: Review of technology transfer mechanisms and indicators". *Technology Management*, 10(7/8), 643–664.
- Autio, E., Hameri, A., Nordberg, M. (1996). "A framework of motivations for industry-big science collaboration: A case study". *Journal of Engineering and Technology Management*, 13, 301–314.
- Awan, M., (2007). "Dubai e-Government: An evaluation of G2B websites". *Journal of internet commerce*, 6(3), pp. 115.
- Göksel, A., Aydıntan, B., (2017). "How can tacit knowledge be shared more in organizations? A multidimensional approach to the role of social capital and locus of control". *Knowledge Management Research and Practice*, 15:1, 34-44,
- Bachmann, R., (2001). "Trust, Power and Control in Trans-Organizational Relations", *Organization Studies* 22: 337-365.
- Bachmann, R., Witteloostuijn, A.V., (2006). "Analysing inter-organizational relationships in the context of their business systems: a conceptual framework for comparative research". *Knowledge Management Research and Practice*, 21:2. 45-76.
- Bartol, K. M., Srivastava, A. (2002). "Encouraging knowledge sharing: The role of organizational reward systems." *Journal of Leadership Organizational Studies*, 9(1), 64-77.

- Battistella C., Nonino F., (2012b). "Exploring the impact of motivations on the attraction of innovation roles in open innovation web-based platforms". *Production planning and control*, 24(4–5), 226–245
- Battistella C., Nonino F. (2012c). "Open innovation web-based platforms: The impact of different forms of motivation on collaboration". *Innovation: Management, Policy and Practice*, 14(4), 557–575.
- Battistella, C., Nonino, F. (2012a). "What drives collective innovation? Exploring the system of drivers for motivations in open innovation, web-based platforms". *Information Research*, 17(1), 513.
- Battistella, C., De Toni, A. F., Pillon, R. (2015). "Inter-organisational technology/knowledge transfer: a framework from critical literature review". *The Journal of Technology Transfer*, 1-40.
- Batts, A. W., Smoot, S. M., Scrivner, E., (2012). "Police leadership challenges in a changing world. *New Perspectives in Policing Bulletin*. Washington, DC: U.S. Department of Justice, National Institute of Justice, 2012. NCJ 238338.
- Bayona, C., Garcia-Marco, T., Huerta, E., (2001), "Firms' motivations for cooperative R and D: an empirical analysis of Spanish firms", *Research Policy*, Vol. 30 No. 8, pp. 1289-307.
- Berger, P., Luckman, T., (1966). "The social construction of reality". London: Penguin Books.
- Bess, K. D., Perkins, D. D., McCown, D. L. (2010). "Testing a measure of organizational learning capacity and readiness for transformational change in human services". *Journal of Prevention and Intervention in the Community*, 39(1), 35-49.
- Bhagat, R. S., Kedia, B. L., Harveston, P. D., Triandis, H. C., (2002). "Cultural variations in the cross-border transfer of organizational knowledge: An integrative framework". *Academy of Management. The Academy of Management Review*, 27(2), 204-221.
- Bharati, P., Zhang, W., Chaudhury, A., (2015). "Better knowledge with social media? Exploring the roles of social capital and organizational knowledge management". *Journal of Knowledge Management*, 19(3), pp.456-475.
- Blasco-Arcas, L., Hernandez-Ortega, B., Jimenez-Martinez, J., (2013). "Adopting television as a new channel for e-commerce. The influence of interactive technologies on consumer behavior". *Electronic Commerce Research*, 13(4), pp. 457-475.
- Blau, P.M., (1964). "Exchange and power in social life". Transaction Publishers.
- Bock, G. W., Zmud, R. W., Kim, Y. G. Lee, J. N., (2005). "Behavioral Intention Formation in Knowledge Sharing: Examining the Roles of Extrinsic Motivators, Social-Psychological Forces, and Organizational Climate," *MIS Quarterly*, 29(1), 87–111.
- Boersma, M. F., Buckley, P. J., Ghauri, P. N. (2003). "Trust in international joint venture relationships". *Journal of Business Research*, 56(12), 1031-1042.

- Bourdieu, P., (1986). "The forms of capital. In J. G. Richardson (Ed.), *Handbook of theory and research for the sociology of education*": 241-258. New York: Greenwood.
- Bourdieu, P., Wacquant, L.J.D., (1992), "An Invitation to Reflexive Sociology", University of Chicago Press, Chicago, IL.
- Bouzdine, T., (2004). "The role of social capital within business networks: Analysis of structural and relational arguments". Safe Publishers.
- Boyd, D., (2010). "Social Network Sites as Networked Publics: Affordances, Dynamics, and Implications." In: *A Networked Self: Identity, Community, and Culture on Social Network Sites*, Z. Papa.charissi, (Ed.). Routledge, New York: pp: 39-58.
- Bozeman, B., (2000). "Technology transfer and public policy: A review of research and theory." *Research Policy*, 29, 627–655.
- Brown, J., Duguid, P., (1998). "Organizing knowledge". *California Management Review*, 40(3), pp.90-112.
- Brown, J., Duguid, P., (2000). "Organizational learning and communities of practice: Toward a unified view of working, learning, and innovation". In *Knowledge and communities* (pp. 99-121).
- Brown, J. S., Duguid, P., (2000). "The social life of information. Boston", MA: Harvard Business School Press
- Bryman, A. and Bell, E., 2007. *Business research methods*. 2nd ed. Oxford: Oxford University Press.
- Bryman, A., (2012). "Social research methods. 4th ed". Oxford: Oxford University Press.
- Buckley, P. J., (2002). "Is the international business research agenda running out of steam". *Journal of international business studies*, 33(2), 365-373.
- Buckley, P., Glaister, K. Klij, E., Tan, H., (2009). "Knowledge accession and knowledge acquisition in strategic alliances: the impact of supplementary and complementary dimensions". *British Journal of Management*, 20 (4), pp. 598-609.
- Bureš, V., (2003). "Cultural barriers in knowledge sharing". *Economics and Management*, 6, 57-62.
- Burt, R.S., (1992), "Structural Holes: The Social Structure of Competition", Harvard University Press, Cambridge, MA.
- Burt, R.S., (2001). "Social capital: theory and research", De Gruyter, New York (2001)
- Burt, R.S., (2017). "Structural holes versus network closure as social capital". In *Social capital* (pp. 31-56). Routledge.
- Byosiere, L., Luethge, D., (2004). "Realizing vision through envisioning reality: strategic leadership in building knowledge spheres. *Leading in Turbulent Times*": *Managing in the New World of Work*, pp.243-258.

- C.-J. Chen, (2004). "The effects of knowledge attribute, alliance characteristics, and absorptive capacity on knowledge transfer performance", *R&D Management*, 34(3), pp. 311-321.
- Caldas, P.T., Ataíde Cândido, G., (2013). "Inter-organizational knowledge conversion and innovative capacity in cooperative networks". *Journal of technology management & innovation*, 8, pp.9-9.
- California Management Review* (2006), vol. 40, no. 3, pp. 265-276.
- Cameron, K.S., (2006). "Diagnosing and changing organizational culture". Revised edition. SF: Jossey-Bass.
- Cameron, K.S., Quinn, R.E., (2011). "Diagnosing and Changing Organizational Culture: Based on the Competing Values Framework, 3rd ed", Jossey-Bass, San Francisco.
- Campbell, M. J., (2009). "Identification of Organizational Cultural Factors That Impact Knowledge Sharing". University of Oregon.
- Canestrino, R., (2009). "Il trasferimento della conoscenza nelle reti di imprese" (pp. 1–208). Torino: G. Giappichelli Editore.
- Carlile, P. R., Reberich, E. S., (2003). "Into the black box: The knowledge transformation cycle". *Management Science*, 49(9), 1180–1195.
- Carlile, P., (2004). "Transferring, translating, and transforming: an integrative framework for managing knowledge across boundaries". *Organization Science* 15 (5), 555–568.
- Carson, E., Ranzijn, R., Winefield, A., Marsden, H., (2004). "Intellectual capital: Mapping employee and work group attributes". *Journal of intellectual capital*, 5(3), pp.443-463.
- Cetto, A., Klier, J., Klier, M., Richter, A., Wiesneth, K., (2016). "The blessing of giving: knowledge sharing and knowledge seeking in enterprise social networks". *Journal of technology management & innovation*. pp 45-67
- Chai, S., Kim, M. (2012). "A socio-technical approach to knowledge contribution behavior: An empirical investigation of social networking sites users". *International Journal of Information Management*. 32(2), 118-126.
- Chan, K. and Liebowitz, J., (2006). "The synergy of social network analysis and knowledge mapping: a case study". *International journal of management and decision making*, 7(1), pp.19-35.
- Chan, Y., Ford, P. (2003). "Knowledge sharing in a multi-cultural setting: a case study". *Knowledge Management Research and Practice*, 1, 11-27. Retrieved May 7, 2009 from <http://www.palgrave-journals.com/kmrp/journal/v1/n1/pdf/8499999a.pdf>
- Chang, C. L., Lin, T.-C. (2015). "The Role of Organizational Culture In The Knowledge Management Process". *Journal of Knowledge Management*, 19, 433-455.
- Chang, H.H., Chuang, S.S., (2011), "Social capital and individual motivations on knowledge sharing: participant involvement as a moderator", *Information and Management*, Vol. 48 No. 1, pp. 9-18.



- Chang, K.-c., Yen, H.-W., Chiang, C.-C., and Parolia, N., (2013). "Knowledge contribution in information system development teams: An empirical research from a social cognitive perspective". *International Journal of Project Management*, 31(2), pp. 252-263.
- Chatterjee, S., Rana, N.P., Dwivedi, Y.K., (2020), "Social media as a tool of knowledge sharing in academia: an empirical study using valence, instrumentality and expectancy (VIE) approach", *Journal of Knowledge Management*, Vol. 24 No. 10, pp. 2531-2552.
- Chase, R.L., (1997), "The knowledge-based organization: an international survey", *Journal of Knowledge Management*, vol. 1, no. 1, pp. 38-49.
- Chen, C.-J., and Hung, S.-W., (2010). "To give or to receive? Factors influencing members' knowledge sharing and community promotion in professional virtual communities". *Information and Management*. 47(4), 226-236.
- Chen, S.- S, Chuang, Y.- W., Chen, P.- Y., (2012). "Behavioral Intention Formation in Knowledge Sharing: Examining the Roles of KMS Quality, KMS Self-Efficacy, and Organizational Climate," *Knowledge-Based Systems*, 31, 106-118.
- Chen, Y.H., Lin, T.P., Yen, D.C., (2014). "How to facilitate inter-organizational knowledge sharing: The impact of trust". *Information and Management*, 51(5), pp.568-578.
- Chia, R., (2003). "From knowledge-creation to the perfecting of action: Tao, Basho and pure experience as the ultimate ground of knowing". *Human Relations*, 56(8), 953-981.
- Chiu, C.M., Hsu, M.H., Wang, E.T.G. (2006), "Understanding knowledge sharing in virtual communities: an integration of social capital and social cognitive theories", *Decision Support Systems*, Vol. 42 No. 3, pp. 1872-1888.
- Chiu-Ping Hsu., (2015) "Effects of social capital on online knowledge sharing: positive and negative perspectives", *Online Information Review*, Vol. 39 Issue: 4, pp.466-484,
- Chong, S.C., Choi, Y.S., (2005), "Critical factors in the successful implementation of knowledge management", *Journal of Knowledge Management Practice*, vol. 6, no. 1, pp. 1-21.
- Choo, C.W., (2002). "Sensemaking, knowledge creation, and decision making: organizational knowing as emergent strategy". In: Choo, C.W. and Bontis, N. eds., 2002. *The strategic management of intellectual capital and organizational knowledge*. Oxford: Oxford University Press.
- Chow, W.S., Chan, L.S., (2008). "Social network, social trust and shared goals in organizational knowledge sharing". *Information and management*, 45(7), pp.458-465.
- Chua, A., Lam, W., (2005), "Why KM projects fail: a multi-case analysis", *Journal of Knowledge Management*, vol. 9, no. 3, pp. 6-17.
- Cohen, W., Levinthal, D., (1990). "Absorptive capacity: A new perspective on learning and innovation". *Administrative Science Quarterly*, 35(1), 128-152.

- Cohen, W. M., Levinthal, D. A., (1990). "Absorptive capacity: A new perspective on learning and innovation". *Administrative Science Quarterly*, 35(1), 128–152.
- Coleman, J. S., (1990). "Foundations of social theory. Cambridge", MA: Harvard University Press.
- Coleman, J.S., 'Social Capital in the Creation of Human Capital', (1988), *American Journal of Sociology*, 94 (Supplement), S95-S120.
- Collier, P. M., (2001). "Valuing intellectual capacity in the police". *Accounting, Auditing and Accountability Journal*, 14(4), pp. 437-455.
- Comeau-Kirchner, C., (2000). "The Sharing Culture". *Management Review*, 89(1), 8-8.
- Cong, X., Pandya, K. V., (2003). "Issues of knowledge management in the public sector". *Electronic Journal of Knowledge Management*, 1(2), pp. 25-33.
- Connelly, B. L., Miller, T., Devers, C. E., (2012). "Under a cloud of suspicion: Trust, distrust, and their interactive effect in interorganizational contracting". *Strategic Management Journal*, 33(7), 820-833.
- Constant, D., Kiesler, S., Sproull, L., (1994). "What's mine is ours, or is it? A study of attitudes about information sharing". *Information Systems Research*, 5, 400–421.
- Constant, D., Sproull, L., Kiesler, S., (1996). "The kindness of strangers: On the usefulness of weak ties for technical advice". *Organization Science*, 7, pp. 119-135.
- Cook, S. D. N., Brown, J. S., (1999). "Bridging epistemologies: The generative dance between organizational knowledge and organizational knowing". *Organization Science*, 10(4), pp. 381-400.
- Coradi, A., Heinzen, M., Boutellier, R., (2015). "Designing workspaces for cross-functional knowledge-sharing in R&D: The "co-location pilot" of Novartis". *Journal of Knowledge Management*, 19, 236–256.
- Cross, R., Borgatti, S.P., Parker, A., (2002). "Making invisible work visible: Using social network analysis to support strategic collaboration". *California management review*, 44(2), pp.25-46.
- Cross, R., Parker, A., Borgatti, S., (2002). "A Bird Eyes View: Using Social Network Analysis to Improve Knowledge Creation and Sharing". IBM Institute of Business Value, IBM Corporation.
- Cummings, J. L., Teng, B., (2003). "Transferring R&D knowledge: The key factors affecting knowledge transfer success." *Journal of Engineering and Technology Management*, 20, 39–68.
- Daghfous, A., Barkhi, R., (2009). "The strategic management of information technology in UAE hotels: an exploratory study of TQM, SCM, and CRM implementations". *Technovation*, 29, pp. 588-95.

- Damodaran, L., Olphert, W., (2000). "Barriers and facilitators to the use of knowledge management systems". *Behaviour and Information Technology*, 19(6), 405-413.
- Darr, E., Kurtzberg, T., (2000). "An investigation of partner similarity dimensions on knowledge transfer". *Organisational Behavior and Human Decision Processes*, 82 (1), pp. 28-44.
- Darroch, J., (2003). "Developing a measure of knowledge management behaviors and practices". *Journal of Knowledge Management*, 7(5), pp. 41-54.
- Darroch, J., (2005). "Knowledge management, innovation and firm performance". *Journal of knowledge management*, 9(3), pp. 101-115.
- Davenport, T. H., Prusak, L., (2000). "Working knowledge: How organizations know what they know". Harvard Business School Press, Boston, MA.
- Davenport, T. H., Prusak, L., (1998). "Il sapere al lavoro, Etas, Milano, 2000 (edizione originale: Workingknowledge: How organizations manage what they know", Harvard Business School Press, Boston,1998).
- Davenport, T., De Long, D., Beers, M., (1998). "Successful knowledge management projects". *Sloan Management Review*, 39(2), 43-57.
- Davis, M. and Wilson, C.S., (2003). "Measurement of knowledge: processes and practice in knowledge management". chapter, 11, pp.342-371.
- De Clercq, D., Pereira, R., (2020), "Knowledge-sharing efforts and employee creative behavior: the invigorating roles of passion for work, time sufficiency and procedural justice", *Journal of Knowledge Management*, Vol. 24 No. 5, pp. 1131-1155.
- De Long, D. W., Fahey, L., (2000). "Diagnosing cultural barriers to knowledge management". *Academy of Management Executive*, Vol. 14, No. 4, pp 113-128.
- De Stricker, U., (2014). "Knowledge management practice in organizations: The view from inside". London: IGI Global.
- Dean et al., (2008). "Cited in Gottschalk, P., 2009. Policing the police: Knowledge management in law enforcement." New York: Nova Science Publishers, pp. 129.
- Dean, G., Gottschalk, P., (2007). "Knowledge management in policing and law enforcement: Foundations, structures, applications". Norfolk: Oxford University Press, pp. 15-16, 31, 33.
- Dean, G., Gottschalk, P., Fahsing, I., (2010). "Organized crime: Policing illegal business entrepreneurialism". Oxford University Press.
- Debowski, S., (2006), "Knowledge Management", Wiley, Milton.
- Deci, E.L., (1975). "Intrinsic Motivation". Springer.
- Denscombe, M., (2007). "The good research guide, 3rd ed". Buckingham: Open University Press. Cited in Saunders, et al., 2009.

- Denzin, N.K., Lincoln, Y.S., (2011). "The SAGE Handbook of Qualitative Research". SAGE.
- Dinesh Rathi, Lisa M. Given, Eric Forcier., (2014) "Interorganisational partnerships and knowledge sharing". structures, applications.
- Dirkmorfeld, N., (2015). "Determinants of employees' willingness of knowledge sharing intention through enterprise social software. A qualitative and quantitative comparison of pre-implementation and post-implementation relationships". Paderborn: Universität Paderborn (Dissertation).
- Dixon, N.M., (1994). "The organizational learning cycle: How we can learn collectively". New York: McGraw-Hill.
- Dodgson, M., (1993), "Organizational learning: a review of some literatures", *Organization Studies*, vol. 14, no. 3, pp. 375-394.
- Donada, C., Nogatchewsky, G., (2006). "Vassal or lord buyers: How to exert management control in asymmetric interfirm transactional relationships", *Management Accounting Research*, 17, 259-287.
- Dougherty, D., Hardy, C., (1996). "Sustained product innovation in large, mature organizations. Overcoming innovation to organization problems". *Academy of Management Journal*, 39, 1120–1153.
- Downes, T., Marchant, T., (2016). "The extent and effectiveness of knowledge management in Australian community service organisations". *Journal of Knowledge Management*, 20(1), pp.49-68.
- Downes, T.V., (2014). "An evaluation of knowledge management practices in nonprofit community services organisations in Australia".
- Drucker, P. F., (1993). "Postcapitalist society. New York": Harper Collins Publishers.
- Dubai Police, (2012). "Organisational chart". [online] Available at: <<http://www.dubaipolice.gov.ae/dp/jsps/content/organizational-chart.do>> [Accessed on 01 May 2015]
- Durst, S., Zieba, M., (2019). "Mapping knowledge risks: towards a better understanding of knowledge management". *Knowledge Management Research & Practice*, 17(1), pp.1-13.
- Easterby-Smith, M., Lyles, M., Tsang, E., (2008). "Inter-organisational knowledge transfer: Current themes and future prospects". *Journal of Management Studies*, 45 (4), pp. 677-690.
- Easterby-Smith, M., (1997). "Disciplines of organizational learning: contributions and critiques", *Human Relations*, vol. 50, no. 9, pp. 1085-1113.
- Easterby-Smith, M., Lyles, M.A. eds., (2011). "Handbook of organizational learning and knowledge management". John Wiley & Sons.
- Easterby-Smith, M., M. Lyles., (2003). "The Blackwell handbook of organizational learning and knowledge management". Oxford: Blackwell.

- Easterby-Smith, M., Lyles, M. A., Tsang, E. W., (2008). "Inter-organizational knowledge transfer: Current themes and future prospects". *Journal of management studies*, 45(4), 677-690.
- Edwards, G., (2010). "Mixed-method approaches to social network analysis".
- Efimova, L., Grudin, J., (2007). "Crossing Boundaries: A Case Study of Employee Blogging". In: HICSS 2007. IEEE computer Society Press: pp: 86-86.
- Ehrlich, K. Shami,N.S., (2010). "Microblogging inside and Outside the Workplace". In: ICWSM '10. Washington, DC.
- Ekman, P., (1993). "Facial expression of emotion". *American Psychologist*. 48, pp.384-392.
- Ellinger, A.D., Ellinger, A.E., Yang, B., Howton, S.W., (2003). "The relationship between the learning organization concept and firms' financial performance: An empirical assessment". *Human Resource Development Quarterly*, 13(1), pp. 5-21.
- Ellison, N.B., Gibbs, J.L., Weber, M.S., (2015). "The use of enterprise social network sites for knowledge sharing in distributed organizations: The role of organizational affordances". *American Behavioral Scientist*, 59(1), pp.103-123.
- Ellison, N.B., Steinfield, C., Lampe, C. (2007), "The benefits of Facebook 'friends' : social capital and college students' use of online social network sites ", *Journal of Computer-Mediated Communication*, Vol. 12 No. 4, pp. 1143-1168.
- Eriksson, P., Kovalainen, A., (2008). "Qualitative methods in business research". London: Sage
- Esia, Z.A., Skok, W. (2014). "Arab Knowledge Sharing in a Multicultural Workforce: A Dual Case Study in the UAE". *Arabian Journal of Business and Management Review*, 4(5).
- Estrada, E., (2011). "The Structure of Complex Networks: Theory and Applications". Oxford, Oxford University Press.
- Estrada, E.E., (2010). "Quantifying network heterogeneity". *Phys. Rev*, 82, 066102.
- Evans, J.M., Brown, A., Baker, G.R., (2015). "Intellectual capital in the healthcare sector: a systematic review and critique of the literature". *BMC health services research*, 15(1), p.556.
- Fahey, L., Prusak, L., (1998), "The eleven deadliest sins of knowledge management".
- Fahey, L., Prusak, L., (1998). "The eleven deadliest sins of knowledge management". *California Management Review*, 40, 265–276.
- Feld, S.L., Suitor, J.J., Hoegh, J.G. (2007). "Describing Changes in Personal Networks over Time". *Field Methods*, 19, pp. 218-236.

- Fenza, G., Furno, D., Loia, V., Veniero, M., (2010). " February. Agent-based cognitive approach to airport security situation awareness". In *Complex, Intelligent and Software Intensive Systems (CISIS)*, 2010 International Conference (pp. 1057-1062). IEEE.
- Ferdows, K., (2006). "Transfer of changing production know-how". *Production and Operations Management*, 15(2), 1–9.
- Ferlander, S. (2007). "The importance of different forms of social capital for health". *Acta Sociologica*, 50(2): 115-128.
- Fernandez Perez, V., Martin Rojas, R., Garcia Sanchez, E. (2011). "Redes sociales empresariales": ¿Una oportunidad o una pérdida de tiempo en la sociedad del conocimiento? *Gestión Joven*, 7, 38-50.
- Fernandez-Perez, V., Garcia-Morales, V. J., " The effects of CEOs' social networks on organizational performance through knowledge and strategic flexibility". *Personnel Review*, 41(6), 777-812.
- Fischer, E., Reuber, A. R. (2011). "Social interaction via new social media: (How) can interactions on Twitter affect effectual thinking and behavior?" *Journal of business venturing*, 26(1), pp. 1-18.
- Fitzgerald, B. and Wynn, E., (2006). "IT innovation for adaptability and competitiveness". IFIP TC8/WG8.6 Seventh Working Conference on IT Innovation for Adaptability and Competitiveness, 30 May-02June 2004, Leixlip, Ireland.
- Fliaster, A., Spiess, J., (2008). "Knowledge mobilization through social ties: The cost-benefit analysis". *Schmalenbach Business Review*, 60(1), 99-117.
- Ford, D., Chan, Y. (2002). "Knowledge Sharing in a Cross-Cultural Setting: A Case Study" (No. 02-09). Kingston: Queen's School of Business, Queen's University at Kingston.
- Fortier, M., Kowal, J., (2007). "The flow state and physical activity behaviour change as motivational outcomes: A self-determination theory perspective". *Intrinsic motivation and self-determination in exercise and sport*, pp.113-125.
- Friedman, V. J., Lipshitz, R., Overmeer, W. (2001). "Creating Conditions for Organizational Learning". In M. Dierkes, A. B. Antal, J. Child & I. Nonaka (Eds.), *Handbook of organizational learning and knowledge* (pp. 757-774). Oxford: Oxford University Press.
- FT.com, (2015). "Definition of globalization". [online] Available at: <<http://lexicon.ft.com/Term?term=globalisation>> [Accessed 01 May 2015]
- Fukuyama, F., (1997), "Social capital and the modern capitalist economy: creating a high trust workplac ", *Stern Business Magazine*, Vol. 4 No. 1, pp. 1-16.
- Fullwood, R., Rowley, J., Delbridge, R., (2013). "Knowledge sharing amongst academics in UK universities". *Journal of Knowledge Management*, 17, 123–136.

- García-Sánchez, E., García-Morales, V.J. and Martín-Rojas, R., (2017). "Do social networks and technological capabilities help knowledge management?" *Journal of Technology Management & Innovation*, 12(4), pp.65-69.
- Gee-Woo, B., Jae-Nam, L., Young-Gul, K., Zmud, R. (2005). "Behavioral intention formation in knowledge sharing: examining the roles of extrinsic motivators, social-psychological forces, and organizational climate". *MIS Quarterly*, 29(1), 87-111.
- Gephart, M.A., Marsick, V.J., Van Buren, M.E., Spiro, M.S. (1996). "Learning organizations come alive". *Training and Development*, 50(12), pp. 34-36.
- Gerbin, A., Drnovsek, M., (2020), "Knowledge-sharing restrictions in the life sciences: personal and context-specific factors in academia–industry knowledge transfer", *Journal of Knowledge Management*, Vol. 24 No. 7, pp. 1533-1557.
- Gerhart, B., (2008). "How much does national culture constrain organizational culture?" *Management and organization review*, 5(2), pp. 241-259.
- Ghuri, P. N., Grønhaug, K., (2005). "Research methods in business studies: A practical guide". 3rd ed. Pearson Education.
- Ghobadi, S., D'Ambra, J. (2012). "Knowledge sharing in cross-functional teams: A cooperative model". *Journal of Knowledge Management*, 16, 285–301.
- Gibbert, M., Krause, H., (2002), "Practice exchange in a best practice marketplace", in Davenport, T.H. and Probst, G.J.B. (Eds), *Knowledge Management Case Book: Siemens Best Practices*, Public Corporate Publishing, Erlangen, pp. 89-105.
- Giddens, A., (1990), "The Consequences of Modernity, Stanford": Stanford University Press.
- Gilbert, M., Cordey-Hayes, M., (1996). "Understanding the process of knowledge transfer to achieve successful technological innovation". *Technovation*, 16(6), 301–312.
- Gill, S.J., (2009). "Developing a learning culture in nonprofit organizations". Sage.
- Gittell, J., Weiss, L., (2004). "Coordination networks within and across organizations: a multi-level framework". *Journal of Management Studies* 41 (1), 127–153.
- Glassop, L., (2002), "The organizational benefits of teams", *Human Relations*, Vol. 55 No. 2, pp. 225-50.
- Glisby, M., Holden, N. (2003). "Contextual constraints in knowledge management theory: the cultural embeddedness of Nonaka's knowledge-creating company". *Knowledge and Process Management*, 10(1), 29-36.

- Goh, S., (2002). "Managing effective knowledge transfer: an integrative framework and some practice implications". *Journal of Knowledge Management*, 6 (1), pp.23-30.
- Goh, S., Richards, G., (1997). "Benchmarking the learning capability of organizations". *European Management Journal*, 15(5), pp.575-583.
- Goh, S. C., (2002). "Managing effective knowledge transfer: An integrative framework and some practice implications". *Journal of Knowledge Management*, 6(1), 23.
- Goldstein, H., (1990). "Problem Oriented Policing". New York: McGraw-Hill
- Google maps, (2013). " United Arab Emirates". [online] Available at: <[https://www.google.co.uk/?gws\\_rd=cr,ssl&ei=MQsuUqLaFsyRhQejulC4Cw#q=uae+map](https://www.google.co.uk/?gws_rd=cr,ssl&ei=MQsuUqLaFsyRhQejulC4Cw#q=uae+map)> [Accessed on 01 May 2015]
- Gottschalk, P., (2006). "Stages of knowledge management systems in police investigations". *Knowledge-Based Systems*, 19(6), pp. 381-387.
- Gottschalk, P., (2009). "Policing the police: Knowledge management in law enforcement". New York: Nova Science Publishers, pp. 129.
- Grant, R., (1996). "Prospering in dynamically-competitive environments: organizational capability as knowledge integration". *Organization Science* 7 (4), 375–387.
- Gray, B., Wood, D. J., (1991). "Collaborative alliances: Moving from practice to theory". *Journal of Applied Behavioral Science*, 27, 3-22.
- Greengard, S., (1998). "Will your culture support KM?" *Workforce*, 77(10), 93-94.
- Griffiths, K., Birdi, K., Alsina, V., Andrei, D., Baban, A., Bayeral, P.S., Bisogni, F., Chirca, S., Constanzo, P., Gascó, M., Gruschinske, M., (2016). "Knowledge sharing practices and issues in policing contexts: a systematic review of the literature". *European Journal of Policing Studies*, 3(3), pp.267-291.
- Grosse, R., (1996). "International technology transfer in services". *Journal of International Business Studies*, 27(4), 781–800.
- Grotenhuis, F., Weggeman, M., (2002). "Knowledge Management in International Mergers". *Knowledge and Process Management*. 9(2), 83-89.
- Gulati, R., (1999). "Network location and learning: the influence of network resources and firm capabilities on alliance formation". *Strategic Management Journal*, 20(5), pp. 397-420.
- Gulati, R., (2007). "Silo busting". *Harvard business review*, 85(5), 98-108.
- Gupta, A., Govindarajan, V., (2000). "Knowledge Flows within Multinational Corporations". *Strategic Management Journal*, 21(4), 473–496.
- Gupta, A.K., Govindarajan, V., (2000). "Knowledge flows within multinational corporations". *Strategic Management Journal*, 21(4), pp. 473–496.



- Gupta, S., Polonsky, M., (2013). "Inter-firm learning and knowledge-sharing in multinational networks: an outsourced organization's perspective". *Journal of Business Research* 67 (4), 615–622.
- Gururajan, V., Fink, D. (2010). "Attitudes towards knowledge transfer in an environment to perform". *Journal of Knowledge Management*, 14, 828–840.
- H. Yli-Renko, E. Autio and H. J. Sapienza., (2001). "Social capital, knowledge acquisition, and knowledge exploitation in young technology-based firms", *Strategic Management Journal*, 22(6), pp. 587-613.
- Schulze, A., Hoegl, M., (2008). "Organizational knowledge creation and the generation of new product ideas: A behavioral approach", *Research Policy*, 37(10), pp. 1742- 1750.
- Hair, J.F., Hult, G.T.M., Ringle, C.M., Sarstedt, M., (2014). "A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)", Sage Publications Ltd, New York, NY.
- Håkansson, H., Lind, J., (2004). "Accounting and network coordination", *Accounting, Organization and Society*, 29, 51-72.
- Hall, H., (2001). "Input-friendliness: motivating knowledge sharing across intranets". *Journal of Information Science*, 27(3), 139-146.
- Hamel, G., (1991). "Competition for competence and interpreter learning within international strategic alliance". *Strategic Management Journal*, 12 (S1), pp. 83-103.
- Hanneman, R.A., Riddle, M. (2005). "Introduction to Social Network Methods". University of California, Riverside, CA.
- Hansen, M. T., Mors, M. L., Løvås, B. (2005). "Knowledge sharing in organizations: Multiple networks, multiple phases". *Academy of Management Journal*, 48(5), 776-793.
- Hansen, M. T., Nohria, N., (1999). What's your strategy for managing knowledge? *Harvard Business Review*, 77(2), pp. 106.
- Hargadon, A., Sutton, R. I. (1997). "Technology brokering and innovation in a product development firm". *Administrative Science Quarterly*, 42, 718–749.
- Harper, J., Harper, J. C., (2002). "Knowledge management and change in international organisations: Learning from the private sector". In: J. Kurbalija, ed. *Knowledge and Diplomacy*. [online] Available at: <<http://www.diplomacy.edu/resources/general/knowledge-management-and-change-international-organisations-learning-private>> [Accessed 01 May 2015]
- Harpham, T. (2008). "The measurement of community social capital. In Kawachi, I., Subramanian, S.V., and Kim, D. (Eds)". *Social Capital and Health*, Springer: New York, (pp. 51-62).
- Harpham, T., Grant, E., Homas, E. (2002). "Measuring social capital within health surveys: Key issues". *Health Policy and Planning*, 17, 106–111.
- Harrigan, K.R., (1985), "Vertical integration and corporate strategy". *Academy of Management Journal*, Vol. 28 No. 2, pp. 397-425.

- Harrison, R. T., Leitch, C. M., (2003). "University technology transfer offices and second order spinouts: Maximising the potential of university spinouts". *Implement Sci* 2: 1–14.
- Harvey, G., Skelcher, C., Spencer, E., Walshe, K., (2010). "Absorptive capacity in a non-market environment". *Public Management Review*, 12(1), pp. 77-97.
- Hazleton, V. Kennan, W., (2000). "Social capital: reconceptualizing the bottom line". *Corporate communications* 5 (2) 81-86.
- He, Q., Galleary, D., Ghobadian, A., (2011). "Knowledge transfer: the facilitating attributes in supply-chain partnership". *Information Systems Management*, 28 (1), pp. 57-70.
- Helfrich CD, Li Y-F, Mohr DC, Meterko M, Sales AE., (2007). "Assessing an organizational culture instrument based on the Competing Values Framework: Exploratory and confirmatory factor analyses". *Implement Sci* 2: 1–14.
- Hemsley, J., Mason, R.M., (2013). "Knowledge and knowledge management in the social media age". *Journal of Organizational Computing and Electronic Commerce*, 23(1-2), pp.138-167.
- Hendriks, L., Assessing. P.H., (2004) *The Role of Culture In Knowledge Sharing*. In *Proceedings of Fifth European Conference In Organization, Knowledge, Learning And Capabilities*, Innsbruck, 2004. Citeseer.
- Hendriks, P. H. J., (1999). "Why share knowledge? The influence of ICT on the motivation for knowledge sharing". *Knowledge and Process Management*, 6(2), 91-100.
- Heritage.L., (2014). "Validation of the Organizational Culture Assessment Instrument" <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3965488/>
- Hislop, D., (2005). "Knowledge Management in Organizations: A Critical Introduction". Oxford University Press.
- HMIC, (2012). "Increasing efficiency in the Police Service". [online] Available at: <<http://www.justiceinspectorates.gov.uk/hmic/media/increasing-efficiency-in-the-police-service.pdf>> [Accessed 01 May 2015]
- Hofstede, G., (1980). "Cultures consequences: International differences in work-related values". Beverly Hills, CA: Sage Publications.
- Hofstede, G., Hofstede, G.J. and Minkov, M., (1991). "Cultures and organizations". *Software of the mind* (Vol. 2). London: McGraw-Hill.
- Holden, N., (2001). "Knowledge management: Raising the specter of the cross-cultural dimension". *Knowledge and Process Management*, 8(3), pp. 155-63.
- Hollin, C. R., (2013). "Psychology and crime: An introduction to criminological psychology". Routledge.
- Holowetzki, A., (2002). "The relationship between knowledge management and organizational culture: An examination of cultural factors that support the

flow and management of knowledge within an organization". Eugene, OR: University of Oregon Applied Information Management Program.

Holsapple, C.W., Joshi, K.D. (2000). "An Investigation of Factors that Influence the Management of Knowledge in Organizations," *Journal of Strategic Information Systems*, (9:2-3), pp 235-261.

Holsapple, C.W., Joshi, K.D., (2002). "Knowledge Manipulation Activities: The Results of a Delphi Study," *Information and Management*, (39), pp 477-490.

Hosein, M., (2013). "Social technologies and informal knowledge sharing within and across organizations". The School of Information Studies, Syracuse University.

Howells, J., (2006). "Intermediation and the role of intermediaries in innovation". *Research Policy*, 35, 715–728.

Hsiu-Fen, L., (2007). "Effects of extrinsic and intrinsic motivation on employee knowledge sharing intentions". *Journal of Information Science*, 33(2), 2007, 135–149.

Hsu, C-P. (2015). "Effects of social capital on online knowledge sharing: positive and negative perspectives". *Online Information Review*, 39(4), pp. 466-484

Huang, H.C., (2009). "Designing a knowledge-based system for strategic planning: A balanced scorecard perspective". *Expert Systems with Applications*, 36(1), pp.209-218.

Huang, J. C., Newell, S., Galliers, R. D., Pan, S. L., (2003). "Dangerous liaisons? Component-based development and organizational subcultures". *IEEE Transactions on Engineering Management*, 50(1), 89-99.

Huang, M. C., Chiu, Y. P., Lu, T. C. (2013). "Knowledge governance mechanisms and repatriate's knowledge sharing: The mediating roles of motivation and opportunity". *Journal of Knowledge Management*, 17, 677–694.

Hulst, M.V., 2013. Storytelling at the police station. *British Journal of Criminology*, 53(4), pp. 624-642.

Hult, G.T.M. and Ferrell, O.C., 1997. Global organizational learning capacity in purchasing: Construct and measurement. *Journal of Business Research*, 40(2), pp.97-111. *International Journal of Knowledge and Learning*, vol. 4, no. 1, pp. 18-35.

Hung, S.-W., and Cheng, M.-J. (2013). Are you ready for knowledge sharing? An empirical study of virtual communities. *Computers & Education*. 62, 8-17.

Hustad, E., (2007). "Managing Structural Diversity: The Case of Boundary Spanning Networks. *Electronic journal of knowledge management*, 5(4).

Hutchings, K., Michailova, S., (2004). "Facilitating knowledge sharing in Russian and Chinese subsidiaries: the role of personal networks and group membership". *Journal of Knowledge Management*. 8(2), 84-94.

- Hutzschenreuter, T., Horstkotte, J. (2010). "Knowledge transfer to partners: a firm level perspective". *Journal of Knowledge Management*, 14 (3), pp. 428-448.
- Huxham, C., Vangen, S., (2005). "Managing to collaborate: The theory and practice of collaborative advantage". New York: Routledge.
- Hyldegård, J., (2006). "Collaborative information behaviour: exploring Kuhlthau's information search process model in a group-based educational setting". *Information Processing & Management* 42 (1) 276-298 (2006)
- Inkpen, A., (2000). "Learning through joint ventures: A framework of knowledge acquisition". *Journal of Management Studies*, 37 (7), pp. 1019-1043.
- Inkpen, A., Dinur, A., (1998). "Knowledge management and international joint ventures". *Organization Science*,9(4),45468.
- Inkpen, A.C., Tsang, E.W.K. (2005), "Social capital, networks, and knowledge transfer", *Academy of Management Review*, Vol. 30 No. 1, pp. 146-165.
- Jap, S.D. (1999), "
- Innes, M., Roberts, C., (2011). "Policing, situational intelligence and the information environment: A report to Her Majesty's Inspectorate of Constabulary". Cardiff: Universities' Police Science Institute, Cardiff University.
- Ipe, M., (2003). "Knowledge sharing in organizations: a conceptual framework". *Human Resource Development Review*, 2(4), pp. 337-359.
- Isaksen, S.G., Lauer, K.J., Ekvall, G. (1999). "Situational Outlook Questionnaire: a measure of the climate for creativity and change". *Psychological Reports*, **85**, 665-674.
- Isett, K.R., Mergel, I.A., LeRoux, K., Mischen, P.A., Rethemeyer, R.K., (2011). "Networks in public administration scholarship: Understanding where we are and where we need to go". *Journal of Public Administration Research and Theory*, 21(suppl\_1), pp.i157-i173.
- Jackson, A., J. Yates and W. Orlikowski, 2007. *Corporate Blogging: Building Community through*
- James, P., (2005). "Knowledge asset management: the strategic management and knowledge management nexus". DBA thesis, Southern Cross University, Lismore. *Journal of Knowledge Management*, vol. 4, no. 3, pp. 204-216.
- Jap, S.D., (1999), "Pie-expansion efforts: collaboration processes in buyer-supplier relationships". *Journal of Marketing Research*, Vol. 36 No. 4, pp. 461-475.
- Jarrahi, M.H., (2017). "Social Media, Social Capital, and Knowledge Sharing in Enterprise". *IT Professional*, 20(4), pp.37-45.
- Jasimuddin, S., Connell, N., Klein, J., (2012). "Knowledge transfer frameworks: an extension incorporating knowledge repositories and knowledge administration". *Information Systems Journal* 22 (3), 195–209.

- Johnson, K.E., (1995). "Understanding communication in the second language classroom" (Cambridge Language Education Series). Cambridge: Cambridge University Press. 204.
- Jones, N. B., Mahon, J. F. (2012). Nimble knowledge transfer in high velocity/turbulent environments. *Journal of Knowledge Management*, 16, 774–788.
- Jones, S., (2008). "Training and cultural context in the Arab Emirates: fighting a losing battle?" *Employee Relations*, 30, pp. 48-62.
- Jönsson, S., Grönlund, A., (1988). "Life with a sub-contractor: New technology and management accounting", *Accounting, Organization and Society*, 15, 512-532.
- Josselson, R., (1996). "Revising herself: The story of women's identity from college to midlife". New York: Oxford University Press.
- Kale, P., Singh, H., Perlmutter, H. (2000), "Learning and protection of proprietary assets in strategic alliances: building relationship capital". *Strategic Management Journal*, Vol. 21, No. 3, pp. 217-237.
- Kalliath TJ, Bluedorn AC, Gillespie D.F., (1999) "A confirmatory factor analysis of the competing values instrument". *Educ Psychol Meas* 59: 143–158
- Kankanhalli, A., Tan, B. C. Y., Wei, K. K., (2005). "Contributing Knowledge to Electronic Knowledge Repositories: An Empirical Investigation," *MIS Quarterly*, 29(1), 113–143.
- Kanter, R.M. (1994), "Collaborative advantage: the art of alliances". *Harvard Business Review*, Vol. 72 No. 4, pp. 96-108.
- Kaplan, R. S. and Norton, D. P., 1996. *The balanced scorecard: Translating strategy into action*. Boston, MA: Harvard Business School.
- Karadsheh, L., Mansour, E., Alhawari, S., Azar, G., El-Bathy, N., (2009). "A theoretical framework for knowledge management process: towards improving knowledge performance". *Communications of the IBIMA*, 7, pp.67-79.
- Karagoz, Y., Whiteside, N., Korthaus, A., (2020), "Context matters: enablers and barriers to knowledge sharing in Australian public sector ICT projects", *Journal of Knowledge Management*, Vol. 24 No. 8, pp. 1921-1941.
- Karim, N. S. A. and Hussein, R., (2008). "Managers' perception of information management and the role of information and knowledge managers: The Malaysian perspectives". *International journal of Information management*, 28(2), pp. 114-127.
- Karn, J., (2013). "Policing and crime reduction: The evidence and its implications for practice". *Police Foundation*. UAE.
- Kaur, V., Kahlon, R., Randhawa, S., (2012). "Conceptual Framework Of Relationship Between Knowledge Management And Organizational Culture". *International Journal of Technology Management*. Vol 3 pp22-35.

- Kayworth, T., Leidner, D., (2003). "Organizational Culture as a Knowledge Resource. In C. W. Holsapple (Ed.)". *Handbook on Knowledge Management* (Vol. 1: Knowledge Matters, pp. 235-252). Berlin: Springer.
- Kianto, A., (2011). "The influence of knowledge management on continuous innovation". *International Journal of Technology Management*, 55(1/2), pp. 110-121.
- Kijkuit, B., Van Den Ende, J., (2007). "The organizational life of an idea: Integrating social network, creativity and decision-making perspectives". *Journal of Management Studies*, 44(6), 863-882.
- Kim, E. J. 2007. *An Integrative Literature Review Of Knowledge Sharing Through Cultural Lenses*. Online Submission.
- King, W.R., (2009). "Knowledge management and organizational learning" (pp. 3-13). Springer US.
- Klein, A., Waxin, M.F., Radnell, E., (2009). "The impact of the Arab national culture on the perception of ideal organizational culture in the United Arab Emirates: An empirical study of 17 firms". *Education, Business and Society: Contemporary Middle Eastern Issues*, 2, pp. 44-56.
- Knight, D. J., (1999). "Performance measures for increasing intellectual capital". *Strategy and Leadership*, 27(2), pp. 22-27.
- Ko, D., Kirsch, L., King, W., (2005). "Antecedents of knowledge transfer from consultants to clients in enterprise system implementations". *MIS Quarterly* 29 (1), 59–85
- Kollock, P. (1998). *Social Dilemmas: The Anatomy of Cooperation*. *Annual Review of Sociology*, 24, pp. 183-214.
- Kožuch, B., (2011). "Towards innovation in the management of local government". *of Intercultural*, 3(2), pp.77-87.
- Kucharska, W., (2017). "Tacit Knowledge Sharing and Project Performance. Does the Knowledge Workers' Personal Branding Matter?". *Advances in Economics and Business*, 5, pp.518-529.
- Kumar, J. A., Ganesh, L. S., (2009). "Research on knowledge transfer in organizations: A morphology". *Journal of Knowledge Management*, 13(4), 161–174.
- Kurman, J., (2003). "Why is self-enhancement low in certain collectivist cultures? An Investigation of Two Competing Explanations". *Journal of Cross-Cultural Psychology*, 34, 496-510.
- Kyoon Yoo, D., Vonderembse, M.A. and Ragu-Nathan, T.S., 2011. *Knowledge quality: antecedents and consequence in project teams*.
- Lam, A., (1996). "Engineers, management and work organization: A comparative analysis of engineers' work roles in British and Japanese electronics firms". *Journal of Management Studies*, 33(2), 183-212.
- Lane, P. J., Lubatkin, M. (1998). 'Relative absorptive capacity and interorganizational learning'. *Strategic Management Journal*, 19, 461–77.

LaPorte, T.M., (2006). "Organizational strategies for complex systems resilience, reliability, and adaptation". In: Auerswald, P., Branscomb, L., LaPorte, T., Michel-Kerjan, E.O. (Eds.), *Seeds of Disasters*. Cambridge University Press, New York.

Larsson, R., Bengtsson, L., Henriksson, K., Sparks, J., (1998). "The interorganizational learning dilemma: collective knowledge development in strategic alliances". *Organization Science* 9 (3), 285–305.

Lave, J, Wenger, E., (1991). "Situated Learning: Legitimate Peripheral Participation (Learning in Doing: Social, Cognitive and Computational Perspectives)". Cambridge: Cambridge University Press

Lawson, S., (2003). "Examining the relationship between organizational culture and knowledge management", DIBA thesis, Nova Southeastern University, Fort Lauderdale.

Lefebvre, V.M., Sorenson, D., Henchion, M., Gellynck, X., (2016). "Social capital and knowledge sharing performance of learning networks". *International Journal of Information Management*, 36(4), pp.570-579.

Leonard, D., Sensiper, S. (1998). The role of tacit knowledge in group innovation. *California Management Review*, 40(3), 112-132.

Leonardi, P. and Contractor, N., (2018). "Better People Analytics". *Harvard Business Review* 96 (6),70

Lesser, E. L. (2000). "Leveraging social capital in organizations". In E.L. Lesser (Ed.), *Knowledge and social capital: foundations and applications* (pp. 3-16). Boston, MA: Butterworth-Heinemann.

Leung, N.K., Lau, S.K. and Tsang, N., (2012). "An Ontology-Based Collaborative Interorganizational Knowledge Management Network" (Cik-Net). In PACIS (p. 38).

Lichtenthaler, U., & Ernst, H. (2007). External technology commercialization in large firms: Results of a quantitative benchmarking study. *R&D Management*, 37, 383–397.

Lilleoere, A. M., & Holme Hansen, E. (2011). Knowledge-sharing enablers and barriers in pharmaceutical research and development. *Journal of Knowledge Management*, 15, 53–70.

Lim, TT 2007, 'Organization culture and knowledge management', DBA thesis, Southern Cross University, Lismore.

Lin, H. F. 2007. Effects of Extrinsic and Intrinsic Motivation On Employee Knowledge Sharing Intentions. *Journal Of Information Science*, 33, Pp. 135–149.

Linder, J, Jarvenpaa, S. and Davenport, T. (2003) Toward an innovation sourcing strategy. *MIT Sloan Management Review*, 44 (4), pp. 43-49.

Liu, Y.C. and Li, F., 2012. Exploration of social capital and knowledge sharing: An empirical study on student virtual teams. *International Journal of Distance Education Technologies (IJDET)*, 10(2), pp.17-38.

Liyanage, C., Elhag, T., Ballal, T., & Li, Q. (2009). Knowledge communication and translation—A knowledge transfer model. *Journal of Knowledge Management*, 13(3), 118–131.

Loebbecke, C., van Fenema, P.C., Powell, P., (2016). “Managing inter-organizational knowledge sharing”. *The Journal of Strategic Information Systems*, 25(1), pp.4-14.

Loewe, M., Blume, J., and Speer, J. (2008). How favouritism affects the business climate: empirical evidence from Jordan. *Middle East Journal*, 62, pp. 259–276.

Lori, N., (2011). “National security and the management of migrant labor: A case study of the United Arab Emirates”. *Asian and Pacific Migration Journal*, 20(3-4), pp. 315-337.

Lozano, R., (2007). “Collaboration as a pathway for sustainability”, *Sustainable Development*, 15, 370-381.

Luarn, P., Hsieh, A.Y., (2014). “Speech or silence: the effect of user anonymity and member familiarity on the willingness to express opinions in virtual communities”. *Online Information Review*, 38(7), pp. 881-895.

Luen, T. W. and Al-Hawamdeh, S., 2001. Knowledge management in the public sector: Principles and practices in police work. *Journal of Information Science*, 27(5), pp. 311-318.

Luhmann, N., (1979), “Trust and Power”. Chichester: Wiley.

Lynn, L. H., Reddy, N. M., Aram, J. D., (1996). “Linking technology and institutions—The innovation community framework”. *Research Policy*, 25, 91–106.

Macke, J., Vallejos, R.V., Faccin, K., Genari, D., (2013). “Social capital in collaborative networks competitiveness: the case of the Brazilian Wine Industry Cluster”. *International Journal of Computer Integrated Manufacturing*, 26(1-2), pp.117-124.

Mackenzie, M.L., (2003). “Information gathering revealed within the social network of line-managers”. In *Proceedings of the 66th Annual Meeting of the American Society for Information Science and Technology*, (85-94). Information Today, Medford NJ.

Magnier-Watanabe, R., (2011). “Getting ready for kaizen: Organizational and knowledge management enablers”. *VINE*, 41, 428–448.

Majchrzak, A., Faraj, S., Kane, G.C., Azad, B., (2013). “The contradictory influence of social media affordances on online communal knowledge sharing”. *Journal of Computer-Mediated Communication*, 19(1), pp.38-55.

Malik, K., (2002). “Aiding the technology manager: A conceptual model for intra-firm technology transfer”. *Technovation*, 22, 427–436.

Malit Jr., F. T., Al Youha, A., (2013). “Labor migration in the United Arab Emirates: Challenges and responses”. Migration Policy Institute. [online] Available at: <<http://www.migrationpolicy.org/article/labor-migration-united-arab-emirates-challenges-and-responses>> [Accessed 01 May 2015]



- Marsella, A. J., 2005. Hegemonic globalization and cultural diversity: The risks of monoculturalism. *Australian Mosaic*, 13(11), pp. 15-19.
- Marsick, V.J., and Watkins, K.E. (2003). "Demonstrating the value of an organization's learning culture: The dimensions of the learning organization questionnaire". *Advances in Developing Human Resources*, 5(2), pp. 132-151.
- Mårtensson, M., (2000), "A critical review of knowledge management as a management tool", *The Learning Business*. Vol12. pp23-56.
- Martin Rojas, R., Garcia Morales, V. J., Garcia Sanchez, E., (2011). "The influence on corporate entrepreneurship of technological variables". *Industrial Management and Data Systems*, 11(7), 984-1005.
- Martínez-Costa, M., Jiménez-Jiménez, D., (2009). "The effectiveness of TQM the key role of organizational learning in small businesses". *International Small Business Journal*, 27(1), pp.98-125.
- Matusik, S., Hill, C., (1998). "The utilization of contingent work, knowledge creation and competitive advantage". *Academy of Management Review* 23 (4), 680–697.
- McAdam, R., McCreedy, S., (1999). "A critical review of knowledge management models". *The Learning Organisation*, 6(3), pp.91-100.
- McAdam, R., Reid, R., (2000). "A comparison of public and private sector perceptions and use of knowledge management". *Journal of European Industrial Training*, 24(6), pp. 317-329.
- McAdam, R., Moffett, S., Peng, J. (2012). "Knowledge sharing in Chinese service organizations: A multi case cultural perspective". *Journal of Knowledge Management*, 16, 129–147.
- McDermott, R. and O'Dell, C. (2001) Overcoming culture barriers to sharing knowledge, *Journal of Knowledge Management*, Vol. 5, No. 1, pp 76-85.
- McEvily, B., Zaheer, A. (1999). "Bridging ties: A source of firm heterogeneity in competitive capabilities". *Strategic Management Journal*, 20, 1133–1156.
- Ardichvili, A., Page, V., Wentling, T., (2003) "Motivation and barriers to participation in virtual knowledge-sharing communities of practice", *Journal of Knowledge Management*, Vol. 7 Issue: 1, pp.64-77.
- Puijenbroek, V., Poell, T., Kroon, R.F., Timmerman, B., (2014). "The effect of social media use on work-related learning". *Journal of Computer Assisted Learning*, 30(2), pp.159-172.
- McEvily, B., Zaheer, A. (1999). "Bridging ties: A source of firm heterogeneity in competitive capabilities". *Strategic Management Journal*, 20, 1133–1156.
- McGill, M. E., Slocum, J. W. (1994). "The smarter organization: how to build a business that learns and adapts to marketplace needs". New York: Wiley.
- McGrath, C., Blythe, J., Krackhardt, D., (1997). "The effect of spatial arrangement on judgments and errors in interpreting graphs". *Social Networks*, 19, 223–242.

- McKeen, J. D., Zack, M. H., Singh, S., (2006). "Knowledge management and organizational performance: An exploratory survey". In System Sciences, 2006. HICSS'06. Proceedings of the 39th Annual Hawaii International Conference on, 7, pp. 152b-152b. IEEE.
- McLure Wasko, M., Faraj, S. (2000). "It is what one does": Why people participate and help others in electronic communities of practice. *The Journal of Strategic Information Systems*, 9, 155–173.
- McNabb, D. E., (2007). "Knowledge management in the public sector". Armonk New York: M.E. Sharpe Inc.
- Md Zahidul, J. A., Doshi, H. M., Zainal, A. A. (2009). "Team learning, top management support and new product development success". *International Journal of Managing Projects in Business*, 2(2), 238-260.
- Mendling, J., (2006). "Testing density as a complexity metric for EPCs". In German EPC workshop on density of process models (Vol. 19).
- Meyer, S., (2012). "Reducing harm from explosive attacks against railways". *Security J.* 25 (4), 309–325.
- Miao, Y., Choe, S., Song, J., (2011). "Transferring subsidiary knowledge in the global learning context". *Journal of Knowledge Management*, 15, 478–496.
- Miles, M. B., Huberman, A. M., (1994). "Qualitative data analysis: An expanded sourcebook". Sage.
- Milgram, S., (1967). "Six degrees of separation". *Psychology Today*, 2, pp.60-64.
- Mitchell, H., (2003). "Technology and knowledge management: Is technology just an enabler or does it also add value?" In E. Coakes (Ed.), *Knowledge management* (pp. 66–78). London: IRM Press.
- Mohamed, A., Hamdy, H. (2008). "The stigma of wasta: the effect of wasta on perceived competence and morality". German University in Cairo, Working Paper Series (No. 5).
- Mohamed, M. S., O'Sullivan, K. J., Ribiere, V., (2008). "A paradigm shift in the Arab region knowledge evolution". *Journal of Knowledge Management*, 12(5), pp. 107-220.
- Monteiro, L. F., Arvidsson, N., Birkinshaw, J. (2008). "Knowledge flows within multinational corporations: Explaining subsidiary isolation and its performance implications". *Organization Science*, 19(1), 90–107.
- Moon, Y. J. and Kym, H. G., (2006). "A model for the value of intellectual capital". *Canadian Journal of Administrative Sciences/ Revue Canadienne des Sciences de l'Administration*, 23(3), pp. 253-269.
- Moreland, R.L., Argote, L. and Krishnan, R., (2002). "Training people to work in groups". In *Theory and research on small groups* (pp. 37-60). Springer US.
- Muhammed, S., Zaim, H., (2020), "Peer knowledge sharing and organizational performance: the role of leadership support and knowledge

- management success", *Journal of Knowledge Management*, Vol. 24 No. 10, pp. 2455-2489.
- Müller-Prothmann, T., (2007). "Social network analysis: A practical method to improve knowledge sharing". *Hands-on knowledge co-creation and sharing*, pp.219-233.
- Rejeb-Khachlouf, N., Mezghani, L., Quélin, B., (2011) "Personal networks and knowledge transfer in inter-organizational networks", *Journal of Small Business and Enterprise Development*, Vol. 18 Issue: 2, pp.278-297,
- Nagy, T. F., (2005). "Ethics in plain English: An illustrative casebook for psychologists". Washington, DC: American Psychological Association.
- Nahapiet, J. and Ghoshal, S. (1998), "Social capital, intellectual capital, and the organization advantage". *Academy of Management Review*, Vol. 23 No. 2, pp. 242-266.
- Nakano, D., Muniz, Jr. J., Dias Batista, E., (2013). "Engaging environments: Tacit knowledge sharing on the shop floor". *Journal of Knowledge Management*, 17, 290–306.
- Neef, D. (1999). "Making the case for knowledge management: the bigger picture". *Management Decision*, 37(1), 72-78.
- Neuman, W.L., (2011). "Social Research Methods: Qualitative and Quantitative Approaches". 7th ed., Boston: Pearson - Allyn and Bacon.
- Ngai, E. W., Tao, S. S., Moon, K. K., (2015). "Social media research: Theories, constructs, and conceptual frameworks". *International Journal of Information Management*. 35(1), 33-44.
- Nguyen, T.-M., Malik, A., (2020), "Cognitive processes, rewards and online knowledge sharing behaviour: the moderating effect of organisational innovation", *Journal of Knowledge Management*, Vol. 24 No. 6, pp. 1241-1261.
- Nielsen, B. B., Nielsen, S. (2009). "Learning and innovation in international strategic alliances: An empirical test of the role of trust and tacitness". *Journal of Management Studies*, 46(6), 1031-1056.
- Nonaka, I. (1991). "The knowledge-creating company". *Harvard Business Review*, 69(6), pp. 96-104.
- Nonaka, I. (1994), "A dynamic theory of organizational knowledge creation", *Organization Science*, Vol. 5 No. 1, pp. 14-37.
- Nonaka, I., (1994). "A dynamic theory of organizational knowledge creation". *Organization Science*, 5(1), 14–37.
- Nonaka, I., Takeuchi, H., (1995), "The knowledge creating company". New York: Oxford University Press, pp. 284.
- Nonaka, I., Toyama, R., (2003). "The knowledge-creating theory revisited: knowledge creation as a synthesizing process". *Knowledge management research & practice*, 1 (1) pp.2-10.

- Nonaka, I., Takeuchi, H., (1995). "The Knowledge-Creating Company". Oxford University Press, New York, NY.
- Nonaka, I., Toyama, R. and Konno, N., (2000). "SECI, Ba, and leadership: a unified model of dynamic knowledge creation". *Long Range Planning*, 33, pp 5–34.
- non-profit organisations (NPOs)" (2003), *Journal of Knowledge Management*, Vol. 18 Issue: 5, pp.867-885.
- Ahmad, N., Daghfous, A., (2010),"Knowledge sharing through inter-organizational knowledge networks", *European Business Review*, Vol. 22 Iss 2 pp. 153 – 174.
- O'Dell, C., Grayson, C. J., (1998). "If only we knew what we know: identification and transfer of internal best practices". *California Management Review*, 40, 154–174.
- Obstfeld, D., (2005). "Social networks, the tertius lungens orientation, and involvement in innovation". *Administrative Science Quarterly*, 50, 100-130.
- OECD, (1996). "The knowledge-based economy". [online] Available at: <<http://www.oecd.org/sti/sci-tech/1913021.pdf>> [Accessed 01 May 2015]
- OECD, 2001. Knowledge management in the public and private sectors: Similarities and differences in the challenges created by the knowledge-intensive economy. [online] Available at: <<http://www.oecd.org/edu/innovation-education/2667077.pdf>> [Accessed 01 May 2015]
- Ojala, M., (2005). "Blogging for knowledge sharing, management and dissemination". *Business Information Review*, 22, pp. 269-276.
- Okamoto, K., Chen, W., Li, X.Y., (2008). "Ranking of closeness centrality for large-scale social networks". In *International Workshop on Frontiers in Algorithmics* (pp. 186-195). Springer, Berlin, Heidelberg.
- Okazaki, S., Taylor, C. R. (2013). "Social media and international advertising: theoretical challenges and future directions". *International marketing review*, 30(1), pp. 56-71.
- Oldenkamp, J. H., (2001). "Limitations of managing knowledge sharing. In: D. Remenyi (Ed.)". *Proceedings of the Second European Conference on Knowledge Management*, Bled, Slovenia, 411-418.
- Oliveira, M., Maçada, A.C., Curado, C., (2014). "Knowledge management mechanisms within the SECI mode". In *Atas da Conferência da Associação Portuguesa de Sistemas de Informação* (Vol. 11).
- Oostervink, N., Agterberg, M., Huysman, M., (2016). "Knowledge sharing on enterprise social media: Practices to cope with institutional complexity". *Journal of Computer-Mediated Communication*, 21(2), pp.156-176.
- O'Reilly, C. A., Pondy, L. R., (1979). "Organizational communication. In: Kerr, S., ed"., *Organizational behavior*. Columbia, Ohio: Grid.

Organ, D.W., (1988). "Organizational Citizenship Behavior: The Good Soldier Syndrome". Lexington, MA: Lexington Books.

Orlikowski, W. J., (2002). "Knowing in practice: Enacting a collective capability in distributed organizing". *Organization Science*, 13(3), pp. 249-273.

Oshri, I. van Fenema, P. Kotlarsky, J., (2008). "Knowledge transfer in globally distributed teams: The role of transactive memory". *Information Systems Journal*, 18 (6), pp. 593-616.

Oshri, I., Kotlarsky, J., Gerbasi, A., (2015). "Strategic innovation through outsourcing: the role of relational and contractual governance". *Journal of Strategic Information Systems* 24 (3), 203–216.

Ouchi, W., (1979). "A conceptual framework for the design of organizational control mechanisms", *Management Science*, 25, 833-848.

Panahi, S., (2014). "Social media and tacit knowledge sharing: physicians' perspectives and experiences" (Doctoral dissertation, Queensland University of Technology).

Panahi, S., Watson, J., Partridge, H., (2013). "Towards tacit knowledge sharing over social web tools". *Journal of Knowledge Management*, 17, 379–397.

Panahi, S., Watson, J., Partridge, H. (2013). Towards tacit knowledge sharing over social web tools. *Journal of Knowledge Management*, 17, 379–397.

Pardo, T.A., Cresswell, A.M., Thompson, F., (2001). "interorganizational knowledge sharing in public sector innovations". In *Academy of Management Proceedings* (Vol. 2001, No. 1, pp. A1-A6). Academy of Management.

Pardo, T.A., Cresswell, A.M., Thompson, F., (2001). "interorganizational knowledge sharing in public sector innovations". *Academy of Management Proceedings* (Vol. 2001, No. 1, pp. A1-A6). Academy of Management.

Pauleen, D. J., Wu, L., (2004). "Knowledge management through a cultural looking glass". 12th Annual Cross-Cultural Research in Information Systems Meeting, Washington D.C.

Pawlowsky, P., (2001). "The treatment of organizational learning in management science". In: Dierkes, M., Antal, A.B., Child, J., and Nonaka, I., eds., *Handbook of organizational learning and knowledge*, pp. 61–88. New York: Oxford University Press.

Pedler, M., Burgoyne, J., Boydell, T., (1997). "The learning company: A strategy for sustainable development". Maidenhead: McGraw-Hill.

Pemberton, JD, Stonehouse, G.H, Yarrow, DJ., (2001), "Benchmarking and the role of organizational learning in developing competitive advantage", *Knowledge and Process Management*, vol. 8, no. 2, pp. 123-135.

Peng, H., (2013). "Why and when do people hide knowledge?" *Journal of Knowledge Management*, 17, 398–415.

- Pérez-Nordtvedt, L., Kedia, B., Datta, D., Rasheed, A., (2008). "Effectiveness and efficiency of cross-border knowledge transfer: an empirical examination". *Journal of Management Studies*, 45 (4), pp. 699-729.
- Persistent Digital Talk. In: HICSS '07. IEEE, Waikoloa, Big Island, HI: pp: 80-80.
- Pettersen, K.A., Bjørnskau, T., (2015). "Organizational contradictions between safety and security—Perceived challenges and ways of integrating critical infrastructure protection in civil aviation". *Safety science*, 71, pp.167-177.
- Pfeffer, J., (1981). "Management as Symbolic Action: The Creation and Maintenance of Organisational Paradigms". In: Cummings, B.S.L., Ed., *Research in Organizational Behavior*, Vol. 3, CT JAI Press, Greenwich, 1-52.
- Phelps, C., Heidi, R., Wadhawa, A., (2012). "Knowledge, networks, and knowledge networks: A review and research agenda". *Journal of Management*, 38(4), pp. 1115-1166
- Phillips, T., Klerkx, L. and McEntee, M., (2018). "An investigation of social media's roles in knowledge exchange by farmers". In 13th Eur. IFSA Symp., Chania, Greece (pp. 1-5).
- Phillipson, J., Lowe, P., Proctor, A., Ruto, E., (2012). "Stakeholder engagement and knowledge exchange in environmental research". *Journal of Environmental Management*, 95(1), pp. 56-65.
- Pi, S.-M., Chou, C.-H., Liao, H.-L. (2013). "A study of Facebook Groups members' knowledge sharing". *Computers in Human Behavior*. 29(5), pp. 1971-1979.
- Pierce, J. L., Rubenfeld, S. A., Morgan, S., (1991). "Employee ownership: A conceptual model of process and effects". *Academy of Management Review*, 16, 121–144.
- Pierce, J.L., Van Dyne, L., Cummings, L., (1992). "Psychological ownership: A conceptual and operational exploration". In *Southern Management Association Proceedings* (Vol. 203, p. 211).
- Polanyi, M., (1966). "The tacit dimension". Garden City, NY: Doubleday.
- Powell, W., (1990). "Neither market nor hierarchy: Network forms of organization". *Research in Organizational Behaviour*, 12, 295-336.
- Powell, W., (1996). "Trust-based forms of governance. In: Kramer, R., Tyler, T. (Eds.), *Trust in Organizations: Frontiers of Theory and Research*". Sage, Thousand Oaks, pp. 51–67.
- Powell, W.W., Koput, K.W., Smith-Doerr, L. (1996)." Inter-organizational collaboration and the locus of innovation: networks of learning in biotechnology". *Administrative Science Quarterly*, 41, pp. 116-45.
- Provan, K., Milward, H.B., (2001)." Do Networks Really Work? A Framework for Evaluating Public Sector Organizational Networks". *Public Administration Review*, 61(4):414-431.

- Provan, K. G., Lemaire, R. H., (2012a). "Core concepts and key ideas for understanding public sector organizational networks: Using research to inform scholarship and practice". *Public Administration Review*, 72(5), 638-648.
- Putnam, R.D., (1995). "Tuning in, Tuning out: The Strange Disappearance of Social Capital in America". *Political Science and Politics*, vol. 28, no. 4, pp. 664-683.
- Qi, C., Leung, H.C., (2015). "Exploring the Role of Social Media and Knowledge Management Processes in Organizational Learning". Edgar, USA.
- Quick, B.L., Stephenson, M.T. (2007). "Further evidence that psychological reactance can be modeled as a combination of anger and negative cognitions". *Communication Research*, 34(3), pp. 255-276.
- Quinn, R.E., Faerman, S.R., Thompson, M.P., McGrath, M., St. Clair, L.S. (1996). "Becoming a Master Manager: A Competing Values Approach, 2<sup>nd</sup> ed". New York: John Wiley & Sons
- Qureshi, A. M. A., Evans, N. (2015). "Deterrents to knowledge-sharing in the pharmaceutical industry: A case study". *Journal of Knowledge Management*, 19, 296–314.
- Ranft A. and Lord, D., (2002). "Acquiring new technologies and capabilities: a grounded model of acquisition implementation". *Organisation Science*, 13(4), pp. 420-441.
- Ranjbarfard, M., Aghdasi, M., López-Sáez, P., Emilio Navas López, J., (2014). "The barriers of knowledge generation, storage, distribution and application that impede learning in gas and petroleum companies. *Journal of Knowledge Management*, 18, 494–522.
- Rantala, K., Karjaluoto, H., (2016). "October. Value co-creation in health care: insights into the transformation from value creation to value co-creation through digitization". In: *Proceedings of the 20th International Academic Mindtrek Conference* (pp. 34-41). ACM.
- Ratcliffe, J. H., (2008). "Knowledge management challenges in the development of intelligence-led policing". In T. Williamson, ed. *The handbook of knowledge-based policing: Current conceptions and future directions*. Chichester: John Wiley and Sons, pp. 205-220.
- Rathi, D., Given, M. L., Forcier, E., (2014). "Interorganisational partnerships and knowledge sharing: The perspective of non-profit organisations (NPOs)". *Journal of Knowledge Management*, 18, 867–885.
- Razmerita, L., Kirchner, K., Nielsen, P., (2016). "What factors influence knowledge sharing in organizations? A social dilemma perspective of social media communication". *Journal of Knowledge Management*, 20(6), pp.1225-1246.
- Rese, A., Kopplin, C.S., Nielebock, C., (2020), "Factors influencing members' knowledge sharing and creative performance in coworking spaces", *Journal of Knowledge Management*, Vol. 24 No. 9, pp. 2327-2354.

- Renzl, B., (2008). "Trust in management and knowledge sharing: the mediating effects of fear and knowledge documentation". *Omega*, 36 (2), pp. 206-220.
- Retzer, S., Yoong, P., Hooper, V., (2012). "Inter-organisational knowledge transfer in social networks: A definition of intermediate ties". *Information Systems Frontiers*, 14(2), pp.343-361.
- Retzer, S., Yoong, P., Hooper, V. (2010). "Inter-organisational knowledge transfer in social networks: A definition of intermediate ties". *Information Systems Frontiers*, 1–19,
- Richardson, L., and St. Pierre, E.A., (2005). "Writing: A Method of Inquiry". In: Denzin, N.K., and Lincoln, Y.S., eds., *The Sage handbook of qualitative research*, 3rd ed. Thousand Oaks, CA: Sage
- Riege, A., (2005) " Three-dozen knowledge-sharing barriers managers must consider", *Journal of Knowledge Management*, vol. 9, no. 3, pp. 18-35.
- Rogers, C., Lewis, R., John, T. and Read, T., (2011). " Police work: Principles and practice". Routledge.
- Roth, J., (2003). "Enabling knowledge creation: Learning from an R&D organization". *Journal of Knowledge Management*, 7(1), 32–48.
- Ruppel, C. P., Harrington, S. J., (2001). "Sharing knowledge through intranets: A study of organizational culture and intranet implementation". *IEEE Transactions on Professional Communication*, 44(1), 37-52.
- Rivera, A.E., Rodríguez-Aceves, L., Mojarro-Duran, B.I., (2020). " Enabling knowledge sharing through psychological safety in inter-organisational arrangements". *Journal of Knowledge Management*
- Sabri, H., (2005). "Knowledge management in its context: Adapting structure to a knowledge creating culture". *International Journal of Commerce and Management*, 15(2), pp. 113-128.
- Saint-Onge, H., (1996). "Tacit knowledge: The key to the strategic alignment of intellectual capital". *Strategy & Leadership*, 24(2), pp. 10-14.
- Salmi, P., Torkkeli, M., (2009). "Success factors of interorganisational knowledge transfer: A case of a collaborative public-private R&D project. *International Journal of Business Innovation and Research*, 3 (2), pp. 109-125.
- Sanders, C.B., Henderson, S., (2013). " Police 'empires' and information technologies: uncovering material and organizational barriers to information sharing in Canadian police services. *Policing and Society*". *An International Journal of Research and Policy*, 23, 243-260
- Santoro, M. D., Gopalakrishnan, S., (2000). The institutionalization of knowledge transfer activities within industry-university collaborative ventures. *Journal of Engineering and Technology Management*, 17(3-4), 299-319.
- Saunders, M., Lewis, P., Thornhill, A., (2009). "Research methods for business students". 5th ed. Harlow: Pearson Education.



- Schilling, M. A., Phelps, C. C., (2007). "Interfirm collaboration networks: The impact of large-scale network structure on firm innovation". *Management Science*, 53, pp. 1113-1126.
- Schramm, W., (1954). "How communication works". In: Schramm, W., ed., *The process and effects of communication* (pp. 3-26). Urbana, Illinois: University of Illinois Press.
- Schultz-Jones, B., (2009). "Examining information behavior through social networks: An interdisciplinary review". *Journal of Documentation*, 65, pp. 592-631.
- Schwaninger, A., (2006). "Airport security human factors: from the weakest to the strongest link in airport security screening". The 4th international Aviation security technology symposium.
- Scott, M. S., (2000). "Problem-oriented policing: Reflections on the first 20 years". Washington DC: COPS Office.
- Seba, I., Rowley, J., (2010). Knowledge management in UK police forces. *Journal of Knowledge Management*, 14(4), pp. 611-626.
- Seba, I., Rowley, J. and Lambert, S., (2012). "Factors affecting attitudes and intentions towards knowledge sharing in the Dubai Police Force". *International Journal of Information Management*, 32, pp. 372–380.
- Sedighi, M., Hamedi, M., (2016). "Knowledge Contribution in Knowledge Networks: Effects of Participants' Central Positions on Contribution Quality". *International Conference on Intellectual Capital and Knowledge Management and Organisational Learning* (p. 302). Academic Conferences International Limited.
- Seebach, C., (2012). "Searching for Answers--Knowledge Exchange through Social Media in Organizations". In: *HICSS '12*. IEEE, Maui, HI: pp: 3908-3917.
- Seibert, S. E., Kraimer, M. L., Liden, R. C. (2001). "A social capital theory of career success". *Academy of Management Journal*, 44(2), 219-237.
- Senge, PM 1992, *The Fifth Discipline: The Art and Practice of the Learning Organization*, Random House Australia, North Sydney.
- Shannon, C.E., Weaver, W. (1948). "A Mathematical Theory of Communication". *Bell System Technical Journal*.
- Sharif, N., Ramanathan, K., (1987). "A framework for technology-based national planning". *Technological Forecasting and Social Change*, 32, 5–18.
- Sheppard, B. H., Sherman, D. M., (1998). "The grammars of trust: a model and general implications". *Academy of Management Review*, 23(3): 422-438.
- Sheptycki, J., 2002. *In search of transnational Policing: Towards a sociology of global policing*. Aldershot: Ashgate Publishing
- Shu, S., Wong, V. and Lee, N., (2005). "The effects of external linkages on new product innovativeness: An examination of moderating and mediating influences". *Journal of Strategic Marketing*, 13(3), pp. 199-218.

- Siddique, M. C., (2012). "Knowledge management initiatives in the United Arab Emirates: A baseline study". *Journal of Knowledge Management*, 16(5), pp. 702-723.
- Simonin, B. L. (1999). "Transfer of marketing know-how in international strategic alliances: An empirical investigation of the role and antecedents of knowledge ambiguity". *Journal of International Business Studies*, 30 (3), 463-490.
- Singh, MD., Kant, R., (2008), "Knowledge management barriers: an interpretive structural modeling approach", *International Journal of Management Science and Engineering Management*, vol. 3, no. 2, pp. 141-150.
- Skok, W., Tahir, S., (2010). "Developing a knowledge management strategy for the Arab world". *The Electronic Journal of Information Systems in Developing Countries*, 41(7), pp. 1-11.
- Skok, W., Clarke, K., Krishnappa, S., (2013). "Managing organizational knowledge: A case study of a global energy consulting group". *Knowledge and Process Management*, 20(3), pp. 123-130.
- Slessor, J., (2014). "Policing in collaboration – working together in a changing world". [online] Available <<http://www.accenture.com/SiteCollectionDocuments/PDF/Accenture-Policing-in-Collaboration-Working-Together-in-a-Changing-World.pdf>> [Accessed 01 May 2015]
- Smedlund, A., (2008). "The knowledge system of a firm: social capital for explicit, tacit and potential knowledge". *Journal of Knowledge Management*, 12, pp. 63-77.
- Smith, W., Lewis, M., (2011). "Toward a theory of paradox: a dynamic equilibrium model of organizing". *Academy of Management Review* 36 (2), 381–403.
- Snyman, R., Kruger, J., (2004). "The interdependency between strategic management and strategic knowledge management". *Journal of Knowledge Management* 8 (1), 5–19.
- Sobrero, M., Schrader, S., (1998). "Structuring inter-firm relationships: a meta-analytic approach". *Organization Studies* 19 (4), 585–615.
- Song, S., (2001). "An internet knowledge sharing system". *The Journal of Computer Information Systems*, 42, 25–30.
- Standards Australia (2003), "Knowledge Management - Interim Australian Standard". AS 5037 2004, viewed 10 October 2009, <[www.standards.org.au/cat.asp?catid=80](http://www.standards.org.au/cat.asp?catid=80) and ContentId=552 and News=1>.
- Steiner, L., (1998). "Organizational dilemmas as barriers to learning", *The Learning Organization*, vol. 5, no. 4, pp. 193-201.
- Steyn, C., Kahn, M., (2008). "Towards the development of a knowledge management practices survey for application in knowledge intensive

- organisations”, *South African Journal of Business Management*, vol. 39, no. 1, pp. 45-53.
- Stock, G. N., Tatikonda, M. V., (2000). “A typology of project-level technology transfer processes”. *Journal of Operations Management*, 18(6), 719–737.
- Stokes, M., Summers, C., (2010). “Managing the current growth in demand for digital forensic services within the metropolitan police service”. *Science and Justice*, 50(1), pp. 43.
- Sturdy, A., (2000). “Training in service - importing and imparting customer service culture as an interactive process”. *International Journal of Human Resource Management*, 11(6), 1082-1103.
- Sukoco, B. M., (2016). “The Effects of Convergence and Divergence Alliance Portfolio on Firm Performance”. *International Journal of Business*, 21(2), 113.
- Suppiah, V., Singh Sandhu, M. (2011). “Organisational culture’s influence on tacit knowledge-sharing behaviour”. *Journal of Knowledge Management*, 15, 462–477.
- Symon, G., Cassell, C. (1998). “Reflections on the use of qualitative methods”. *Qualitative Methods and Analysis in Organizational Research. A Practical Guide*, 1-9.
- Szulanski, G., (1996). “Exploring internal stickiness: Impediments to the transfer of best practice within the firm”. *Strategic Management Journal*, 17, 27–43.
- Szulanski, G. (2000). “The process of knowledge transfer: A diachronic analysis of stickiness”. *Organizational Behavior and Human Decision Processes*, 82(1), 9–27.
- Szulanski, G., (1996). “Exploring internal stickiness: Impediments to the transfer of best practice within the firm”. *Strategic management journal*, 17(S2), pp.27-43.
- Talbot, J., Akeman, M., (2008). *SRMbok, RMIA, Carlton South*.
- Tangaraja, G., Mohd Rasdi, R., Ismail, M., Abu Samah, B., (2015), “Fostering knowledge sharing behaviour among public sector managers: a proposed model for the Malaysian public service”, *Journal of Knowledge Management*, Vol. 19 No. 1, pp. 121-140.
- Tangaraja, G., Ismail, M., (2016) "Knowledge sharing is knowledge transfer: a misconception in the literature", *Journal of Knowledge Management*, Vol. 20 Issue: 4, pp.653-670.
- Tasselli, S., (2015). “Social networks and inter-professional knowledge transfer: the case of healthcare professionals”. *Organization Studies*, 36(7), pp.841-872.
- Taylor, W., (2004), “Computer-mediated knowledge sharing and individual user differences: an exploratory study”. *European Journal of Information Systems*, 13(1), 52-64.

- Templeton, G.F., Lewis, B.R., Snyder, C.A. (2002). "Development of a measure for the organizational learning construct", *Journal of Management Information Systems*, **19**, 2, 175-218.
- Teng, J. T., Song, S., (2011). "An exploratory examination of knowledge-sharing behaviors: Solicited and voluntary". *Journal of Knowledge Management*, 15, 104–117.
- Thom, J., S.Y., Helsley, T.L., Matthews, Millen, D.R., (2011). "What Are You Working On? Status Message in an Enterprise". In: ECSCW '11. Springer, Aarhus, Denmark: pp: 313-332.
- Titi Amayah, A., (2013). "Determinants of knowledge sharing in a public sector organization". *Journal of Knowledge Management*, 17, 454–471.
- Treem, J., P. Leonardi, 2012. *Social Media Use in Organizations: Exploring the Affordances of Visibility, Editability, Persistence, and Association*. *Communication Yearbook*, 36: 143-189.
- Trkman, P., Desouza, K., (2012). "Knowledge risks in organizational networks: an exploratory framework". *Journal of Strategic Information Systems* 21 (1), 1–17.
- Tsai, W. and Ghoshal, S., (1998). "Social capital and value creation: The role of intrafirm networks". *Academy of management Journal*, 41(4), pp.464-476.
- James, T., (2011). "Social Capital: Measurement, Dimensional Interactions, And Performance Implications" (2011). All Dissertations. 762.
- Tyler, M.C., (2005), "Benchmarking in the non-profit sector in Australia", *Benchmarking: An International Journal*, vol. 12, no. 3, pp. 219-235.
- Tymon, W. G., Stumpf, S. A. (2003). Social capital in the success of knowledge workers. *Career Development International* 8(1), 12-20.
- UAE Police College, (2013). "Missions and objectives of the college". [online] Available at: <[http://apc.gov.ae/abcd/english/about\\_mission-and-objectives.asp](http://apc.gov.ae/abcd/english/about_mission-and-objectives.asp)> [Accessed on 01 May 2015]
- UNDP, 2014. Arab knowledge report (2014) "Youth and localisation of knowledge". [online] Available at: <[http://www.arabstates.undp.org/content/dam/rbas/report/AKR2014\\_Summary\\_Eng.pdf](http://www.arabstates.undp.org/content/dam/rbas/report/AKR2014_Summary_Eng.pdf)> [Accessed 01 May 2015]
- Vaara, E., Sarala, R. Stahl, G., Björkman, I., (2010). "The impact of organisational and national cultural differences on social conflict and knowledge transfer in international acquisitions". *Journal of Management Studies*, 47 (7), pp. 1-27.
- Valente, T.W.; Chou, C.P.; Pentz, M.A., (2007). "Community coalitions as a system: Effects of network change on adoption of evidence-based substance abuse prevention". *Am. J. Public Health* 2007, 97, 880–886.
- Van Den Brink, P. (2001). "Measurement of conditions for knowledge sharing". In *Proceedings 2 nd European Conference on Knowledge Management*, Bled.

- van den Hooff, B., van Weenen, F. de L., (2004), "Committed to share: commitment and CMC use as antecedents of knowledge sharing", *Knowledge and Process Management*, Vol. 11 No. 1, pp. 13-24.
- van Fenema, P., Loebbecke, C., 2014. Towards a framework for managing strategic tensions in dyadic interorganizational relationships. *Scandinavian Journal of Management* 30 (4), 516–524.
- van Puijenbroek, T., Poell, R.F., Kroon, B., Timmerman, V., (2014). "The effect of social media use on work-related learning". *Journal of Computer Assisted Learning*, 30(2), pp.159-172.
- Van Wijk, R., Jansen, J., Lyles, M. (2008). "Inter- and intra-organisational knowledge transfer: a meta-analytic review and assessment of its antecedents and consequences". *Journal of Management Studies*, 45 (4), pp. 830-853.
- Väyrynen, K., Hekkala, R., Liias, T. (2013)." Knowledge protection challenges of social media encountered by organizations". *Journal of Organizational Computing and Electronic Commerce*, 23(1-2), 34-55.
- Vlaar, P., van Fenema, P., Tiwari, V., (2008). "Cocreating understanding and value in distributed work: how members of onsite and offshore ISD vendor teams give, make, demand and break sense". *MIS Quarterly* 32 (2), 227–255.
- Voel, S. C., Han, C., (2005). "Managing knowledge sharing in China: The case of Siemens ShareNet". *Journal of Knowledge Management*, 9(3), pp. 51-63.
- Vuori, V., Okkonen, J., (2012). "Knowledge sharing motivational factors of using an intra-organizational social media platform". *Journal of knowledge management*, 16(4), pp.592-603.
- Wahlroos, J.K., (2010). "Social media as a form of organizational knowledge sharing. A case study on employee participation at Wärtsilä. Master, Department of Social Research". Faculty of Social Sciences, University of Helsinki, Helsinki.
- Wallace, K.A., (1999). "Anonymity". *Ethics and Information Technology*, 1(1), pp. 21-31.
- Wang, S., Noe, R. A., (2010). "Knowledge sharing: A review and directions for future research". *Human Resource Management Review*, 20(2), 115-131.
- Wasko, M. M., Faraj, S., (2005). "Why Should I Share? Examining Social Capital and Knowledge Contribution in Electronic Networks of Practice," *MIS Quarterly*, 29(1), 35-57.
- WEF, (2014). "World Economic Forum - The global competitiveness report. [online] Available at: <[http://www.police.gov.hk/info/doc/world\\_economic\\_forum\\_en.pdf](http://www.police.gov.hk/info/doc/world_economic_forum_en.pdf)> [Accessed on 01 May 2015]
- Wenger, E., (1998). "Communities of Practice: Learning, Meaning and Identity". Cambridge: Cambridge University Press.

- Weir, D., Hutchings, K., (2005). "Cultural embeddedness and contextual constraints: Knowledge sharing in Chinese and Arab cultures. *Knowledge and Process Management*, 12(2), pp. 89-98.
- Widén-Wulff, G., Ginman, M., (2004). Explaining knowledge sharing in organizations through the dimensions of social capital. *Journal of Information Science*, 30(5), 448-458.
- Widén-Wulff, G., (2007). *Challenges of knowledge sharing in practice: a social approach*. Oxford: Chandos.
- Williams, T. (2005). "Cooperation by Design: Structure and Cooperation in Inter-Organizational Networks," *Journal of Business Research*, 58(2), 223-31.
- Williamson, O., (1990). "A comparison of alternative approaches to economic organization". *Journal of Institutional and Theoretical Economics* 146 (1), 61–71.
- Wolpert, J. D. (2002). Breaking out of the innovation box. *Harvard Business Review*, 80, 77–83.
- Wong, K.Y., (2005), "Critical success factors for implementing knowledge management in small and medium enterprises", *Industrial Management & Data Systems*, vol. 105, no. 3/4, pp. 261-279.
- Woolcock, M., Narayan, D., (2000). "Social capital: Implications for development theory, research, and policy". *World Bank Research Observer*, 15(2): 225-249.
- WPR, (2015). "United Arab Emirates Population 2015". [online] Available at: <<http://worldpopulationreview.com/countries/united-arab-emirates-population/>> [Accessed 01 May 2015]
- Yessis, J., Riley, B., Stockton, L., Brodovsky, S., Von Sychowski, S., (2013). "Interorganizational relationships in the Heart and Stroke Foundation's Spark Together for Healthy Kids: insights from using network analysis". *Health Education and Behavior*, 40(1\_suppl), pp.43S-50S.
- Yi, J. (2009), "A measure of knowledge sharing behavior: scale development and validation", *Knowledge Management Research and Practice*, Vol. 7 No. 1, pp. 65-81.
- Yin, R. K., (2010). "Qualitative research from start to finish". Guilford Press.
- Yli-Renko, H., Autio, E. Sapienza, H.J., (2001). "Social capital, knowledge acquisition, and knowledge exploitation in young technology-based firms". *Strategic management journal*, 22(6-7), pp.587-613.
- Yoo, J., Choi, S., Choi, J. and Rho, J. (2014), "Why people use Twitter: social conformity and social value perspectives", *Online Information Review*, Vol. 38 No. 2, pp. 265-283.
- Youndt, M. A., Snell, S. A., (2004). "Human resource configurations, intellectual capital, and organizational performance". *Journal of Managerial Issues*, 16(3), pp. 337-360.

- Yao, J., Crupi, A., Di Minin, A., Zhang, X., (2020), "Knowledge sharing and technological innovation capabilities of Chinese software SMEs", *Journal of Knowledge Management*, Vol. 24 No. 3, pp. 607-634.
- Yu, T.-K., Lu, L.-C., Liu, T.-F. (2010). "Exploring factors that influence knowledge sharing behavior via weblogs". *Computers in Human Behavior*. 26(1), pp. 32-41.
- Zaman, S., (2010). "Diverse population in Abu Dhabi plays role in high rate of traffic fatalities. Gulf news". [online] Available at: <<http://gulfnews.com/news/uae/diverse-population-in-abu-dhabi-plays-role-in-high-rate-of-traffic-fatalities-1.726272>> [Accessed 01 May 2015]
- Zander, U., Kogut, B. (1995). "Knowledge and the speed of the transfer and imitation of organizational capabilities: An empirical test". *Organization Science*, 6(1), 76–92.
- Zhang, J., Luo, Y., (2017), "March. Degree Centrality, Betweenness Centrality, and Closeness Centrality in Social Network". In 2017 2nd International Conference on Modelling, Simulation and Applied Mathematics (MSAM2017). Atlantis Press.
- Zhao, R. Y., Chen, B. K. (2013). "Study on enterprise knowledge sharing in ESN perspective". A Chinese case study. *Journal of Knowledge Management*, 17, 416–434.
- Zhou, S., Siu, F., Wang, M. (2010). "Effects of social tie content on knowledge transfer". *Journal of Knowledge Management*, 14, 449–463.
- Zhu, H. M., Zhang, S. T., Jin, Z. (2016). "The effects of online social networks on tacit knowledge transmission". *Physica A: Statistical Mechanics and its Applications*, 441, 192-198.

# Appendices



## Appendix 1 – Summary of Research Approaches in Inter-Organisational KM

Title	Author	Approach	Strategy	Key Methods
Inter-Organizational Knowledge Sharing System in the Health Sector: Physicians' Perspective	Al-Busaidi, 2015	Mixed methods quantitative and qualitative	Case study	Questionnaire
An investigation of knowledge transfer in information systems (IS) outsourcing	Al-Salti, 2011	Interpretivist, qualitative methods	Multiple case studies	Semi-conducted interviews; Non-participant observation
Inter-organisational technology/knowledge transfer: a framework from critical literature review	Battistella et al., 2015	Interpretivist, qualitative methods	Descriptive study	Narrative literature review
Inter-Organizational Knowledge Management. The Importance of Organizational and Environmental Context	Capó et al., 2004	Interpretivist, qualitative methods	Descriptive study	Content analysis Deduction
Managing Processes and Knowledge in Inter-Organisational Environments	Chen et al., 2003	Interpretivist, qualitative methods	Case study	Observation Document analysis
Towards an inter-organisational knowledge transfer framework for SMEs	Chen et al., 2002	Interpretivist, qualitative methods	Descriptive study	Content analysis

Knowledge sharing through inter-organizational knowledge networks: Challenges and opportunities in the United Arab Emirates	Ahmad and Daghfous, 2010	Interpretivist, qualitative methods	Case study	In-depth and onsite interviews;
Measures and conditions of success in public sector knowledge networks	Dawes, 2008	Interpretivist, qualitative methods	Descriptive study	Synthesis of lit. review Content analysis
A critical review of three theoretical approaches on knowledge transfer in cooperative alliances	Ding et al., 2009	Interpretivist, qualitative methods	Descriptive study	Observation Personal interpretation
Key success factors for electronic inter-organisational co-operation between government agencies	Joia, 2003	Interpretivist, qualitative methods	Case study	Observation Analysis of the questionnaires
Evaluating Interorganizational Knowledge Management: The Concept of IKM Orientation	Lancini, 2015	Interpretivist, qualitative methods	Case study	Extensive literature review Secondary data analysis
Knowledge management theory in interorganizational settings.	Magnussona et al., 2004	Mixed methods quantitative and qualitative	Case study	Literature review Theoretical assumptions Survey Qualitative summary
Inter-organizational knowledge transfer: Current themes and future prospects	Easterby-Smith et al., 2008	Interpretivist, qualitative methods	Descriptive study	Content analysis

Inter-organizational knowledge transfer: the perspective of knowledge governance	Fang et al., 2013	Interpretivist, qualitative methods	Descriptive study	Literature review Content analysis
Interorganisational partnerships and knowledge sharing: the perspective of non-profit organisations (NPOs).	Rathi et. al., 2014	Empirical qualitative analysis	Case study	Exploratory interviews; Semi-conducted interviews; Coding emergent themes and patterns (Nvivo 10)
Exploring individual-level and group-level levers for inter-organizational knowledge transfer	Merok Paulsen and Brynjulf Hjertø, 2014	Mixed methods quantitative and qualitative	Case study	Self-report questionnaires completed via an online survey, Multiple regression, Structural equation modelling Hierarchical linear modeling Empirical test of moderator effects.
Organizational receptivity– understanding the inter-organizational learning ability	Nieminen, 2005	Interpretivist, qualitative methods	Descriptive study	Literature review analysis
Successful inter-organizational knowledge transfer: developing pre-conditions through the management of the relationship context	Nieminen, 2005	Qualitative paper	Descriptive study	Conceptual framework of analysis

Inter-organisational knowledge transfer in social networks: A definition of intermediate ties	Retzer et al., 2012	Mixed methods quantitative and qualitative	Case study	Participant observation Interviews Online survey Follow-up questions Cluster analysis
-----------------------------------------------------------------------------------------------	---------------------	--------------------------------------------	------------	---------------------------------------------------------------------------------------------------

## Appendix 2 – Summary of Research Approaches in Policing

Title	Author	Approach	Strategy	Key Methods
Impediments to Information and Knowledge Sharing Within Policing	Abrahamson and Goodman-Delahunty, 2014	Inductive qualitative analysis	Case study	Interviews; Open-ended question
Fusing Knowledge Management into the Public Sector: a Review of the Field and the Case of the Emirates Identity Authority	Al-Khouri, 2014	Interpretivist, qualitative methods	Case study	Observation and group discussions); Secondary sources (publications and technical documentation analysis)
Police Knowledge Sharing Capabilities. 2nd Cross-country comparison on knowledge sharing capabilities and best practice	Birdi et al., 2012	Mixed methods quantitative and qualitative	Cross-border Case study Survey	Semi-structured interviews; Case studies and cross-border
Knowledge Management Systems in Law Enforcement: Technologies and Techniques: Technologies and Techniques	Gottschalk, 2006	Mixed methods quantitative and qualitative	Case study Survey	Multiple regression analysis
Evidence-based solution to information sharing between law enforcement agencies.	Plecas et al., 2011	Mixed methods quantitative and qualitative	Case study	Entity Analytics Software (EAS)
A Few Good Knowledge Transfer Mechanisms: Keys to Successful Military Operations	Hasnain, 2016	Interpretivist, qualitative methods	Descriptive study	Content analysis Deduction
Knowledge sharing in the Dubai police force	Seba et al., 2012	Interpretivist, qualitative methods	Case study	Semi-structured interviews; Three stage thematic analyses

### Appendix 3 – Summary of Research Approaches in Knowledge Management in Arab Cultures

Title	Author	Approach	Strategy	Key methods
Organizational culture impact on knowledge exchange: Saudi Telecom context	Al-Adaileh, and Al-Atawi, 2011	Quantitative	Survey research	Regression methods
Fusing Knowledge Management into the Public Sector: a Review of the Field and the Case of the Emirates Identity Authority	Al-Khouri, 2014	Qualitative	Case study	Content analysis
Linking Organizational Structure, Technological Support and Process Innovation: the Mediating Role of Knowledge Sharing in the Iraqi Textile Industry	Al-Mamoori, and Ahmad, 2015	Quantitative	Survey research	Statistical theory and methods of inference
Knowledge management and organization's perception in the United Arab Emirates: case study	Alrawi, 2008	Quantitative	Survey research	Statistical theory and methods of inference
Toward a knowledge management strategic framework in the Arab region	Al-Shammari, 2008	Qualitative	Case study	Qualitative interviewing
Toward investigating the requirements of Knowledge Management in the Arab Cities: Case study of the Dubai City	El Emary et al, 2012	Qualitative	Case study, Secondary analysis	Content analysis
Knowledge sharing in the Dubai police forc	Seba .et al, 2012	Inductive approach, Qualitative	Case study	Qualitative interviewing Thematic analysis
Knowledge sharing through inter-organizational knowledge networks: Challenges and opportunities in the United Arab Emirates	Daghfous, 2010	Qualitative, Exploratory	Case study	Qualitative interviewing

## Appendix 4 - Summary of Inter-organisational Measures in Knowledge Management

Dimension	Sub-Dimension	Measure	Question Item	Source
Organisational culture	Organisation culture assessment (competing values framework)	Cultural Type	<p><b>Dominant Characteristics</b>                      The organisation is ....                      ... a very personal place. It is like an extended family. People seem to share a lot of themselves.                      ... a very dynamic entrepreneurial place. People are willing to stick their necks out and take risks.                      ... very results oriented. A major concern is with getting the job done. People are very competitive and achievement oriented.                      ... a very controlled and structured place. Formal procedures generally govern what people do</p>	Cameron & Quinn 2006
		Trust, collaboration and respect	Openness, honesty and concern for others is encouraged	Debowski 2006; Marsick & Watkins 2003; Steyn & Kahn 2008
			Staff fear that sharing knowledge may jeopardise their job security	Riege 2005; Steyn & Kahn 2008
			Staff hold onto their personal knowledge due to a fear of not receiving recognition or accreditation	Chua & Lam 2005; Dodgson 1993; Easterby-Smith 1997; Riege 2005; Steyn & Kahn 2008
			There is a lack of trust in people because they misuse knowledge or claim credit	Chua & Lam 2005; Riege 2005; Singh & Kant 2008; Steyn & Kahn 2008
Organisational culture (cont'd)	Organisational structure	Organization structure	<p>Which of the following best describe the structure of your organisation?                      Hierarchical, where people are arranged in a pyramid structure with a chain of authority and responsibility from top management down to lower levels; Functional, where people are grouped with others</p>	Riege (2005); Singh and Kant (2008)

Organisational culture (cont'd)		working in a similar field, eg administration, finance, client services, marketing; Divisional or business units, where people are grouped by type of service or location; Matrix of functions and divisional or business units, where some elements are managed locally and others are managed centrally; Informal, where the organisation does not have a formal structure.		
	Power and direction	The organisational structure. does not empower people There is strong evidence of hierarchical, position-based status and power within the organisation Communication and knowledge flow is one-directional, top down	Chase 1997; Chua & Lam 2005; EasterbySmith 1997; Marsick & Watkins 2003; Riege 2005; Singh & Kant 2008; Steiner 1998	
	Team or individual focus	Work processes are centred around teams, rather than around individual workers	Chase 1997; Pemberton, Stonehouse & Yarrow 2001; Senge 1992	
	Organisational infrastructure;	Reward System	The organisation has rewards and recognition systems that motivate and acknowledge knowledge sharing	Chase 1997; Lim 2007; Marsick & Watkins 2003; Mårtensson 2000; Riege 2005; Singh & Kant 2008
		Performance measurement	The organisation measures the volume of access to knowledge	Chua & Lam 2005; Fahey & Prusak 1998; Mårtensson 2000
		Technology resourcing	The organisation assesses the contribution of knowledge in decision making and organisational performance	Chua & Lam 2005; Fahey & Prusak 1998;



Organisational culture (cont'd)				Mårtensson 2000; Marsick & Watkins 2003;	
			Information and communication technologies meet the needs of individual users	Chua & Lam 2005; Riege 2005; Steyn & Kahn 2008	
			Information technology systems are lacking	Chase 1997; Chua & Lam 2005; Reige 2005; Singh & Kant 2008	
			Integrated information technology systems impede the way people do things	Chase 1997; Chua & Lam 2005; Reige 2005; Singh & Kant 2008	
			The technological infrastructure supports knowledge sharing	Debowski 2006; Lim 2007; Riege 2005; Singh & Kant 2008; Steyn & Kahn 2008	
		Leadership (Empowering Leadership Questionnaire (ELQ))	Leading by example	Sets high standards for performance by his/her own behavior Works as hard as anyone in my work group Works as hard as anyone in my work group Sets a good example by the way he/she behaves	Arnold et al (2000)
			Participative Decision-Making	Encourages work group members to express ideas/suggestions Listens to my work group's ideas and suggestions Makes decisions that are based only on his/her own ideas	
			Coaching	Suggests ways to improve my work group's performance Teaches work group members how to solve problems on their own Helps develop good relations among work group members	
			Informing	Explains company decisions Explains rules and expectations to my work group Explains his/her decisions and actions to my work group	

		Showing concern/interacting with the team	Shows concern for work group members' well-being Shows concern for work group members' success Gives work group members honest and fair answers	
Organisational Learning Scale (16 item 6 dimension)	Organizational System Alignment	Practices to promote external alignment	My organization encourages people to think from a community perspective (adapted from DLOQ 33: "global perspective") My organization works together with the outside community to meet mutual needs [DLOQ 36]	Bess et al (2010) adapted from DLOQ instrument
		Practices to Promote internal alignment	My organization builds alignment of visions across different levels and work groups [DLOQ 31] My organization considers the impact of decisions on employee morale [DLOQ 35] My organization encourages people to get answers from across the organization when solving problems [DLOQ 37]	
		Open communication practices	In my organization, people openly discuss mistakes in order to learn from them [DLOQ 1]. In my organization, people give open and honest feedback to each other [DLOQ 8].	
		Learning practices	In my organization, people view problems in their work as an opportunity to learn [DLOQ 6]. In my organization, people are rewarded for exploring new ways of working (adapted from DLOQ 7: "for learning"). My organization enables people to get needed information at any time quickly and easily [DLOQ 21].	
		Practices of staff empowerment	My organization recognizes people for taking initiative [DLOQ 26]. My organization gives people control over the resources they need to accomplish their work [DLOQ 29].	
		Practice of supporting staff development	In my organization, leaders generally support requests for learning opportunities and training [DLOQ 38]. In my organization, investment in workers' skills and professional development is greater than last year [new]. In my organization, the number of individuals learning new skills is greater than last year [DLOQ 55].	

Knowledge process scales	-	Knowledge creation	Our organisation frequently comes up with new ideas about our products and/or Services Our organisation frequently comes up with new ideas about our working methods and processes If a traditional method is not effective anymore our organisation develops a new method Our organisation uses existing know-how in a creative manner for new applications	Kianto (2011); Andreeva and Kianto (2011)
	-	Knowledge storage and documentation	Our organisation does a lot of work to refine, organize and store the knowledge collected Our organisation possesses many useful patents and licenses In our organisation we are used to documenting in writing the things that are learnt in practice In our organization we make sure that the most important experiences gained are documented	Andreeva and Kianto (2011) Karadsheh et al (2009) Bayona et al. (2001)
		Intra-organizational knowledge sharing and application	In our organisation information and knowledge are actively shared within the units Different units of our organisation actively share information and knowledge among each other In our organisation employees and managers exchange a lot of information and knowledge Our organisation shares a lot of knowledge and information with strategic partners Our employees are systematically informed of changes in procedures, instructions and regulations	Kianto (2011); Darroch (2003)
		Knowledge acquisition	Our organisation regularly captures knowledge of our competitors Our organisation regularly captures knowledge obtained from public research institutions including universities and government laboratories Our organisation regularly captures knowledge obtained from other industry sources such as industrial associations, competitors, clients and suppliers	Kianto (2011)
Inter-organisational Knowledge Transfer	-	Embeddedness	It was easy for the recipient to identify source personnel who could help them reconfigure and adapt this know-how. It was easy for the recipient to identify source personnel who could help them learn the tools, equipment and technologies related to this know how	Moreland, Argote and Krishnan (1996)

		It was easy for the recipient to identify which tools to use to perform each activity, task and procedures	
		It was easy for the recipient to locate and extract the information needed to understand this know how	Baughn et al (1997)
Transfer success		They are willing to put in a great deal of effort beyond that normally expected to help this know how transfer be successful	Mowday, Steers and Porter (1979)
		They feel that there is very much to be gained personally by continuing to work with this know how They really care about the implementation of this know-how They have had sufficient interaction with this know how to develop an intimate understanding of it They have significantly invested their time, ideas, their skills and physical, psychological and intellectual energies in this knowhow and the related transfer process	Pierce, Van Dyne and Cummings (1992)
		How satisfied was the recipient with the quality of the know-how? How satisfied was the recipient with the quality of the transfer process?	Szulanski (1996)
	Physical distance	Distances in Miles	Cummings et al (2003)
Knowledge distance	Given the overlap of the source and the recipient's knowledge bases, source personnel could easily independently publish substantially the same scientific articles as recipient personnel The recipient has the knowledge base necessary to easily understand and put to use the transferred know-how The source had the knowledge base necessary to easily understand how the recipient planned to use the transferred know-how Differences in the knowledge bases made discussions very difficult (R)		
Transfer activities	How frequently did the source and the recipient use the following transfer mechanisms and activities during the transfer project Approximate number of people involved from both units? Document exchanges Clarifying communication Presentations Problem solving meetings Site visits/tours Joint technical training Job rotations		

		<p>Cultural training</p> <p>Joint project teams</p> <p>Joint development teams</p> <p>Joint management meetings</p>	
Knowledge sharing behavior		<p>I often share the reports and official documents from my work with the members of my team</p> <p>I always share my manuals, methodologies and models with the members of my team</p> <p>I often share my experience or know how with the members of my team</p> <p>I always share my know-where and know-whom when prompted by the members of my team</p>	Huang (2009)
Absorptive capacity		<p>The members of my team have the ability to use existing knowledge</p> <p>The members of my team have the ability to recognize the value of new knowledge</p> <p>The members of my team have the ability to combine their knowledge with the specialties of others</p> <p>The members of my team have the ability to integrate various opinions from the team members</p>	Yoo et al (2011)
Effectiveness of KM	Enhanced collaboration	<p>Operational processes have improved</p> <p>Operating systems have improved</p> <p>Managers are more innovative</p> <p>Staff are more innovative</p> <p>Managers are more knowledgeable</p> <p>Staff are more knowledgeable</p> <p>Staff are more skilled</p> <p>Staff have gained more experience</p> <p>Managers are making better decisions</p> <p>Staff are making better decisions</p> <p>Teamwork has improved</p>	Anantatmula (2005); Anantatmula and Stankosky (2008)
	Improved communication	<p>Operational processes have improved</p> <p>Operating systems have improved</p> <p>Learning by individuals has improved</p> <p>There is increased awareness of information that is critical to achieving the organisation's mission</p>	

		Knowledge of individuals has become knowledge available to the whole organisation	
	Improved learning/adaptation capability	Operational processes have improved Operating systems have improved Managers are making better decisions Teamwork has improved Learning by individuals has improved Knowledge of individuals has become knowledge available to the whole organisation	
	Improved performance	The proportion of operating costs, relative to income, has been reduced We are delivering a higher quality of service to our clients We are better placed to meet competition from other organisations in tendering for services We are better placed to meet competition from other organisations for funding	
Organisation size and profile	Number of employees	No Employees	Lim (2007); Marsick and Watkins (2003)
	Annual Expenditure	A total expenditure of the organisation	ABS (2009); ACOSS (2010)

