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Unlocking Innovation through Social Media Usage: A Study in UAE

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Under the Supervision of Dr. Ananth Chiravuri

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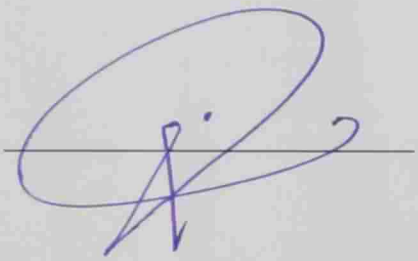
Declaration of Original Work

I, Maher Farid Shirah, the undersigned, a graduate student at the United Arab Emirates University (UAEU), and the author of this dissertation entitled "*Unlocking Innovation through Social Media Usage: A Study in UAE*", hereby, solemnly declare that this dissertation is my own original research work that has been done and prepared by me under the supervision of Dr Ananth Chiravuri in the College of Business and Economics at UAEU. This work has not been previously been presented and published, formed as the basis for the award of any academic degree, diploma or a similar title at this or any other university. Any materials borrowed from other sources (whether published or unpublished) and relied upon or included in my dissertation have been properly cited and acknowledged in accordance with appropriate academic conventions. I further declare that there is no potential conflict of interest with respect to the research, data collection, authorship, presentation and/or publication of this dissertation.

Student's Signature:  Date: 15/7/2018

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Abstract

It has been suggested that the use of social media is advantageous for a firm, but few academic studies have examined this issue. The objective of our study is to investigate the impact of the use of social media on an employee's creativity and propensity to innovate, in the context of a public-sector firm in the UAE. Specifically, we examine the impact of social media use on an employee's creativity and propensity to innovate using the innovations that are internal to a firm: service, process and organization. Surveys were used to collect data from the employees of the selected organisation followed by a qualitative analyses to offer interpretation of their perspectives. Findings from the study indicate that use of social media positively impacts an employee's creativity. Results also indicate that social media use positively influences an employee's propensity for different types of innovation: service, process and organization. In addition, the findings indicate that creativity mediates the relationship between social media usage and organizational innovation. Similarly, organizational innovation mediates the relationship between social media usage and service and process innovations. Accordingly, the study discusses the findings and recommends social media practices that may enable more employee creativity and innovation.

Keywords: Innovation, Mobility, Social Media, Creativity, Service Innovation, Process Innovation, Organizational Innovation, Mediation, Knowledge Management.

Title and Abstract (in Arabic)

إطلاق الإبداع من خلال استخدام وسائل التواصل الاجتماعي: دراسة ميدانية في دولة الامارات العربية المتحدة

الملخص

إن استخدام وسائل التواصل الاجتماعي هو في مصلحة المؤسسات، ولكن ندر وجود دراسة علمية حول هذا الموضوع، الهدف من هذه الدراسة هو التحقق من تأثير استخدام وسائل التواصل الاجتماعي على الابتكار لدى الموظفين ودراسة مدى تأثير ذلك على ابداعهم، في سياق المؤسسات الحكومية في المدن الذكية تحت التطوير، وبالتحديد دراسة تأثير استخدام وسائل التواصل الاجتماعي وتأثير ذلك على ابتكار الموظفين وتأثيره على ابداعهم والذي بدوره ينعكس على المؤسسة أو الجهة التي يعملون بها من حيث الخدمات المقدمة، والعمليات الداخلية، والابداع الإداري أو ما يسمى إبداع المؤسسة. تم اعتماد التحليل الكمي لتحليل نتائج الدراسة باستخدام استبيان لموظفي المؤسسة المختارة، بالإضافة إلى ذلك تم عمل تحليل لملاحظاتهم ومقترحاتهم في هذا المجال ضمن نطاق الدراسة.

نتائج الدراسة أوحت بأن استخدام وسائل التواصل الاجتماعي يؤثر بشكل إيجابي على ابتكار الموظفين، كما أوحت أن لذلك تأثير إيجابي على إبداعهم في الخدمات والعمليات. بالإضافة الى ذلك، اشارت نتائج التحليل الكمي ان الابتكار قد لا يكون له تأثير احصائي كوسيط بين استخدام وسائل التواصل الاجتماعي والابداع إلا أنه يوجد تأثير احصائي عالي عند استخدام الابداع المؤسسي كوسيط بين استخدام وسائل التواصل الاجتماعي والابداع في مجال الخدمات والعمليات. وبناءً عليه تقترح الدراسة ممارسات واستخدامات لوسائل التواصل الاجتماعي والتي قد تمكن المزيد من الابتكار والأبداع للموظفين.

مفاهيم البحث الرئيسية: الابتكار، والتنقل، ووسائل الإعلام الاجتماعية، والإبداع، والابتكار في الخدمات، والابتكار في العمليات، والابتكار التنظيمي، والوساطة، وإدارة المعرفة.

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Dedication

To my beloved parents and family

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Chapter 1: Introduction

1.1 Research Importance and Motivation

Dubai, one of the fastest growing cities in the Middle-East, has undergone a significant transformation under the leadership of His Highness Sheikh Mohammad Bin Rashid Al-Maktoum, Prime Minister of the United Arab Emirates (UAE) and the ruler of Dubai. Driven by the need to ensure sustained economic development and achieve the long-term economic security and well-being of the state, the Government of Dubai has undertaken several initiatives to further enhance its competitiveness (Coury & Dave, 2010). One such initiative that is a pioneering project in the Arab region is the Smart Government transformation initiative announced in February 2013, as well as Smart City initiative announced in 2015.

Innovation is considered as the key to success (Schumpeter, 1946, cited in Sørensen and Torfing (2011)) and failure to innovate makes organisations ineffective and reduces their competitiveness (Kankanhalli et al., 2016; Mergel, 2015). In general, public sector institutions are considered to be driven by the bureaucratic approach of (Weber, 1978), the objective of which is to ensure stability through a rigid system of rules and regulations with clearly defined hierarchies and reporting structures. Halvorsen et al. (2005) argue that rigid organisational rules and multi-layered formal hierarchical organisational structures stifle innovation. However, due to the leadership of the rulers in Dubai, government sector institutions are being encouraged to innovate and transform the delivery of public services, which is in contrast with the slow bureaucratic approach adopted by public-sector organisations globally. Therefore, the objective of the Smart Government initiative is to innovate and transform the delivery of all government services and deliver them conveniently through smart devices .

Innovation has long appealed to organisations, due to its ability to increase competitive advantages (Kankanhalli et al., 2016). This also includes the public sector, which has gained interest in open innovation to better handle big changes in society (Mergel, 2015). Open innovation encourages organisations to open up and search for ideas and solutions outside the organisation, such as reaching out to former users and citizens (Mergel & Desouza, 2013). Hence, innovation has become one of the top administrative agendas for a nation's development (Borins, 2001) due to the growing expectations and demands of citizens. The importance of creativity and innovation has become more apparent as many governments face the challenges of development, among which are inequality, poverty and unemployment. Challenges such as those mentioned and more have prompted the government of the UAE to realise the importance of open innovation in the public sector, and thus it has included it in the UAE's innovation strategy. Since the UAE government aims to implement an innovation strategy to make UAE a highly competitive and attractive business and lifestyle destination by improving the overall quality of life through innovation and creativity in all governmental services, including mobility and transportation, the focus of the National Innovation Strategy is to make the UAE one of the most innovative countries in the world by creatively finding solutions to address the seven key challenges: renewable energy, transport, education, health, technology, water and space.

In response to the National Innovation Strategy, the Crown Prince of Dubai, His Highness Prince Sheikh Hamdan Bin Mohammad bin Rashid Al Maktoum, approved the launch of the Dubai Innovative Strategy involving 20 initiatives to be implemented over three years, to make Dubai the world's most innovative city

(www.Gulfnews.com, 2014). It is of little surprise that the heart of the Smart City initiative of the Government of Dubai is innovation, which is driven by its vision to put Dubai on a par with the best cities in the world. As part of this initiative, hundreds of apps have been launched by various Government departments in Dubai; the Roads and Transport Authority (RTA), the firm chosen for this study, has successfully launched nine smart apps and provides 173 different services to citizens and residents in Dubai and the UAE (Shahbandari, 2016). The heavy emphasis on the need for more innovation by the Government of Dubai is driven by its long-term vision of a sustainable city and hence encourages all government institutions to understand and realise their full potential through innovation in the workplace.

Innovation does not occur in a vacuum and, in the context of organisations, innovation is determined by structure and internal organisational culture (Greenhalgh et al., 2008). Numerous previous studies (Damanpour, 1991; Kanter, 1988; Van de Ven et al., 2008) have explored the influence of these two dimensions on innovation; however, there is a growing emphasis on the role of human resources (Abrahamson & Fairchild, 1999; Gabriel, 2000) and knowledge in innovation (Nonaka, 2008). It is also widely recognised that innovation stems from the creative imagination of individuals who communicate and collaborate with others internally and externally to create and distribute knowledge (Plsek, 2003). Because of this new recognition, considerable attention is being paid to collaborative innovation, where different kinds of actors interact and collaborate to identify and define problems and find new and viable ways to solve them. Sørensen and Torfing (2011) argue that innovative solutions are facilitated by resource exchange and coordination between individuals. Bommert (2010) also argues strongly in favour of enhancing collaborative innovation, especially

in the public-sector, as this can bring together all relevant innovation assets in terms of knowledge, imagination, creativity, courage, resources, transformative capacities and governmental authority. McSherry and Kell (2007), who argue that collaboration can lead to superior innovation performance, also support the importance of collaboration in innovation.

From an organisational perspective, information and communication technologies (ICT) have transformed the way we communicate and are an excellent tool to enhance collaboration. Studies found that business use of social media technologies has increased tremendously since 2008 (Chiu et al., 2012) . This study also found that social media technologies are mostly used for external collaboration rather than internal use. On average, each of the Fortune 500 companies are using more than one social media tool (Culnan et al., 2010). Pateli (2017) found that social media, when combined with a number of organisational and environmental conditions, helps firms improve their innovation performance. The study's findings demonstrate that firm size is the greatest discriminant and reveal four alternative configurations associated with the use of certain Web 2.0 tools (diversified based on the media richness they provide), with firms' open innovation practices (external knowledge breadth) under certain environmental influences (competition intensity and intellectual property protection). Bertot et al. (2012) argue that social media has great potential to extend government services in introducing new ideas, and Walker (2014) found that employees' contributions to social computing technologies enable exchange of thoughts and ideas, and that this may have a positive impact on innovation in public-sector organisations.

To sum up, social media has become a part of our day-to-day life, creating an opportunity for organisations, including governments, to benefit from new engagements and communication and participation channels. Social networks foster "collaboration, joint learning and the speedy exchange of information between users" (Bonsón & Flores, 2011) and therefore it is important to analyse the impact on different facets of a firm. This becomes more important in the case of Dubai whose vision is to become a smart city in the next few years.

1.1.1 Smart City Context

Among a plethora of initiatives the Government of Dubai has launched over the years to increase the competitiveness of Dubai, the Smart City Initiative is the most innovative and ambitious project, aiming to transform the way public-sector organisations deliver services to citizens and residents in Dubai (RTA, 2016). At the heart of the Smart City plan is ***innovation driven by technology***, and people who will play a critical role in achieving the goals set for the Smart City plan.

Literature on Smart Cities shows a multiplicity of definitions (see Section 2.1), but most definitions converge on a fuzzy set of characteristics that make up the core of a Smart City: high attention to investment in human and social capital, in infrastructure and in technology, to solve emerging urban issues in transport, economic development, quality of life, management of resources and service provision. Some of the definitions also relate to the participatory aspect of smart cities – things like e-government, e-voting and e-services (Dameri, 2013). It is a process of continuous development, innovation and improvement, rather than a clearly defined ideal with rigidly set indicators and attainment thresholds.

A city can be defined as ‘smart’ when investment in human and social capital and traditional (transport) and modern (information communication technology (ICT)) communication infrastructure fuels sustainable economic development and a high quality of life, with wise management of natural resources, through participatory action and engagement (Caragliu et al., 2013). It is an urban system that makes its infrastructure and its public services more interactive, more accessible and more efficient through employing ICT (Sainz Pena, 2011).

Innovation is heavily emphasised in the literature concerning Smart Cities. Naphade et al. (2011) state that the transformation to smarter cities will require innovation in planning, management and operations. Abdullaev (2011) defines a Smart City as an innovative urban settlement with intelligent ICT infrastructure; he states that the real Smart City is a smart and sustainable city, bringing together all the innovative characteristics associated with organisational change and the technological, economic and social development of a modern city. Nam and Pardo (2011) states that the concept of a Smart City represents the city’s innovation in management, policy and technology, while Loukis et al. (2017) indicates that innovation and technology are the drivers of growth that allocates resources in the right direction. In the mobility sector, the defining characteristics are innovative, safe and sustainable transport systems and facilities (Abdullaev, 2011). In addition, recent studies have recognised the increasing interest in innovation and the major role that innovation plays in the development of Smart Cities (Curry et al., 2016; Efthymiopoulos, 2016). Among them, Curry et al. (2016) reported that implementing an innovation model to increase the participation of citizens and organisations has a strong impact on smart cities’ development, and

that the innovation model is needed for urban management and considered one of the important aspect of smart cities' development and sustainability.

Continuous innovation is at the core of Smart Cities and technology, and people drive this innovation. Great emphasis has been placed on innovation by the Dubai government, with innovation being a main driver of Smart Cities' development (Efthymiopoulos, 2016), and while considering the great potential of social media technologies (Angelidou, 2017; Koch et al., 2011; Majchrzak et al., 2013), this study will examine the effect of social media on innovation. By tapping the ease and cost effectiveness of social media and its seamless information and knowledge-sharing potential, organisations can break down organisational barriers in information sharing and enhance real-time coordination and collaboration that can extend the boundaries of the organisation.

Social media use is expected to grow in the next phase of social media implementation in government, including the idea of measuring the real-time effects of social media as a source of innovation in public agencies. Therefore, the challenge is not only to build a strong case for tapping the full potential of social media as a tool of innovation in government, but also to provide compelling evidence from real cases (Criado et al., 2013). We attempt to do this by collecting data from real world experts from a government organization, namely, Roads and Transport Authority (RTA)-Dubai, which is discussed further in the next section.

1.1.2 RTA – Smart Mobility

Originating from the mandates of His Highness Sheik Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai, to

work constantly and persistently to make Dubai a model for future urban areas through its progress to a Smart City and major enhancement to the general population, the Board of the Roads and Transport Authority (RTA) received the RTA Strategic Plan for the years 2014-2018. The Plan mirrors the goals and desires of the administration and the legislature in accomplishing the vision of the United Arab Emirates for the year 2021.

The key mission of the RTA is to create incorporated and economical transportation frameworks and give professional services to all partners to help Dubai's comprehensive development plans by preparing strategies and enactment, adjusting advances and innovative methodologies and actualising world-class practices and benchmarks. The Strategic Plan focuses on developing the community, transport framework and the RTA's internal effectiveness. For instance, developing the community is through three perspectives: 1) making Dubai smarter by encouraging networking, incorporation, participation and data administration, shifting to smart government and developing smart solutions for transportation and mobility. 2) making Dubai more coordinated by upgrading reconciliation between transportation policy and urban policy, making roads and transport frameworks well-maintained for all, enhancing lawful structure for roads and transport frameworks and safeguarding national identity. 3) increasing individuals' satisfaction by guaranteeing streamlined administration and cultivating communication and participation for all. For the transportation frameworks, the RTA is planning for smooth and safe transportation through supported public transport; it aims to provide a successful and helpful system and framework for roads and public transport, to manage travel demand and congestion, to improve transport and movement security to reduce accidents and

fatalities, to guarantee environmental sustainability for transportation and encourage occupational health & safety sustainability.

Besides the plans that the RTA is attempting to accomplish for the public and citizens, it also wants to improve the RTA internal community from numerous angles, for example, financial sustainability, by increasing incomes, encouraging organisation with the private sector, creating proficient utilisation of financial resources and upgrading the effectiveness of activity cost. Also, it intends to develop and enhance HR, upgrade management effectiveness, enhance procedures and frameworks and enhance the culture of excellence, quality and development for the RTA's advancement. To be far-reaching, strategic plans for the RTA's assets have been considered; these incorporate improving the proficiency of resource administration, guaranteeing the ideal level of resources for best performance and maximising resource quality.

1.2 Research Gap

In spite of the potential of social media for developing public and private sectors, the role of social media is still in doubt and unclear (Curry et al., 2016; Kaplan & Haenlein, 2010; Leidner et al., 2010). Primarily, an organisation's reluctance to use social media across the organization is due to lack of information and knowledge of how to implement social media platforms to benefit the organisation in all aspects (Andriole, 2010).

Prior studies have investigated the impact of social media on innovation (Roberts & Piller, 2016; Tsai et al., 2011) but these were not empirical/quantitative. Tsai et al. (2011) used the case study approach to propose a process based framework

to help organizations use social media for supporting innovation process. Similarly, Roberts and Piller (2016) theoretically argue that the presence of social media does not automatically impact new product development (and perhaps innovation) positively unless organizations develop strategies to link social media with corporate objectives. However, as indicated earlier, these studies were not empirical unlike this study. Similarly, other studies have investigated the indirect impact of social media on innovativeness (Bertot et al., 2012; Dahlander & Gann, 2010; Gray et al., 2011; Jarvenpaa & Majchrzak, 2010; Koch et al., 2011; Walker, 2014) yet such studies did not explore the impact of social media tools on different types of innovation and whether the impact of each is positively or negatively significant. Moreover, previous studies didn't examine the effect of creativity and organizational innovation as mediators on between social media and different innovation types: service, process and organizational innovation. Above all, little research was conducted on internal organisational social media using real world experts; instead, most research on social media has focused primarily on marketing and student use (Skeels & Grudin, 2009).

Also, while prior literature suggests that social media has a positive impact on innovativeness in the government sector (Behringer & Sassenberg, 2015; Bertot et al., 2012; Brem & Bilgram, 2015; Cantner et al., 2010; Ferreira & Du Plessis, 2009; Sigala & Chalkiti, 2015), there is a dearth of studies focusing on emerging markets or emerging smart cities such as Dubai. Findings from prior studies on social media and innovation may not be generalizable to a developing Smart City such as Dubai, where innovation is heavily stressed and demanded. For example: previous research in this area is general and lacks specific investigation of the impact of social media on innovativeness (Housing & OTB, 2017).

In the context of a Smart City that is in a process of continuous development, innovation and improvement, evaluating the impact of social media use and innovation enhances the ability of an organisation to better understand, diagnose and implement innovative initiatives for sustained growth and operational effectiveness (Cameron & Quinn, 2011). These are the motivations for our study, the objectives of which are explained next.

1.3 Research Problem

There are considerable challenges surrounding innovation in the public-sector in the UAE and elsewhere, chief among them are the shortage of national skills and knowledge resources, the continued need for investment in these resources, the reliance on large numbers of foreign workers and firms to fill the national skill-knowledge gap and to shoulder the implementation of ambitious economic development goals (Biygautane & Al-Yahya, 2011; Fagerberg, 2017). Initiatives such as e-Government and Smart Government have transformed the delivery of services. However, as His Highness Sheikh Mohammed has said, ‘In the race for excellence there is no finish line’(Al Maktoum & Bishtawi, 2006). In a dynamic and fast-paced business environment, customer needs are constantly evolving and enhancing delivery of services and competitiveness is a never-ending process that calls for constant innovation in process improvement and service delivery.

Public sector organisations in the UAE are large and sometimes geographically scattered, for example the Road and Transport Authority (RTA) in Dubai. The RTA is a highly active public-sector organisation that provides all the transportation and road services for over 2 million customers in Dubai. It is one of the biggest and most widely scattered organisations in Dubai, with around 10,000 employees in over 40

departments and independent authorities. Therefore, the collaboration and communication between its different departments is limited due to procedural and practical challenges arising out of time, cost and geographical constraints.

RTA was chosen for this study as it is a large, geographically scattered organisation with a well-established bureaucratic work environment. It plays a significant role in the life of citizens in Dubai. With a number of branches scattered around the city of Dubai, the interaction between staff is mainly through email that is time-consuming, slow and does not meet the need for speed that has become critical at work.

The use of technology in the UAE public sector in general, and in the RTA in particular, is so pervasive that it resembles that in private organisations. This same technology can be further leveraged through the adoption of social media tools for connecting in real-time and increasing collaboration to tap the knowledge and innovation potential of employees, which can enhance the overall innovation performance of staff in RTA. Hence, the technological advancement of communication technology in Dubai allows the public sector to have cutting-edge technology for internal and external communication. As the RTA is a widely distributed organisation in Dubai, it has an advanced communication infrastructure to comprehend the huge amount of communication every day and keep every service seeker connected. Social media use is very pervasive and the majority in the UAE use several tools for sharing information in real-time through audio, video, text, images and maps; this can enhance knowledge sharing and learning, which can lead to innovative ideas that are new and relevant for improving service delivery or to improve

business processes in the organisations in which they work. Therefore, the RTA has established multiple communications tools to make transportation services accessible.

Yet the impact of the social media on innovation and creativity is not clear and well defined in the public-sector organisations in general or in the RTA. Due to the nature of the RTA in providing, managing and developing road and transportation services in Dubai, the focus of this study is on the services, process and organizational types of innovation. In short, the objective of this study is to investigate the impact of social media use on enhancing the creativity and exploring the impact on services, process and organizational innovations within the context of the RTA.

1.4 Research Objectives

Research objectives can be summarized to study and analyze the impact of social media usage on creativity and innovation as well as to study and analyze how creativity and organizational innovation are influencing the impact of social media use on innovation. This can further detailed as follow:

1. Study and analyse the impact of social media use on employee's creativity.
2. Study and analyse the impact of social media use on service innovation.
3. Study and analyse the impact of social media use on process innovation.
4. Study and analyse the impact of social media use on organizational innovation.
5. Study and analyse if creativity mediates the effect of social media use on service innovation.
6. Study and analyse if creativity mediates the effect of social media use on process innovation.

7. Study and analyse if creativity mediates the effect of social media use on organizational innovation.
8. Study and analyse if organizational innovation mediates the effect of social media use on service innovation.
9. Study and analyse if organizational innovation mediates the effect of social media use on process innovation.

1.5 Research Questions

1. What is the impact of social media use on employee's creativity?
2. What is the impact of social media use on service innovation?
3. What is the impact of social media use on process innovation?
4. What is the impact of social media use on organizational innovation?
5. How influential is creativity as a mediator between social media use and service innovation?
6. How influential is creativity as a mediator between social media use and process innovation?
7. How influential is creativity as a mediator between social media use and organizational innovation?
8. How influential is organizational innovation as a mediator between social media use and service innovation?
9. How influential is organizational innovation as a mediator between social media use and process innovation?

1.6 Structure of the Dissertation

This study is organised into five chapters as follows:

Chapter 1: Introduction: In this chapter, a brief background of the study and the context in which it is being studied along with the study motivation. This is followed by research gap, problem, objectives, and research questions.

Chapter 2: Literature Review and Background:This chapter presents the theoretical background of this research. Then, innovation in organisations, the types of innovation, the theoretical underpinnings of innovation and its impact on organisational performance are discussed. In addition, the social media technologies and the role of social media in knowledge management and creativity are examined, followed by a literature review of the state-of-the-art knowledge and studies that have been carried out on the role of the social media in innovation. The chapter also presents background information on the UAE's innovation strategy and specific information about the organisation being studied and its innovation and technology use practices which will be analysed.

Chapter 3: Research Model and Hypotheses: This chapter provides a detailed discussion on the research model and the research hypotheses

Chapter 4: Research Methodology. This chapter provides a detailed discussion on the philosophical paradigms driving this study, data sampling, data access and collection approach, the data analysis approach and the significance and limitations of this study are discussed

Chapter 5: Results and Discussion: This chapter will present data collected using the survey and the results of the analysis of that data. Finally discuss and present finding and results of the study.

Chapter 6: Conclusion and Recommendations: This will present the conclusions drawn from the study and make recommendations. Lastly, the managerial implications of this study and reflections are presented.

Chapter 2: Literature Review and Background

This chapter presents and discusses the theoretical background to the main element of this research: social media and the role of social media in knowledge management and creativity, innovation in organisations, types of innovation and theoretical underpinnings of innovation and its impact on organisational performance. A comprehensive review of literature on innovation in organisations is discussed, reviewing the theoretical underpinnings of innovation in organisations, starting with the resource based- and knowledge-based views of the firm and their role in driving innovation. This is followed by a discussion on the role of technology in driving innovation, specifically social media technology and its role in enhancing collaboration between organisational stakeholders that can enhance knowledge sharing and learning, leading to innovation.

2.1 Social Media

Since its introduction in 2004, the term Web 2.0 has been a buzzword that has been increasingly present in today's society (O'reilly, 2005). Social media is another term that frequently occurs in everyday conversations and news. Despite their frequent use in many contexts, these concepts and their contents are not clearly defined in academic discussion. 'Web 2.0' is often used alongside 'social media', but they are not synonyms, as the following section explains.

2.1.1 Social Media Definition

In the first generation of the internet, which can be referred to as Web 1.0 or read-only internet, the applications and systems allowed only static and channelled content (Schneckenberg, 2009), for example, web pages with permanent content,

emails to predetermined recipients, and intranets as information storage places with predefined structure. According to Schneckenberg (2009), in Web 1.0 the content was generated by the providers and pushed towards the web users, who had to settle for the passive role of mere recipients. In addition, especially regarding web pages, those providing content were quite a small minority compared to the masses reading it at the other end, since publishing something on the internet required some technical understanding and access to suitable software.

In the new internet era, users have a more active role and the power to pull selected content for their use (Schneckenberg, 2009). This is made possible by a developed set of technologies and software that together can be referred to as Web 2.0 (Tredinnick, 2006). This technology has changed the traditional ways of publishing on the internet to be more dynamic and sensitive to users' actions (Tredinnick, 2006). It enables people to interact with each other over the internet, to take part in conversations, express their opinions and to download content to other places, systems and devices (Bonsón & Flores, 2011). They describe Web 2.0 as representing a 'technological democratisation' and are supported by (Eijkman, 2009), who states that Web 2.0 enables a more egalitarian and democratic way of accessing, using and creating knowledge collectively. It has been agreed that Web 2.0 empowers the masses and individuals to be active participants, letting them give added value to contents in the internet (Levy, 2009).

2.1.2 Social Media Tools

There is no coherent categorisation of social media tools, although several classifications have been presented in the literature (Lietsala & Sirkkunen, 2008; Razmerita et al., 2009). The tools and application of social media are versatile and can

be used in several contexts and for many purposes, which explains the challenge of definitive classification.

This research attempts to contribute to the challenge by identifying five categories under which tools can be divided. Realising the potential of social media in different contexts requires understanding of what purposes different social media tools are applicable to; that is, what purpose they serve and how they can be used. The following categorisation introduced by this dissertation aims to facilitate the efforts to understand the jungle of social media tools. This categorisation of 5Cs is based on the actions enabled by the tools:

- Communicating: publishing and sharing content
- Collaborating: collective content creation
- Connecting: networking people
- Completing: adding, describing and filtering
- Combining: mixing and matching for different purposes

These categories are discussed in the following subsections.

Communicating: publishing and sharing content

Content publishing and communicating tools, such as blogs, media sharing systems and microblogging, offer a way to communicate or share information with a broad audience. They are used, for example, to discuss, share views, create joint meanings, express opinions and for sharing music, videos or photographs. Examples of tools, their purposes and well-known commercial applications are presented in Table 1 below.

Blogs are probably the most used social media tool for publishing information on the internet. Blog is short for 'web log' or weblog' (Tredinnick, 2006; Wyld, 2008); and they provide an easy way to publish content on the internet. Blogs are managed by one or many specified authors, who publishes entries (known as posts) that are dated and shown in reverse chronological order (Bonsón & Flores, 2011). Blogs differ from traditional Web 1.0 webpages, as they are dated, easily created and continuously updated by publishing new posts instead of remaining a static page (Levy, 2009).

Table 1: Social media tools

Tools	**Purpose**
Communicating: publishing and sharing content	
Blogs, media sharing systems, podcasts, video casts, discussion forums, microblogging, instant messaging	Publish, discuss, express oneself, show opinion, share, influence, store
Collaborating: collective content creation	
Tagging, social bookmarking, syndication and add-ons	Adding metadata, describing content, subscribing updates, combining and Serendipity
Connecting: networking people	
Social networks, communities and virtual worlds	Socialize, network, connect, play and entertain
Completing: adding, describing and filtering	
Tagging, social bookmarking, syndication and add-ons	Adding metadata, describing content, subscribing updates, combining and Serendipity
Combining: mixing and matching	
Mashups and platforms	Combining other tools and technologies according to situation and needs

Anyone can create a blog without knowing very much about the technological details behind it. Blogs allow using an embedded collection of tools that make it possible to aggregate and republish content from elsewhere on the internet (Tredinnick, 2006). They usually provide a commenting opportunity, allowing the blog's readers to share their opinion of the content. Blogs can be depicted as a one-to-many communications medium, even though teams and groups of several people can also have a joint authorship of the same blog. When a commenting option is in place,

it enables conversation and thus becomes a two-way medium for authors and readers. The word can also be used as a verb, meaning to publish text or other content in a blog (Wyld, 2008), that is, blogging.

In a company setting, blogs can be used for multiple purposes and in various ways: promoting products to customers, informing shareholders or sharing knowledge within the company. Other widely used tools for communicating are media sharing systems and microblogging. Media sharing systems (e.g. Flickr, YouTube, Prezi) let users share videos, photographs, documents or presentations and allow others to evaluate and comment on them. Micro-blogging (e.g. Twitter, Jaiku) is a form of instant messaging, where short messages are published from one to many or a selected audience.

Collaborating: collective content creation

Collaboration-focused tools facilitate co-creation of content and collaboration regardless of their participant's location. They enable collective content creation, editing and support prod use.

The main tools in this category are wikis (Grace, 2009) defines a wiki as 'a democratic, accessible community of users responsible for its own content, supported by an open model of knowledge creation and communication' A wiki can be described as a dynamic database for information storing in the form of interlinked webpages that are expanded, reviewed, edited and updated freely by users (Leuf & Cunningham, 2001). It enables collaborative authoring, empowering the users to create, edit and update contents as they browse the pages (Tredinnick, 2006). Wikis are contextual and organise knowledge by topic, whereas blogs are chronologically organised (Klobas,

2006). In addition, in the particular online community of a wiki, authorship is open to anyone and everyone (Grudin, 2006). Wikis also provide more structure by filtering out conversation from the actual content by, in many cases, providing separate discussion areas (Grudin, 2006). The basic characteristics of wikis, according to (Grace, 2009), are:

- easy editing, as users do not have to understand scripting languages;
- links and references to other websites, that are related to the content;
- tracking changes, version history and keeping track on who has made changes; and
- built-in search function.

Wikis are often criticised regarding the reliability and accuracy of the information they hold, but group discipline corrects the errors quickly, thus leading to very credible content (Tredinnick, 2006). If the existing content is regarded as incomplete or in need of correcting, the online community is supposed to continuously review and correct it (Bonsón & Flores, 2011). In wikis, the contents are reviewed, edited and aggregated as long as necessary to reach an outcome that is satisfying and reliable (Razmerita et al., 2009). The theoretical premise of wikis is that the more people are working on an article, the better the quality of its content becomes, which in turn encourages more people to use it as a resource and contribute to it.

McKelvie et al. (2007) studied how wikis can be used as a knowledge management system in a company for storing key knowledge, recording interactions between employees and capturing recent news articles and reports. They found wikis to create several benefits in this context:

- reduction of cycle times;
- shortening product development time;
- improvement of customer service;
- empowerment of employees;
- innovation;
- enhancement of flexibility;
- ensuring that critical knowledge stays within the company when employees leave; and
- a training tool for new employees (shortens the learning curve and time to becoming effective contributors).

Grace (2009) claims that wikis embody the ultimate knowledge-sharing dream of a company, as they enable employees to voluntarily and altruistically collaborate and create knowledge that helps the company to achieve its objectives. In addition, Grace (2009) promotes wikis in the company setting to support communication between employees, create technical documentation or project management and a form of tracking meetings.

Connecting: networking people

The social media tools in the connecting category are used to connect people and enable interaction between them. They gather people around common interests or locations, enabling them to maintain the old social networks and build new ones. Some of them provide opportunities to play or experience and live virtual environments.

Social network sites, especially Facebook, are usually the first thing that people think of when discussing social media. This is no wonder, as social networks are

probably the most significant and visible social media tool that people use and identify as part of the phenomenon called social media. Social networking sites are ‘technology that allows people to set up profiles, link to other individuals’ profiles and view, navigate and interact with others in the social network’ (Ferreira & Du Plessis, 2009). They connect people with similar interests and enable the creation of communities around shared interests (Razmerita et al., 2009). The focus of the network sites can be, for example, professional (e.g. LinkedIn), entertainment (e.g. MySpace), or relationships in general (e.g. Facebook).

Social networking also has relevance in the company setting. (DiMicco et al., 2008) examined the employees’ perceived usefulness and benefits of IBM’s internal social networking site and found that it:

- was conducive to more free and secure data sharing between employees,
- increased communication and connected employees,
- enabled codification and sharing of personal knowledge for professional purposes,
- facilitated learning opportunities and
- advanced careers.

Ferreira and Du Plessis (2009) add that social networking encourages people to share their knowledge and expertise and Porta et al. (2008) note that they enable innovation at grassroots level. In addition, Ferreira and Du Plessis (2009) found that employees believed that a social network connecting an organisation’s employees would enable them to do their daily work more efficiently. Online communities can be used to implement the company’s vision, strategy and values, as the users may adopt

the community's visions and values as their own (Zhou, 2011). Forming communities of practice and sharing knowledge through them can benefit a company by shortening the learning curve of new employees, enabling the company to respond to customer needs and inquiries faster and decreasing overlapping work, all of which enhance employee productivity (Ferreira and du Plessis, 2009).

Companies can create virtual communities around their products, brands or the company itself. The communities can be used for promoting and communicating the company's messages (e.g. product launches) and to promote brand loyalty amongst consumers (Casaló et al., 2008). Companies can also use communities to learn and understand their customers' needs better (Kozinets, 2002; Ridings et al., 2002; Tredinnick, 2006).

Another well-known social media application is the virtual environment, also known as virtual worlds. In a virtual world, users can create a virtual identity that, for example, reflects their real-life situation or differs from it completely (Kaplan & Haenlein, 2009). Virtual social worlds (e.g. Second Life) and virtual gaming worlds (e.g. World of Warcraft) are mainly thought to be leisure activities. However, they can also provide noteworthy value creation opportunities for companies as well (see e.g. (Kaplan & Haenlein, 2009, 2010; Porta et al., 2008).

Using virtual worlds to further company success is not as common as using other social media tools, but it also has noteworthy potential. Kaplan and Haenlein (2009) suggest five ways for companies to use virtual social worlds to enhance their business efforts:

1. Advertising/communication: setting up stores, sponsoring events and advertising in virtual worlds.
2. Virtual product sales: selling virtual versions of real-life products and services.
3. Marketing research: conducting surveys and involving users in innovation processes.
4. Human resource management: organising recruiting events in virtual worlds to complement real-life recruiting campaigns.
5. Internal process management: using virtual worlds as platforms for internal videoconferences and meetings.

Virtual worlds also offer an environment for learning and training professionals. For example, management games and simulations (e.g. Simcountry, Perfect Competition) can gain a more realistic dimension using online virtual worlds as a platform ((Baldissin et al., 2007).

Completing: adding, describing and filtering

A group of social media tools is used to complete content or other tools by describing information, adding information to the primary content and making it more understandable or valuable, or showing a connection between contents or filtering information. Tags are widespread and popular tools used in different social media applications for creating user-generated metadata i.e. information about information (Lee et al., 2009). Tags are words or short phrases that describe the content or association of the actual information or object (Grudin, 2006). For example, a photograph of a football could be tagged as ‘ball’, ‘football’, ‘sport’, ‘play’, ‘hobby’, ‘fun’ and so on. Tags are linked to objects without the word itself appearing in the object, whereas traditional keywords are usually present in the text they refer to

(Grudin, 2006). People use tags mostly for personal information management (Grudin, 2006; Vander Wal, 2005); for example, categorising their holiday photographs according to the place they were taken or who appears in them. However, tags are used increasingly for professional purposes as well (Kipp, 2006), where they are often more closely related to the content and are not as specific to the users (Heckner et al., 2008).

Tagging is not based on hierarchy and allows an object to be classified under several categories simultaneously (Pak et al., 2007). A non-hierarchical approach does not, however, mean that there is no order; tags can create user-generated classification or a taxonomy, often referred to as a folksonomy (derived from 'folk taxonomy') (Vander Wal, 2005). Other related terms are social tagging, social bookmarking or social indexing (Tsai et al., 2011). Folksonomy combines the collective wisdom of multiple users, who in a bottom-up manner classify objects without constraints or controlled vocabulary (Tsai et al., 2011). Freedom of choosing the terms in tagging is beneficial as tags can more accurately describe the content as people perceive them in contrast to vocabulary or categorisation that is determined by an authority in advance. The lack of control also creates potential problems that mainly derive from users' diverse use of terms: synonymy, polysemy and overall lack of consistency in the use of terms can affect the usability of tagging when using it as indexing or searching function (Grudin, 2006; Tsai et al., 2011).

Another benefit of tagging is that it may be used as a search interface (Tsai et al., 2011) as it can help to identify or find information (Grudin, 2006). Tags can also be used to describe objects other than merely text on a web page and thus improve user access and finding of these objects, where general search engines (e.g. Google, Bing) can merely tap the page content, query logs or link structures of a web page (Tsai et

al., 2011). In some social media tools such as Flickr, navigation and search are mainly driven by user-generated tags (Levy, 2009). In addition, tags can help to show connections between different things, thus enabling serendipity.

Tags can also illustrate the weight of issues in the form of tag clouds or word clouds. Clouds illustrate the frequency with which a certain word or tag is used by sizing them according to how many times they occur; the bigger the tag or word, the more it is used. This kind of visualisation of tags describing the contents of a blog gives the reader an idea of what issues are mainly discussed in the blog.

Syndications and feed aggregators are tools that help filtering and following information publishing in the internet. Syndications, such as Really Simple Syndication (RSS) or ATOM, are ways to 'syndicate' content on the internet using content feeds (Tredinnick, 2006). Most web pages nowadays provide the opportunity to follow changes on the page by subscribing to the page's syndication feed through a feed reader or aggregator.

A syndication aggregator or reader provides either a summary or the whole content of the page in a simple format and a link to the source, thus providing the user with a centralised way of keeping up with updates of the web pages to which he has subscribed to the RSS feed (Tredinnick, 2006; Levy, 2009). The reader automatically notifies of new blog entries or changes on a web page. This automates the monitoring of changes and centralises it to one place instead of having to visit pages continuously to find out if any changes or updates have occurred.

Combining: mixing and matching tools

Social media tools can usually be combined into versatile entities according to the needs, thus forming a new group of tools, usually referred to as mash-ups or platforms. The verb *mash-up* means to combine different features of tools and means:

‘a coherent combination of pre-existing web services that allow a certain user within a platform to use another application, in a specific window, without the need to get out of the initial website’ (Bonsón and Flores, 2011).

That is, choosing the wanted actions and features needed for the specific purpose and combining them into an entity that allows their use in one, centralised place. Many social media tools are in fact mashups: for example, Facebook and blogs make it possible to embed videos or photographs from other locations in the web, wikis can provide RSS feeds to keep up with updates on a certain article, and Google Maps can be used, for example, by real estate agents to geographically pinpoint the listed real estate.

2.1.3 Social Media Knowledge

Social media is an exceptionally intelligent platform for organisations to speak with clients consistently. Information accumulated from clients through social media is publically expressed, although organisations can increase their inferred knowledge about their shoppers through social media. The web-based social networking stage can give the entire scientific classification of recognising what, know-why, know-how and know-who information.

In general, knowledge has been categorized into two types; tacit and explicit (Nonaka, 2008). The tacit knowledge is personal and it consists of the phenomena that

one is perceptually or intellectually aware, such as those pertaining to the things and people in context of the organization. While the explicit knowledge is codified and transmitted using formal, systematic languages, mathematical expressions, and abstraction for sharing among professionals and, may be, even laypeople (Amar & Juneja, 2008). From the definition of the explicit form of knowledge, it can be concluded that the social media is of this type of knowledge as its the social media that is a mega infrastructure for knowledge sharing (Zaffar & Ghazawneh, 2012).

Express knowledge taken from social media applications is effectively arranged as they are in the composed type of inquiries, answers, remarks, accounts and so on. By surveying the stories behind every section, organisations can additionally create implied knowledge about the clients of the online networking stages for use in their advancement endeavours. Organisations cannot exclusively pick up understanding about their clients from what they compose via social media, yet this knowledge can likewise be picked up by breaking down what clients do not expound on. What clients do not react to and what they do not 'like' can give organisations inferred information about client inclinations and preferences. An illustration would be an organisation that posts another thought regarding item delivery on its Facebook page, either the clients' remarks are for the most part positive towards the question, or for the most part negative, or maybe the Facebook post gets no remarks at all. All things considered, the organisation may translate the 'quiet' from clients as though they are indifferent about the matter. This information would be implied learning gained by the firm from online networking exercises. This learning can be deciphered by the organisation's representatives and made unequivocal and could be useful in the organisation's advancement exercises.

The order introduced by Johnson et al. (2002) clarifies in more detail what sort of information online networking applications yield. Online networking offers actualities about the client and uncovers what the client knows unequivocally (realise what). By taking a gander at the client's profile, e.g. his or her Facebook page, or basically by inquiring as to why his or her inclinations are those that they are, in regard to a specific item or administration, organisations can be furnished with know-why information. Each component of knowledge about clients can be important for development. Understanding why clients incline toward this over that can provide organisations with knowledge into future client needs and wants. Organisations can screen their Facebook pages and other social media systems that offer social connection to investigate who their clients are, who leans towards what and additionally recognising who their lead clients or innovators are, in like manner picking up know-who information. Know-how knowledge can likewise be achieved through online networking as organisations can contact their clients through this stage and approach clients for arrangements that can be useful in their advancement forms.

The connections amongst knowledge and development from one perspective and advancement and authoritative financial accomplishment on the other, have turned out to be progressively clear over the most recent couple of years. Proof demonstrates that effective inventive organisations get 75% of their income from new items or administrations, ones that did not exist five years back (Asgarian, 2012). Subsequently, information has accepted a driving part in associations' esteem creation. This is because developments happen when authoritative individuals share information and change it into express types of new items or administrations, new procedures, new standards or new positions. Information securing, i.e. scanning for, perceiving and

making use of new learning from outside hierarchical limits, for example, client information, expands the likelihood of information creation in an association (Asgarian, 2012). Using client information implies that an organisation has a bigger capacity for accomplishing learning, which improves the probability of new information being made through expanded hierarchical knowledge and advancement. What is more, using client information can now and again turn into an obstruction for the opposition as building a decent association with the client will limit the opposition's knowledge obtaining as it cannot be copied (Vat, 2011). As discussed earlier, information is a vital authoritative resource that must be overseen, keeping in mind the end goal to encourage advancement. With a specific end goal to use learning for the production of significant worth and improvement of authoritative adequacy, Knowledge Management is pivotal (Asgarian, 2012). This announcement can be upheld by the consequences of an investigation by Cantner, Joel and Schmidt on German organisations, which uncovers that organisations that apply Knowledge Management perform better in terms of turnover than their peers (Cantner et al., 2010). With the broad measure of data and learning accessible to people and organisations in the associated and worldwide economy of today, the requirement for overseeing information has turned out to be considerably more noteworthy.

2.2 Creativity

In this section, we will show to which extent creativity is an essential part of innovation. This will be considered from in two different perspectives: how creativity might affect an organisation, and how to stimulate each individual to build a creative mind-set. To answer the research question, we will consider the first sub-question: 'How can employees be stimulated and inspired to create good ideas? To present a

proper answer, we will start by presenting the topic of creativity and its scope. The management can affect the creative activities in an organisation to a certain extent and the challenge is how to manage this in the right direction.

2.2.1 Definition of Creativity

The concept of creativity can be broadly defined as 'the production of novel, appropriate ideas in any realm of human activity, from science, to the arts, to education, to business, to everyday life' (Amabile et al., 1996). In other words, this definition deals with creativity as it relates to an activity that is beneficial for a large amount of businesses and industries. The current work will be narrowed down, where the focus will be related to creativity in business processes and activities that attend to result in innovation. Nevertheless, the emphasis on combining novel ideas, which bring some new perspectives and approaches, and their appropriateness, means that they can be used to answer to particular problems, directly appealing to business creativity (Amabile et al., 1996). What makes the concept of creativity interesting and crucial for business and what matters in this case, is that creativity is the necessary prerequisite to innovation, and the latter is a part of the organisational change and development processes, which are vital for the running of an organisation in the long run. (Amabile et al., 1996). Companies have to constantly deliver products and services that are appropriate and needed at the corresponding time, and thus exercise creativity in their strategic and daily operations. Despite the fact that creativity can be excellent at different levels depending on the business functions and tasks, it can be still used at all the levels in organisations to some extent (Shalley & Gilson, 2004). Moreover, managers who are aware of various factors influencing creativity at all

levels can be better at influencing and positively affecting the occurrence of creativity in their organisations (Shalley & Gilson, 2004).

2.2.2 Individual and Organisational Creativity

In business research, the concept of creativity is often seen in two aspects: individual and organisational creativity (Amabile et al., 1996; Shalley & Gilson, 2004). Creativity at the individual level can be seen as a foundation for forming and supporting organisational creativity and innovation. Individual creativity incorporates personality factors, cognitive style and ability, relevant task domain expertise, motivation, and social and contextual influences. (Woodman et al., 1993) Organisational creativity can be defined as 'the creation of a valuable, useful new product, service, idea, procedure, or process by individuals working together in a complex social system' (Woodman et al., 1993) Very often, individual creativity is seen as an attribute of creative people, who are supposed to have different characteristics relating to their working and thinking approaches compared to 'non-creative' people (Lampel et al., 2000). According to Amabile et al. (1996), this approach appears to create limiting conditions for further practical use: it ignores the role of various factors, which can influence the creativity of a given individual. Moreover, it does not create opportunities for creating frameworks, which would help 'ordinary' people to become more creative at work. The Componential Theory of Creativity assumes that every person having normal capacities can make creative output in some field or other (Amabile et al., 1996). This theory formulates three main components of individual creativity, which together form a necessary requirement for exercising creativity in any given field. These components are: expertise, creative-thinking skills, and intrinsic task motivation. Amabile et al. (1996) formulates

expertise as a foundation for all creative work, which means that expertise comprises all the knowledge accumulated by the individual, their special technical skills and talents. The creative thinking skills comprise cognitive elements enabling a person to apply their expertise to creating new problem-solving approaches and solutions. The combination of expertise and creative thinking skills creates a basis for what a person is able to do. At the same time, the aspect of intrinsic task motivation will determine what the person will actually do, depending on the level of motivational orientation (Adler & Chen, 2011).

2.2.3 Creativity and Innovative Behaviour

Prior research has connected employees' creativity and innovative behaviour to the success of organisations (Nonaka, 2008; Rubera & Kirca, 2012). Around the 1950s, Guilford used divergent thinking to spread knowledge of creative ideas (Mumford et al., 2010; Woodman et al., 1993). Mumford et al. (2002) has criticised the popularity of Guilford's method, as it is a singular and remarkable procedure that branded the early exploration and investigation of creativity as a multifaceted theme. He claimed that different methods producing a more extensive comprehension of creativity have emerged in less than two decades. According to Woodman et al. (1993), the concept of creativity shows a relatively undiscovered area in terms of change and innovation in the workplace. Amabile et al. (1996) also argued that the empirical investigation of creative behaviour within an organisational context left a large gap that needs to be considered. As stated before, this thesis aims to understand the drivers of creativity within a workplace, and how scholarly literature depicts the distinction between creativity and innovation.

Creativity has been defined in many ways (Sternberg & Lubart, 1999), and a diverse set of aspects, such as person, process, service, and product, have been mentioned in relation to it. For the purpose of this thesis, the focus is on a conceptual explanation of creativity, through the lens of creative behaviour. Feist (1998) declared that 'for the last 30 years or more, creativity researchers have been fairly unanimous in their definition of the concept' and that, 'creative thought or behaviour must be both novel/original and useful/adaptive' (p.290). According to Amabile et al. (1996, p. 19), 'we do not know enough to specify a precise universally applicable definition of the term', but most theorists have defined creativity as the production of novel and useful thoughts that can be presented in different ways, such as in products, services and procedures. Frequently, theorists describe two main phases of the innovation process: initiation and implementation (Axtell et al., 2000; Zaltman et al., 1973). The initial phase ends with the production of an idea, and the second with its implementation (King & Anderson, 1995). While creativity refers to the production of novel ideas (Mumford et al., 2010), innovation refers to their application (West & Farr, 1989). To be clear with the definitions, the literature distinguished between innovation and creativity as innovation is often defined as the implementation of ideas whereas the creativity is related to the production of ideas (Shalley & Gilson, 2004). In this thesis, idea initiation/generation indicates creativity and idea application/implementation indicates behaviour, which is not the scope of this study.

Innovation has been recognized as the driving force that can substantially support and foster an enterprise's adaptation, survival and outstanding performance and insures the long-term survival of organizations (Bohn, 1998; Palacios Marqués & José Garrigós Simón, 2006). Knowledge, innovation and creativity are connected

concepts as the capacity of an organization to sustain its ability to generate ideas and innovate is predicated on its capacity to learn, expand its knowledge base, and its people sharing their knowledge (Teece, 2007).

In 1998, researchers started to incorporate the concept of innovation into creativity. The link made between these concepts forced organisations to recognise the significance of fostering employees' creativity. Mumford et al. (2002, p. 705) stated that 'creativity, the generation of new ideas, and innovation, the translation of these ideas into action, have come to be seen as a key goal of many organisations and a potentially powerful influence on organisational performance'. According to West and Farr (1989), creativity is mainly a distinguishing quality of a person, while innovation is generally executed by a group or community; however, West's description of innovation may be too narrow, as both creativity and innovation may occur at individual, team and organisational levels.

In the available literature, creativity appears as an important factor related to innovation (Amabile, 1988; Madjar & Ortiz-Walters, 2009). For example, Amabile et al. (1996, p. 1155) suggested that 'all innovation begins with creative ideas'. Similarly, Baer (2010) stated that creativity is the first step for innovation and provides the base for every innovation: the concepts of creativity and innovation are clearly related. Because of this, the terms 'creativity' and 'innovation' are sometimes used interchangeably and even at times indiscriminately (Ford, 1996; Scott & Bruce, 1994). According to Mumford et al. (2010), the fundamental source of any novel thought is individuals. A person is the ultimate source of innovation in the workplace (Shalley & Gilson, 2004). Employees' creativity, theoretically, provides the impetus required for innovation (Madjar et al., 2002). Gumusluoglu and Ilsev (2009) claimed that

employees who are creative tend to see opportunities for new products or identify new ways of utilising existing methods, producing new ideas to solve work-related problems and also often developing sufficient plans for implementation. In line with this, Shalley and Gilson (2004) proposed that creative staff generate new and useful thoughts about products, procedures and practices. It can be expected that employees' creative ideas are transferable to other staff in the workplace who adapt them. The distinction between creativity and innovative behaviour is recognised and explained by other authors in this field. According to Scott and Bruce (1994) and West and Farr (1989), innovative behaviour has an obvious applied ingredient that encompasses behaviours directed at the generation of new services, products and work processes. Creativity is the initial phase in which ideas are produced in response to a perceived necessity for innovation-oriented behaviour (West & Farr, 1989); the difference between creativity and innovation is of emphasis rather than essence. This thesis considers creativity and innovative behaviour as distinct constructs for the purpose of empirical investigation. Some previous research does not consider the distinction between idea generation and implementation behaviour but keeps innovative behaviour as a one-dimensional construct (Scott & Bruce 1994). This research follows Mumford et al. (2010), who suggested that researchers should keep these two phases of the innovation process separate.

According to De Jong and Den Hartog (2007), to begin an innovation, persons could produce thoughts by binding in behaviours, to look at opportunities, recognise gaps, or generate solutions for problems in the workplace. Opportunities to generate thoughts are presented by inconsistencies, or when things do not follow expected patterns: for instance, when problems and difficulties exist in established work

procedures, or clients have unique and original needs. In the second phase of innovation, employees show application-oriented behaviour, such as convincing others of the value of a specific idea. De Jong and Den Hartog (2007) stated that employees' innovation-oriented behaviour is associated with their creativity. This statement seems to overlook the distinction between creativity and innovation, which implies that the distinction between creativity and innovative behaviour is blurred. However, some models cover the elements independently: for instance, Basadur (2004) discerned differences between problem detection, problem conceptualisation, problem solving, and solution execution. Clearly, in this model the first three cycles relate to creativity, while the last cycle is about innovative behaviour. In this regard, Mumford et al. (2002) suggested that coming studies should look into 'late cycle' abilities such as the implementation of creative thoughts, arguing that the declaration, formation and implementation of thoughts depicts 'another important component of creative work', and stressing the consideration of execution of creative ideas as a separate phase.

2.2.4 Managerial Approaches to Enhancing Creativity

Further research by Amabile et al. (1996) formulated a managerial approach to enhancing creativity, which is based on six elements to be used throughout organisations (which are also called Environmental Stimulants for Creativity): challenge, freedom, resources, work-group features, supervisory encouragement, and organisational support. Current work will be further dealing with the elements of challenge and work-group features, as dealing with other elements is beyond the scope of this study. Innovation is increasingly about teamwork and the creative combination of different disciplines and perspectives. Whether it is in designing a new car in half

the time usually taken, bringing a new computer concept to market, establishing new ways of delivering old services such as banking, insurance or travel services, or putting men and woman routinely into space, *success* results from employees working together in high performance teams (Tidd et al., 2009). This represents the managerial task of matching the people with the assignments which use their expertise and creative-thinking skills, and stimulate intrinsic motivation, at the same time providing opportunities for further development. According to Amabile et al. (1996), the main feature of work-groups that enhance creativity is a combination of supportive environment, which encourages expressing opinions and new ideas, with a diversified structure of the team, including various backgrounds, perspectives and personalities. We argue that the characteristics of social media facilitate such an expression of opinion and new ideas, and therefore using it should impact the creativity of individual employees.

Another managerial framework based on the approach created by Amabile et al. (1996) and Woodman et al. (1993) focuses on the categorisation which divides the work context into the following components: individual, job, group or team, and organisational level factors (Shalley & Gilson, 2004). Considering the individual-level factor, it is important to highlight that while this approach states that some people can be more creative than others, it acknowledges the fact that 'social and contextual factors can enable the expression of creative activity and motivate its applications' (Shalley & Gilson, 2004). The job-level factors point out the importance of providing employees with jobs which would be sufficiently challenging to motivate creativity, but at the same time not overwhelming, which enables the individual to break out of their usual or habitual working procedures with creative ideas. One of the elements of

job-level factors, sufficient resources, highlights the importance of access to other individuals as a resource: various individuals in organisations possess different expertise and skills complementing each other, and input from many of them can be necessary to come up with and develop creative ideas. According to Woodman et al. (1993), it is necessary for individuals to be able to share information freely with others within the organisation and take part in decisions to remain creative. Therefore, acquiring others' views and knowledge can have an enhancing effect on an individual's creative performance. We believe that using social media allows employees to collaborate and share information with each other, thereby enabling the expression of creativity of employees with different skill sets.

Shalley and Gilson (2004) claim that the way the rewards are constructed and communicated to the individuals can also affect creativity, through having influence on the intrinsic motivation. When describing team and work group factors, Shalley and Gilson (2004) concentrate on the influence of social interaction on an individual's creativity: the opinion of co-workers can influence the whole view on the work and organisation of an individual. Moreover, Madjar et al. (2002) (as quoted in Shalley and Gilson, 2004) conducted a research study, which found out that support from co-workers is positively related to employee's creativity. Moreover, it is important that there is diversity within the group composition, which is supposed to increase the variety of expertise and skills in the group, introduce different perspectives to discussions, and stimulate going beyond obvious alternatives to problem-solving. Once again, we argue that the characteristics of social media allow the individual to seek and get the support of co-workers.

2.3 Innovation

2.3.1 Innovation Definition

Due to the wider scope of innovation, it is defined in different ways by different authors. The management and organisation literature contains a number of definitions of innovation.

Schumpeter and Backhaus (2003) was a pioneer in the domain of innovation and he defined innovation as ‘changes of the combinations of the factors of production as cannot be effected by infinitesimal steps of variations at the margin’. Tidd et al. (2009) defined innovation as a process of turning opportunity into new ideas and of putting these into widely used practice (p.38).

Another definition by Perrin (2002) defined innovation as ‘novel ways of doing things better or differently, often by quantum leaps versus incremental gains’ or as Nonaka (2008) defined it as more ‘a creative process than an end-state’ (p. 75).

Based on a review of several definitions, for the purpose of this study, the definition by Tushman and Anderson (2004) is adopted:

> **‘**An innovation is more than an invention. It advances a novel idea to the next level, reducing it to practice in a way that creates economic value for some group of customers. An innovation may lower the cost of producing what a company already produces, enhance the value of the company’s output, or allow the company to reach new customers’.

Most of its definitions have two common constituents: novelty and successful deployment (Ertürk, 2012) and innovation is generally regarded as a means of improving the competitiveness of firms and their performance, not necessarily

directly, but through the production of useful innovations and increased productivity (Mortensen & Bloch, 2005).

This topic has attracted the attention of management scholars since the argument of Schumpeter (1982) that continuous innovation activity is the key source of long-term firm success. The interpretation and systemisation of the innovation efforts yielded a handful of scholarly articles in the early 1950s and up to 20,000 cross-disciplinary scholarly articles per year by the mid-2000s (Fagerberg, 2017) and there is a wide body of literature that attempted to explain the innovation phenomena.

Eveleens (2010) and Crossan and Apaydin (2010) highlight that there is considerable interest in the field of innovation both from the academic fraternity and among industry due to the realisation of the innovation importance in developing countries. Considerable literature has been published on the subject of innovation and several reviews have been conducted on this subject by various authors such as Anderson et al. (2014), and Damanpour and Gopalakrishnan (2001) that attempted to cover the birth, evolution and transformation of innovation research. According to Mohr (1969), innovations are intentionally implemented changes that are new to the organisation. Rogers and Wright (1998) emphasised that innovation can involve both the creation of entirely new knowledge and the diffusion of existing knowledge. According to Drucker (2017), the generation of innovation is intended to contribute to the organisation’s effectiveness and competitiveness by creating a new opportunity or by making use of an existing opportunity in novel ways.

2.3.2 Types of Innovation

It is important to distinguish between different types of innovation because each type has its own characteristics and the impact of environmental and organisational factors on each innovation type and its adoption are not identical (Jansen et al., 2006). Innovation researchers have introduced many conceptual typologies of innovation. The basic classification of innovation divides it into technical innovation that focuses on new services or products and administrative innovation that focuses on procedures, policies and organisational forms (Dewar & Dutton, 1986; Hage & Dewar, 1973).

One recurrent categorisation of innovation is according to its proximity to the current technological trajectory: radical vs. incremental (Abernathy & Utterback, 1978; Benner & Tushman, 2003; Henderson & Clark, 1990). Innovations can also be categorised as radical, incremental, architectural, or modular based on the effects it has on the organisation, products, customers, or suppliers.

Relatively small and consistent improvements are considered as incremental innovations, it has an iterative nature in which one small innovation leads to another (Benner & Tushman, 2003). Some dimensions that distinguish the innovation as radical or incremental are the innovation's cost to the organisation, its diffusion in the organisation and its disruption to existing organisational arrangements (Fagerberg, 2017; Wolfe, 1994). Arguably, the cumulative benefit versus cost of incremental innovations is higher than of radical innovations. In general, radical innovations create less beneficial consequences due to higher risk factors and resistance from organisations (Fagerberg, 2017; Van de Ven et al., 2008). Incremental innovations seem to occur often in interaction with partners (Tödtling et al., 2006) and since social

media tools by definition are used to enable social interactions (Hansén & Wakonen, 1997), this study will investigate the impact of social media on incremental innovation in organisations.

Zaltman et al. (1973) identified approximately 20 innovation types and grouped them in terms of the focus of the innovation, the state of the organisation and outcome of innovation (see Appendix B). However, the most widely classified/studied innovation types are product and process innovations (Abernathy & Utterback, 1978; Satell, 2017).

More recently, with technological developments researchers have suggested classifying innovations based on a distinction between technological and administrative (organisational/management) innovations (Birkinshaw et al., 2008; Lam, 2005). These two types of innovations were juxtaposed by Meeus and Edquist (2006) who offered a taxonomy that further classifies these two types of innovations into product innovations (in goods and services) and two types of process innovations (technological and organisational).

Hamel (2008) further distinguished the process innovations suggested by Meeus and Edquist (2006) into two types: operational processes innovations (such as customer service, supply chains, quality) and management processes innovations (such as strategic planning, project management, performance management).

Edquist and Hommen (2006) four innovation types, however, in this study we focus on service innovations and process innovation (including technological and organisational) because the unit of study is a service-oriented firm and excludes

innovation related to manufacturing. We define these types next. The types of the innovation are represented in Figure 1.

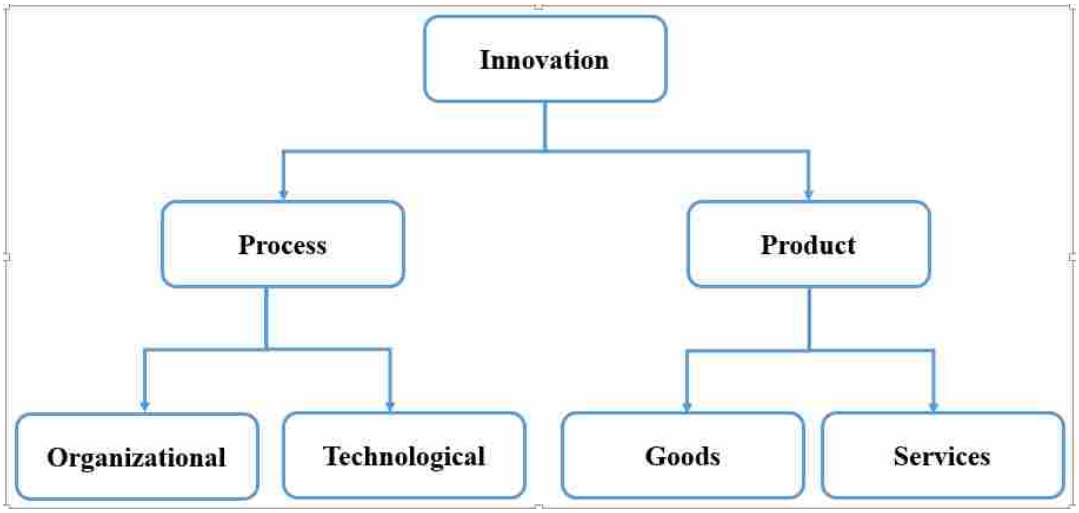


Figure 1: Taxonomy of Innovations

1. Service innovations

Service innovation can be defined as changing the way you serve your customers to create greater value for them and deliver more revenue for your organization (Witell et al., 2016). Organisations offer products or services to clients (Barras, 1986) and literature on innovation has generally not distinguished between product and service innovations, even though the services sector plays a significant role in global economic activity. Services offered by organisations in the service sector are conceptualised to be similar to products introduced by organisations in the manufacturing sector (Damanpour et al., 2009; Halvorsen et al., 2005) even though services have unique characteristics. The lack of distinction between product and service innovation is because both are driven by customer demand for new products or services and executives' desire to offer innovative products or services to differentiate themselves from their competitors (Damanpour & Gopalakrishnan,

2001). Many definitions have been proposed for the service innovation, some among them have defined it as (1) the introduction of new service offering or the development of a new way of delivery services (Mansharamani, 2005) (2) a multistage process whereby organizations transforms ideas into new or improved services (Andrews, 1971), and (3) a multidisciplinary process of designing, realizing and marketing combinations of existing or new services (Flikkema et al., 2010).

Damanpour et al., (2009) believe the lack of clear distinction between product and service innovation offers a definition for service innovation from service user perspective. They define service innovation as the introduction of new services to the existing or new clients, and offer of existing services to new clients.

The work of (Barras, 1986) is still referenced in literature on service innovation, as he was a pioneer in this field. Barras (1986) postulated that innovation in services takes place through three main phases:

Phase 1: Incremental Process Innovation: Improving the efficiency in delivering existing services;

Phase 2: Radical Process Innovation: the improvement of service quality that comes from more radical process innovations;

Phase 3. Emergence of product and service innovations: In this phase completely, new services are introduced, or existing services are completely transformed and presented in new forms (Scuotto et al., 2017).

As discussed earlier, these 3 phases require close consultation and collaboration between individual employees and we posit that the characteristics of social media allow it to be used across the three phases. Employees can brainstorm using social media tools to make an incremental process innovation or come up with

"out of the box" solutions for radical process innovation. Finally, social media allows divergent perspectives to emerge and challenge existing paradigms leading to the creation of new services.

2. Process innovations

Zooming in from this general definition of the innovation to the field of process innovation gives multiple perspectives. Continuing with Garcia and Calantone (2002), they state that a production process is the system of process equipment, work force, task specification, material inputs, work and information flows, and so forth that are employed to produce a product or service. Followed by this definition is the statement that "the primary focus of process innovations is the efficiency improvement of the production process for product innovations". This is definition is relative broadly stated if compared with e.g. the definition of Rochina-Barrachina et al. (2010) which defines process innovations as "important modifications of the productive process which can be materialized by the introduction of new machines, introduction of new organization methods for production, or both" (p. 1341). Where the first definition also takes work force and information flows into consideration this second definition specifies process innovation only as improvements to machines or organization methods for production.

Besides a discussion about the scope of process innovations there is also no consensus about the main goal of process innovations. Where Garcia and Calantone (2002) define "the efficiency improvement of the production process" as the primary goal, Reichstein and Salter (2006) state that process innovations have the aim of "achieving lower costs and/or higher product quality. The definition used in this article is based on multiple other scholars and specifies process innovation as "new elements

introduced into an organization's production or service operations – input materials, task specifications, work and information flow mechanisms, and equipment used to produce a product or render a service – with the aim of achieving lower costs and/or higher product quality". Finally, it should be clarified if a process innovation only can influence the manufacturing process or also cover the broader perspective of business processes. This second view is used in the definition of (Papinniemi, 1999) who states that "process innovation means performing a work activity in a radically new way. Process innovation is generally a discrete initiative and it also implies the use of specific change tools and technology for enterprise engineering and transformation of business processes."

The focus of process innovations is mainly internal to the organisation and aims to improve, alter or completely innovate processes to improve efficiency and effectiveness in delivering the products or services to customers of the organisation (Boer & During, 2001). Meeus & Edquist (2006) and Damanpour (1991) highlight that process innovation can be associated with technical systems or administrative systems of the organisation. Furthermore, process innovations represent any modifications to steps taken by organization to produce end products and services (Agarwal & Ndubisi, 2014).

In relation to social media, the previous studies carried out the impact and role of social media on innovation in general. However, it has been hard to find studies or research carried out on how social media use specifically impacts process innovation which makes the current study of great value in introducing empirical findings about the role of social media in enhancing process innovation in organizations.

3. Technological innovations

To improve or introduce new products or services, technology plays a critical role (Meeus & Edquist, 2006). Technological innovations are new elements introduced into an organisation's production system or service operation for producing products or rendering its services to the clients (Damanpour & Gopalakrishnan, 2001). Technological innovations have primarily captured the attention of executives' as they reduce service delivery time, streamline processes and increase operational flexibility and lower production costs (Boer & During, 2001).

Technological innovations in service organisations are mainly introduced with the help of information technologies (Barras, 1986; Halvorsen et al., 2005). Social media technologies are ideal tools to improve collaboration and communication within organisations and can be an effective tool for knowledge sharing and innovation.

4. Administrative innovations

Administrative innovations refer to the adoption of new approaches aimed at doing things at work such as changing a business strategy, adopting a new organisational structure, developing a collaborative and knowledge sharing culture, adopting new techniques to motivate and reward administrative members (Birkinshaw et al., 2008). Administrative innovations affect management practices and indirectly impact an organisation's work activities and in turn performance (Damanpour & Gopalakrishnan, 2001). The drive for administrative process innovations is mainly due to the need for improving operational efficiencies and to effectively use its resources such as people and technology. Technology plays a significant role in supporting administrative innovations in organisations. For example, the Customer Relationship

Management (CRM) function in large organisations can best be managed only through the use of information technology applications. Similarly, in large organisations with employees spread geographically, information technology tools enhance collaboration and communication in real time and improve knowledge sharing and the generation of innovative ideas.

To sum up, both technological innovation and administrative innovation depend on collaboration and effective communication which can be facilitated by social media. As discussed above, usage of social media may allow more creative solutions that in turn lead to benefits such as reduced cycle time, lower costs and efficient processes.

5. Organizational innovation

In a general sense, the term 'organizational innovation' refers to the creation or adoption of an idea or behaviour new to the organization (Damanpour & Gopalakrishnan, 2001). In general, organizational innovation can be defined as a new organizational method in the firm’s business practices, workplace organization or external relations that can be intended to increase the firm’s performance (Mortensen & Bloch, 2005), and also as the process of translating an idea or innovation into a good or services that creates organizational value (Kasemsap, 2016).

The existing literature on organizational innovation is indeed very diverse and not well integrated into a coherent theoretical framework. The phenomenon of 'organizational innovation' is subject to different interpretations within the different strands of literature. The literature can be broadly classified into three different streams, each with a different focus and a set of different questions which it addresses.

Organizational design theories focus predominantly on the link between structural forms and the propensity of an organization to innovate (Lawrence & Lorsch, 1967). In addition, Baumol (2005) emphasizes that while innovation is important for the development of organizations and sectors, the scientific literature on the subject has found it difficult to follow the development of a theoretical point of view, especially when dealing with organizational innovations.

Although less prominent in the studies that seek to raise the indicators of technological innovation activities in the national domain, organizational innovations began to receive attention from researchers because of its contribution to the development of other types of innovation, such as product, service or process innovations (Hamel, 2008, Lam, 2005). However, despite this interrelationship, Lam (2005) notes that the literature is diverse and not integrated into a consistent theoretical framework. Nevertheless, the focus of this type of innovation is essentially linked to the creation or adoption of new forms of management and organization, which may or may not be supported by technology, once it comes to fundamental aspects of social organization.

The Oslo manual (Mortensen & Bloch, 2005), which is the main conceptual and methodological framework for collecting and interpreting innovation data, justifies the need to expand the concept of innovation including non-technological innovations, such as organizational and marketing innovation. According to the Oslo Manual, the innovation perspectives has changed over time, and there is a need for indicators that capture these changes, and that provide policy makers with appropriate tools of analysis.

The degree of organizational innovation focuses on the internal micro-perspective. Profound innovations are frequently associated with new, formal, organizational structures and processes. However, they also affect informal characteristics of organizations, for example by changing corporate culture. This is reflected, for example, in intensified and more open collaboration with external business partners which can significantly increase the complexity of the processes (Peters, 2011). Strategic realignment is also a feature of innovations with a high degree of organizational innovation.

It is now well-documented that social media can play an important role in supporting the innovation process. Social approaches are most commonly thought to be useful in either idea generation, as in open innovation approaches, or in idea diffusion. However, while the connection between social media and innovation success has been established, the mechanics of how social media supports innovation are less well understood. Hence, the current research is carried out to explore how social media impact organizational innovation. In the next section, the open innovation will be discussed in accordance to the innovation in organization.

2.3.3 Open Innovation

Open innovation has become a trending topic in the field of innovation management (Chesbrough, 2010; Huizingh, 2011; Scholten & Scholten, 2012). It is still a relatively new concept, intended to investigate the value creation by the transmission of innovation from external parties (Chesbrough, 2010; Huizingh, 2011). It is an emerging paradigm exposing organisations to networked capabilities and competencies through collaboration (Carroll & Helfert, 2015). The openness encourages the flow of knowledge and information between organisations (Huang &

Rice, 2013). According to Chesbrough (2010), open innovation is ‘both a set of practices for profiting from innovation and also a cognitive model for creating, interpreting and researching those practices’ (p 286). (Dahlander & Gann, 2010) point out that this definition includes various different practices that can be considered open. On the other hand, open innovation as a concept is not evident, but rather broad including various dimensions (Huizingh, 2011; Van de Vrande et al., 2009).

The starting point of open innovation is opening up the innovation process (Huizingh, 2011). Chesbrough (2010) discusses inbound open innovation processes, where purposive inflows and outflows of knowledge advance internal innovation, and outbound open innovation processes, in which the markets for external use of innovation are expanded. Open innovation is often seen as the opposite of closed innovation, in which organisations produce their own ideas and develop, market, distribute, service, finance and support them internally (Chesbrough, 2010). In today’s world, open innovation is perhaps taking different forms than in the past as the availability of new information and communications technologies and infrastructures support innovation. Thus, they enable rapid idea development, exchange and dissemination while decreasing transmission costs and allowing for a larger range of potential and number of participants. (Dahlander & Gann, 2010). Carroll and Helfert (2015) claim that one of the key drivers of open innovation is the cost savings. Hence, today’s organisations often opt for joint venture or licence agreements rather than spending all their resources on the internal research and development teams (Carroll & Helfert, 2015). Huizingh (2011) groups open innovation practices by separating between innovation process and outcome, which can both be either closed or open. Table 2 below by Huizingh, (2011) illustrates this matrix.

Table 2: Open innovation practices

Innovation process:	Innovation outcome:	
	Closed	Open
Closed	Close innovation	Public innovation
Open	Private open innovation	Open source innovation

There are also several other open innovation frameworks or practices (Dahlander & Gann, 2010; Huizingh, 2011).

In Table 2, the closed innovation describes a situation where patented innovation is developed internally in the organisation (Chesbrough, 2010). In this case, both the innovation process and innovation outcome are closed. In the second case, private open innovation, the outcome is closed but the innovation process itself is opened up by using external partners' input or by using externally an innovation developed internally. In the second dimension, the innovation process can be either closed or open. Thus, public innovation outcome may be open, but the innovation process remains closed. Finally, in open source innovation both the process and outcome are open. An example of this category is open source software (Huizingh, 2011).

Van de Vrande et al. (2009) point out that, compared to the closed innovation model, the open innovation model means more complex management and organisation of innovation processes. This is because open innovation consists of various activities, more than just those traditionally handled in internal R&D departments (Van de Vrande et al., 2009).

According to Huang and Rice (2013), open innovation leads to two main advantages in comparison to closed innovation. Firstly, it facilitates the transmission

of complementary and synergistic knowledge, expertise and resources throughout an organisation (Chesbrough, 2010). Secondly, it allows sustaining competitive advantage over time by creating complex, differentiated and even incomparable capabilities, when externally sourced knowledge has been successfully integrated with in-house resources (Huang & Rice, 2013). The study by Huang and Rice (2013) suggests that, generally, regional clusters' close geographical proximity enables positive and significant improvements through open innovation practices. Chesbrough (2010) states that open innovation helps to share the risks and rewards and to reduce the costs of innovation. It also speeds up the time required for delivering innovations to the market and can help in turning a business into a platform for others to build on (Chesbrough, 2010).

Some drawbacks include the possibility of high co-ordination costs due to involving external parties and transaction costs from contractual negotiations and information accessibility. Simard and West (2006) add that there are also indirect costs and risks involved if the knowledge inflows are less valuable than the outflows. Thus, organisations are more likely to benefit from open innovation when the potential returns can outbalance the potential drawbacks (Huang & Rice, 2013). However, Huang and Rice (2013) state that regional clusters can offset the drawbacks of open innovation and overcome potential disadvantages. Regional clusters can enable an environment where costs associated with open innovation strategies, uncertainty of collaborative relationships and potential conflicts between inbound and outbound knowledge flows can be minimised. In these clusters unrestricted knowledge transfers can occur, supported by mutual benefits and smaller-scale transaction and other costs. (Huang & Rice, 2013).

An area of importance regarding open innovation is external networking (Chesbrough, 2010). According to Hennala et al. (2011), customer involvement is growing in importance. Customers can be used to inform internal innovation processes and it has been recognised that they can be the source of new innovations that producers can emulate, rather than being just passive adopters. Innovation networks that consist of individuals and organisations may have a central role, especially in product and market innovation (Ojasalo, 2016).

In the end, Huizingh (2011) predicts that the term 'open innovation' will vanish in the near future. This is not because it will lose its usefulness, but rather because it will be a logical development to fully integrate it in innovation management practices. Organisations will come to realise that they cannot afford to assume they have nothing to learn or gain from others. When this time comes, it will be hard to imagine that we ever lived without open innovation (Huizingh, 2011).

2.4 Theoretical Underpinnings of Innovation

In order to better understand the phenomenon of innovation in organizations a review of the theoretical underpinnings of innovation would be useful. Crossan and Apaydin (2010) based on their review of literature on innovation highlighted the theories of innovation in some of the mostly cited papers (See Crossan and Apaydin (2010).

The theoretical perspectives of innovation widely reported are institutional (Burns & Wholey, 1993; Haunschild & Miner, 1997), economic (Coe & Helpman, 1995; Feldman & Florida, 1994), network (Ahuja, 2000; Hargadon & Sutton, 1997) resource based view (Lei et al., 1996; Teece et al., 1997) and Learning, Knowledge

and Change based theories (Eisenhardt & Martin, 2000; Luca & Atuahene-Gima, 2007).

Network, learning and knowledge theories are used across all levels: Macro (Industry level), Organization and Individual level. Economic theories of Innovation are mostly used at the economy or societal level whereas resource-based view theories of innovation are used at the organizational level. The commonly used theory of innovation is the learning and management based view.

From among the widely cited theories that incorporate innovation capabilities and their antecedents and determinants the following theoretical perspectives will be deeply investigated for this study i.e., the Knowledge-based view; Resource-based view and Organizational learning based theories of innovation.

These theories explain how organizational capabilities are developed and how it impacts performance.

2.4.1 Resource Based View and Innovation Capabilities

According to the resource-based view, a firm is a heterogeneous mix of different resources such as all its attributes, assets, capabilities, business processes, and knowledge (Barney, 2001) that offer it a competitive advantage (Wernerfelt, 1984). This recognition of the competitive advantage that resources can offer a firm was recognized long back by various authors (Andrews, 1971; Ansoff, 1965).

Amit and Schoemaker (1993) highlight that a distinction between resources and capabilities was later made and resources were defined as those that can be traded such as patents and licenses, financial or physical assets (e.g., property, plant and

equipment), human capital, etc., while defining capabilities as the firm's capacity to deploy resources to achieve a desired end. Barney (2001) further emphasized this distinction and defined capabilities as the ability of firms to organize their business processes and use their resources to generate competitive advantages.

According to Wernerfelt (1984) innovation capabilities of a firm transform its resources into new products. As such capabilities are the key to deriving a competitive advantage (Ray et al., 2004), and to achieve a higher performance than competitors (Zahra & George, 2002). Several authors state that there is a positive relationship between capabilities and competitive advantage (Wernerfelt, 1984).

The capabilities of a firm need to be dynamic to deal with market instability and to have a sustainable competitive advantage. Dynamic capabilities are defined as the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments (Teece, 2007).

2.4.2 Knowledge Based View and Innovation Capabilities

The knowledge based view (KBV) of the firm holds that knowledge is the most important resource of the firm. The knowledge-based view of the firm is built upon the resource-based view, organizational capabilities, organizational learning and competitive dynamics (Grant, 2016) and both underlying assumptions upon which both KBV and resource-based view are built are similar with the key difference being that KBV puts more emphasis on the importance of knowledge as a resource, which is considered to play a significant role in deriving a competitive advantage (Eisenhardt and Santos 2000).

Kogut and Zander (1992) introduced the concept of knowledge as a source of innovation and competitive advantage. Nonaka (2008) provided a framework for understanding the integration of individual and organizational knowledge that leads to a competitive advantage (Eisenhardt & Martin, 2000).

Customers, market, competitors, or organizational processes, inter-departmental collaboration and communication can be sources of knowledge. Luca and Atuahene-Gima (2007), highlight that the breadth and depth of knowledge has differing effects on innovation performance. Specialized knowledge plays an important role in building organizational capabilities (Grant, 2016) and shields the organization from imitation by competitors (Sampler, 1998), which increases the competitive advantage of the innovations.

Eisenhardt and Martin (2000) argue that tacit knowledge plays an important role in innovation and Berman et al. (2002) argue that is the source of sustained competitive advantage and team performance. The function of innovation capabilities is to utilize knowledge and transform it into new products to achieve competitive advantage.

2.4.3 Organizational Learning Theory and Innovation Capabilities

Organizational learning is another source of knowledge which helps build innovation capabilities of organisations via obtaining and sharing information within the organization (Slater & Narver, 2009). Successful organizational learning is found to have a positive effect on organizational outcomes and results in greater new products, improved quality of products and services, customer retention, and, ultimately, superior growth and profitability (Slater & Narver, 2009). Thus it can be

argued that organizational learning transforms the firm's knowledge into innovation capabilities.

2.4.4 Market Orientation and Innovation Capabilities

Market orientation is essential to the innovation capabilities of the firm as it provides the firm with market intelligence about current and future customer needs, which when permeates throughout the organization can lead to new innovations to meet customer needs ((Kohli & Jaworski, 1990); (Slater & Narver, 2009)).

Slater and Narver (2009) argue that innovation is an outcome of market orientation. This view is also supported by Han et al. (1998). The focus of Slater and Narver (2009) was more on the mediating role of market orientation on product innovations whereas Han, et al., (1998) focused on the role of market orientation on technological innovations used in service delivery and administrative innovations.

Based on a review of previous literature Zhou (2011) integrate market orientation, organizational learning and innovation and highlight that market orientation contributes to developing organizational capabilities and organizational learning acts a mediating factor between market orientation and innovation performance.

2.5 Knowledge Management and Innovation

Knowledge is data collected over time. According to the Cambridge Online Dictionary, knowledge is a:

> 'comprehension of or data about a subject, which a man gets by involvement or study and which is either in a man's psyche or known by individuals for the most part; the condition of thinking about or being comfortable with something' (Dictionary, 2008).

Consequently, information is not restricted to the data a man has gained from writing, but also the know-how picked up by involvement or even the in-explicit nature picked up by training. This kind of knowledge, frequently alluded to as unsaid information, is important to advancement because our thoughts and innovations for enhancing existing conditions regularly originate from our experience of using the present supply of items or administrations. This is one reason why clients are a significant wellspring of information for advancement; they have the implied knowledge picked up by encountering the present item and administration, and the present needs and wants for enhancements. Although level-headed discussion about knowledge has been around for quite a while, it only in the mid-1990s that academics and the business world started to perceive information as a key hierarchical asset.

In financial aspects, the components of generation were customarily thought to be land, work and capital. Drucker (2017) asserted that these set up components of creation were never again key authoritative assets deciding achievement. He asserted that learning, or scholarly capital dwelling inside firms, was the key driver of accomplishment: ‘Information has turned into the key asset’ and accordingly it ‘is on a very basic level not the same as the customary key assets of the business analyst – land, work and even capital’ (Drucker, 2017). Truth be told, he took the variety further and called attention to the basic of overseeing learning as an asset:

> ‘We require efficient work on the nature of information and the profitability of information’ on the grounds that ‘the execution limit, if not the survival, of any association in the information society will come progressively to rely upon those two components’.

The reality of these words composed just twenty years ago has now turned out to be clear and more researchers have reached a similar conclusion. The

acknowledgment of the importance of Knowledge Management can be seen when entering ‘Information Management’ into Google-Scholar’s internet search tool, with more than three million articles and books recommended in the outcomes. Numerous organisations today have some sort of a Knowledge Management framework set up, recognising the significance of knowledge as a key asset. As advantage has been perceived as coming about because of organisations giving differentiators, for example, ‘quality’, ‘consumer loyalty’ and ‘advancements’ learning and Knowledge Management has gradually been perceived as an unmistakable basic resource of an organisation (Frappaolo, 2008). Organisations understand that their biggest resource is the knowledge they approach, or as Rahimli puts it:

> ‘to have an economical upper hand, an association ought to acknowledge how to make, convey and use information through an association and how append it to authoritative process’ (Rahimli, 2012).

As learning has turned out to be perceived as being such a profitable advantage for firms, the importance of overseeing it productively and viably has been perceived. Information Management has appropriately gained greater consideration in the most recent decade. Information Management alludes to:

> ‘an expansive gathering of hierarchical practices and methodologies identified with creating, catching, scattering know-how and other substance applicable to the association’s business’ ((Boylan, 2002).

The drivers behind the significance of Knowledge Management in the present economy are different. The quick progression of personal computers (PC) and correspondence innovation and in addition expanding globalisation throughout the most recent two decades are the most self-evident, and these drivers have changed the business setting for organisations working in the present economy. With the goal for

organisations to survive and remain aggressive in these turbulent and consistently changing business conditions, they have to persistently enhance, create and actualise developments. This can, for example, be seen in the expansion of documented licences at the United States Patent and Trademark office which went from 186,507 licences recorded in 1992 to 576,763 in 2012, an increase of 209% in 20 years (Securities & Commission, 2013).

Despite the fact that advancement can mean a radical change – a progressive new item or change of hierarchical procedures, by going past the limits of existing information and growing new knowledge and experiences – it can likewise take an alternate shape. Advancement can be incremental, including adjustment and improvement of existing items or procedures. Advancements as a rule arise from:

> '… the capacity to look for and recognise significant outside information, apply existing knowledge to new settings, comprehend and ingest new outer learning and mix and coordinate distinctive assortments of information together' (Hislop, 2013).

Likewise, developments give an impression of ending up more unpredictable in nature and organisations progressively perceive that inner information does not generally get the job done for their advancement exercises, and along these lines scan for knowledge remotely. Consequently, the significance of client information is clear; outer knowledge from clients coordinated with existing authoritative information can be important in the development procedure.

2.6 Social Media in Dubai

Social media has picked up over the last years in the Arab world in general and in the UAE in particular, and a report released by the UN and further analysed by the Dubai School of Government in 2011 shows that the total number of Facebook users

in the Arab world stands at 27,711,503 (as of April 5, 2011), up from 21,377,282 users in January 2011) and having almost doubled in less than a year when it jumped from around 14 million users in 2010. The UAE alone has over 9.3 million registered users out of its total population of 9.54 million in 2018, representing more than 29% of the UAE population. The report also stated that GCC countries still dominate the top five Arab states for Facebook users as a percentage of population, and that UAE remains at the top of the Arab region. The report also highlighted the use of Twitter in the Arab world, estimating the total number of tweets generated by active users at more than 22.7 million, with an average of around 252,000 tweets daily. The UAE was ranked second top in number of active Twitter users in 2011, scoring around 201,060 active users with a penetration of around 2.4% of its overall population, giving the UAE the third most active twitter users in the Arab world and GCC after Qatar and Bahrain.

In the case of Dubai, one of the fastest-growing cities in the Middle East if not the world, it was announced in Feb 2013 by the Prime Minister and ruler of Dubai that all governmental services would transfer to Smart Government, enabling smart device services factoring mobility. In 2013, Dubai also announced positioning itself as a Smart City with a narrowed focus on improving the quality of life as its vision, which explicitly mentioned improving mobility as a major pillar.

The Roads and Transportation Agency of Dubai (RTA) holds a sole and prime responsibility to govern, manage and control mobility in the city of Dubai. As one of the unique setups in the world, RTA combines and governs all transportation means in the city; that includes traffic and roads, metro, public transportation, taxi dispatches, marine transportation and licensing and registration of public and private vehicles, suggesting RTA as a complicated and distributed environment with clear potential for

introducing and studying innovative social media practices to influence the organisation's performance.

2.7 UAE National Innovation Strategy (NIS)

Recognizing innovation as a cornerstone of social and economic development, nations around the world have set about to develop national innovation strategies and frameworks. Innovation is defined as the aspiration of individuals, private institutions and governments to achieve development by generating creative ideas and introducing new products, services and operations that improve the overall quality of life. Innovation is key to promoting economic growth, increasing competitiveness and providing new job opportunities.

Emanating from its strong belief that building a human capital is far more critical than urban development, the UAE is keen on creating a wealth of human resources capable of meeting the country's aspirations of development across various sectors. The UAE distinctly demonstrates its ability to attract and retain top talent by becoming a primary destination for educated Arab youth seeking a better professional and personal life, besides ranking first worldwide in attracting global talent. Over the past few decades, the UAE's efforts have culminated in its ranking first among the Middle East and North African countries and 36th globally among 143 countries in terms of performance in the 2014 Global Innovation Index. The UAE's total investment in innovation is estimated at AED 14 billion yearly, AED 7 billion of which are allocated for Research and Development. H.H. Sheikh Mohammed bin Rashid Al Maktoum, UAE Vice President, Prime Minister and Ruler of Dubai, launched the National Innovation Strategy to sustain the UAE's leading position in the region and

realise its ambition of becoming one of the most innovative nations in the world. The key innovations are presented in Figure 2.

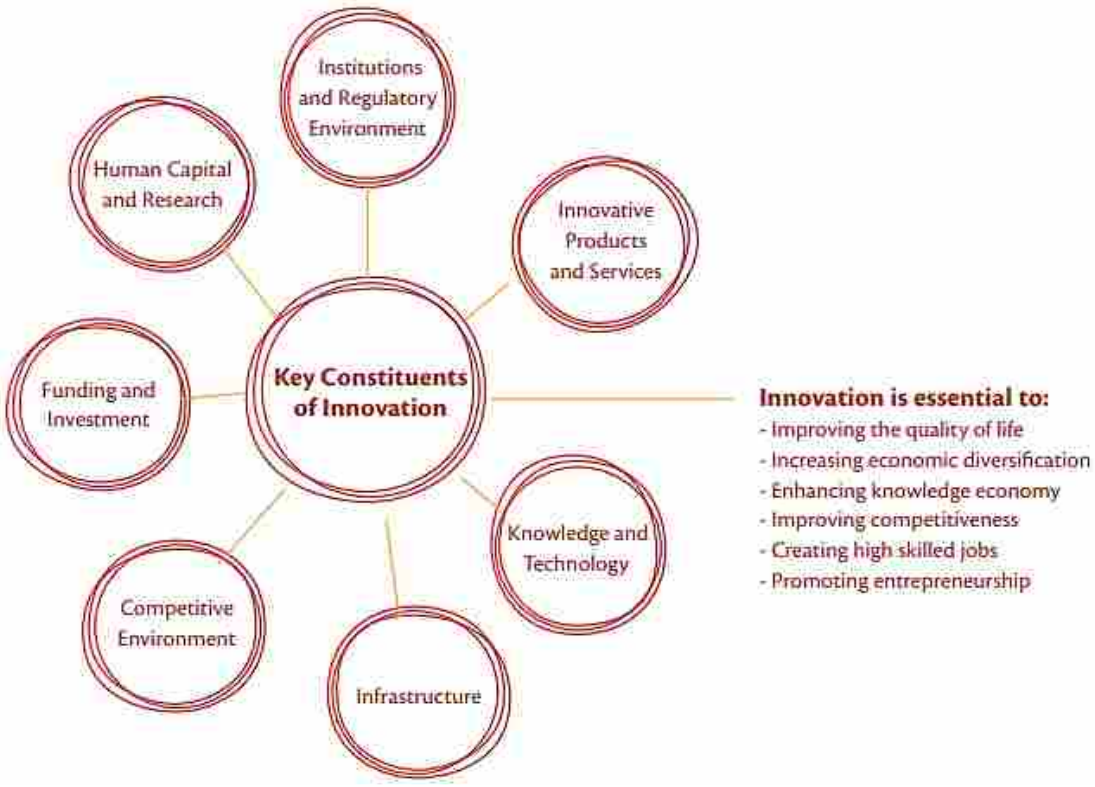


Figure 2: Key Constituents of Innovation

Since its inception in 1971, the United Arab Emirates has constantly been distinguished as an icon for innovation and creativity, enhancing its social and economic status and transforming into a primary destination for talents and businesses in record time. Believing that innovation is the future of human investment, the UAE Leadership emphasizes its importance across all sectors through the UAE Vision 2021: "Innovation, research, science and technology will form the pillars of a knowledge-based, highly productive and competitive economy, driven by entrepreneurs in a business friendly environment where public and private sectors form effective partnerships".

The National Innovation Strategy (NIS) aims to take innovation in the UAE to new heights, where a culture of innovation is embedded amongst individuals, companies and governments. It primarily focuses on identified priority sectors that will drive future innovation. The NIS Framework (see Figure 3) is structured around the following key pillars:

1. An Innovation-Enabling Environment

2. Innovation Champions

3. Innovation Priority Sectors

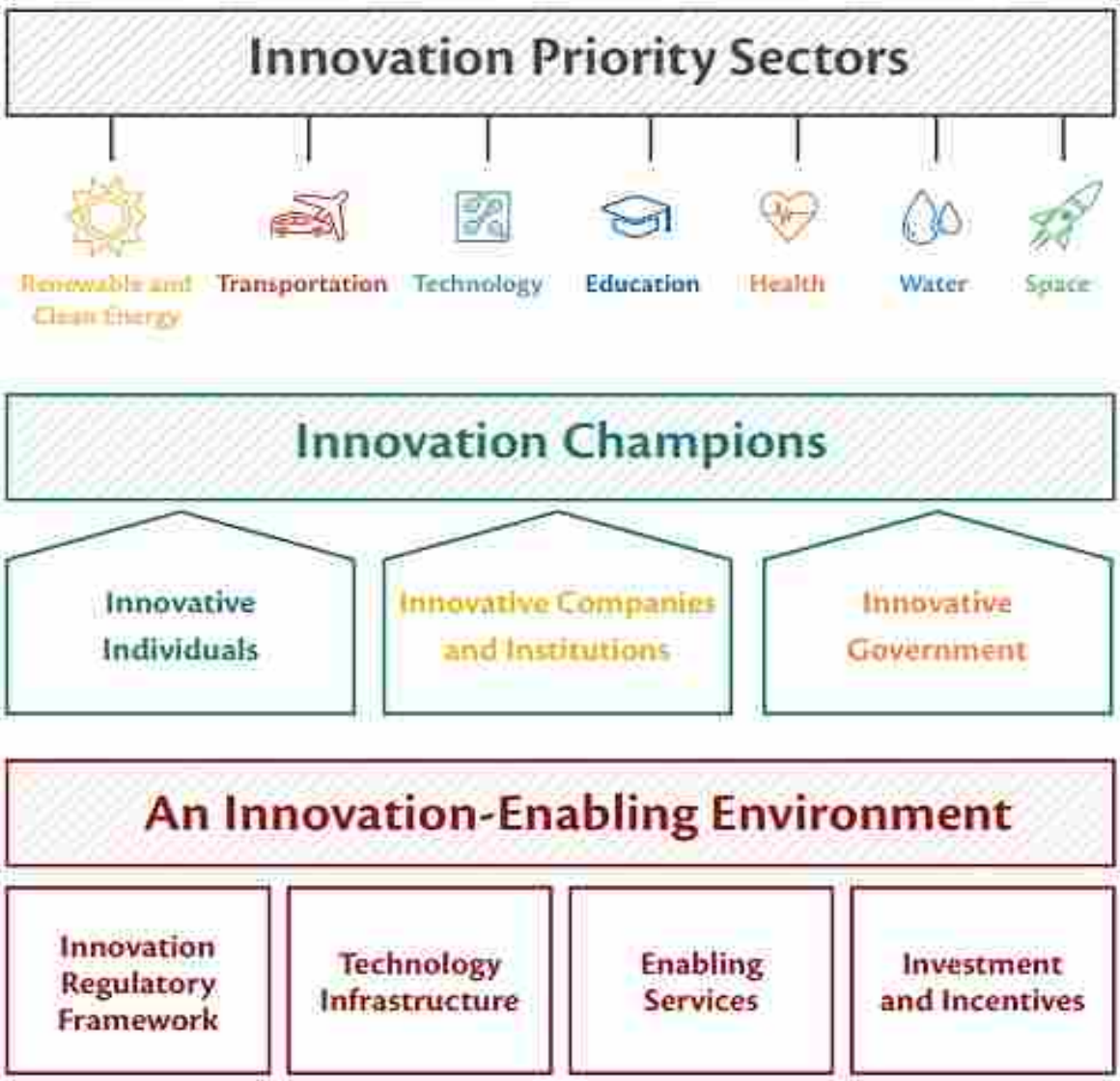


Figure 3: NIS framework

2.7.1 An Innovation-Enabling Environment

Creating the right environment for innovation is key to the success of innovative endeavours. It sets the context in which individuals, companies and governments work, and indicates a nation's ability to attract investments and innovative ideas. The NIS seeks to develop an environment that promotes and enables innovation by developing the right regulatory framework, providing comprehensive

enabling services, enhancing the technology infrastructure and ensuring the availability of investments and incentives.

- ***Innovation Regulatory Framework***

An ideal environment for innovation is underpinned by supporting laws and regulatory frameworks. The NIS seeks to establish the innovation regulatory framework by developing rules and regulations that promote innovation, allowing for the rapid enactment of relevant legislations. It aims as well to design efficient and effective patent registration procedures, while raising awareness of the importance of intellectual property rights and the best methods to protect those rights.

- ***Enabling Services***

High quality education is a distinctive feature of developed countries that rank high on innovation indices. Hence, the NIS is dedicated to building a first-rate education system as a foundation for innovation. It aims as well to promote research and development across universities, besides incentivizing innovation and entrepreneurship incubators to sponsor and assist innovators in transforming their ideas into leading projects. Such incubators will foster a culture of innovation by providing innovators with supportive counselling, training, and administrative support services, while promoting and funding their innovations by ensuring them access to a global network of potential business partners.

- ***Technology Infrastructure***

Innovation is enabled by a technology infrastructure that supports the generation, dissemination and retention of knowledge needed by innovators. Hence,

the NIS aims to ensure the best technology infrastructure that enables effective channels of communication and promotes innovation amongst individuals, companies and governments. The NIS will ensure competitive and cost effective technology infrastructure, and will provide as well innovative solutions to ensure the optimal use of information and communications technology in acquiring and sharing knowledge amongst universities, research institutions and innovation incubators.

- ***Investment and Incentives***

Investing in generating innovative ideas and turning them into new products and services is a prerequisite for innovation. The NIS seeks to introduce new innovative funding options that meet the needs of both individuals and companies. While an advanced financial system is one of the key elements of an innovative culture, financial rules and regulations will be revisited to ensure their effectiveness in securing various funding options and promoting innovative ideas.

2.7.2 Innovation Champions

Innovative Individuals' human capital is a cornerstone of innovation, demonstrated through the growing interest of companies and governments around the world in recognizing and promoting innovative individuals and teams. Given the importance of the citizen in the UAE's development, the NIS focuses on developing individuals and entrepreneurs who exemplify a spirit of innovation. It aspires to empower the nation to drive local innovation by developing innovative national talents and capabilities in science, technology, engineering, mathematics and entrepreneurship, while equipping individuals with the 21st century skills.

As learning and innovation go hand in hand, schools and universities will play a bigger role in promoting innovation by collaborating with top global academic institutions to introduce new specialized educational materials, while launching innovation challenges and recognizing national innovators. The NIS thus seeks to develop structured mechanisms to recognize and sponsor creative and talented individuals at an early age, and help develop their capabilities and harness their full potential. It also aims to embed a national culture of innovation and entrepreneurship that recognizes innovators and promotes collaboration between the government, private sector and media agencies.

Furthermore, the NIS emphasizes the importance of attracting best global talented scientists and innovators, and infuses a shift towards multi-cultural work teams to share knowledge and experience that help in building strong innovation skills.

- ***Innovative Companies and Institutions***

Most businesses around the world build their competitiveness around innovation. Studies show that companies adopting a systematic and sustainable approach to innovation report higher levels of gross value added per employee, besides higher wages and profits compared to other companies. Such companies help in enhancing the competitiveness and standard of living of the countries where they operate.

The NIS seeks to promote a culture of innovation generally across businesses, and specifically in small and medium enterprises. It aims to support national companies in developing, promoting and commercializing their innovations worldwide, thus enhancing their global market accessibility. In addition to driving top

national and international businesses towards investment in Research and Development within the UAE, the NIS aspires to build innovation and scientific research centers, adopt cutting-edge technologies, sponsor innovative nationals, and launch a national corporate innovation award. Furthermore, The NIS aims to attract the world's leading innovative companies, while promoting the role and reputation of the UAE as a global hub for testing innovations across identified innovation priority sectors. It also calls for the development of specialized zones for the identified sectors in line with the Internet, Media, Renewable Energy, Industry and other specialized zones currently present in the UAE.

Social innovation represents as well one of the NIS pillars, hence the call for innovating services and products that help address social challenges in the UAE and around the world. The NIS also aims to drive research institutions toward applied research in the identified innovation priority sectors.

- ***Innovative Government***

Government innovation plays an essential role in enabling public sector entities to provide customers and businesses with highly efficient services at a lower cost.

Emphasizing the significance of innovation in enhancing public sector performance, the NIS aspires to embed a culture of innovation across government entities. It aims to promote the UAE as a global innovation hub, making it a leader of innovation in government services worldwide, and driving innovation in government policies, processes and procedures to increase overall efficiency.

Aspiring to a well-structured environment of government innovation, the NIS calls government entities to allocate 1% of their budgets – deducted from savings – to

the implementation of innovative initiatives and projects, as well as the launch of a national government innovation award.

The NIS thus aims to introduce a comprehensive set of advanced tools to promote innovation within government entities, and maintain an updated database of various national, regional and international innovative practices that can be shared across public sector entities within the UAE. The NIS aims to train and equip government personnel with the right skills for innovation, incentivize employees to generate innovative ideas and launch an innovation diploma across public sector entities.

2.7.3 Innovation Priority Sectors

While the NIS focuses on promoting innovation at large, it aims in parallel to lead innovation in 7 primary national sectors, namely renewable and clean energy, transportation, technology, education, health, water and space.

- ***Renewable and Clean Energy***

Considering the growing demand for energy, it has become a necessity for many countries around the world to innovate in renewable and clean energy; hence the global tendency towards diversifying energy sources and providing future generations with access to sustainable energy that ensures them a better way of life.

The UAE has numerous existing projects relating to renewable and clean energy such as Masdar, Mohammed bin Rashid Al Maktoum Solar Park, and The Emirates Nuclear Energy Corporation which collectively set the stage for the UAE to play a leading role in global innovation.

The NIS aims to promote innovation in renewable and clean energy by developing relevant energy industries within the UAE, furthering applied research in renewable and clean energy technology, enhancing the efficiency of energy networks and storage, as well as shifting towards decentralized energy generation through feed-in tariff programs.

- ***Transportation***

Transportation is one of the key pillars of a well-developed society aiming at an infrastructure that boosts economic growth and enhances productivity. While playing a primary role in facilitating movement from one place to another, transportation eliminates geographical distance and enhances the welfare of societies.

The UAE is at the forefront of the transportation industry worldwide. The successful experience of its national airline companies, Emirates and Etihad, in uniquely reshaping the travel experience is a testament to its national innovative outlook. Over and above, multiple national companies have succeeded up to date in managing varied activities across 75 international airports including ground-handling services, cargo, travel and others. The same applies to maritime transport where the UAE manages 65 seaports across 6 continents.

The NIS aims to promote innovation in transportation by achieving leadership in air and sea transport services and technology, as well as developing and utilizing unmanned vehicles such as drones and unmanned cars and trains. It also calls for the development and implementation of eco-friendly air and sea transportation means underpinned by an infrastructure that caters for electric vehicle charging, besides the manufacturing and maintenance of aircrafts and spare parts.

- ***Technology***

Technology is of paramount importance in today's world. Given the primary role it plays in shaping the future, there is a growing need for innovation in technology tools and systems to ensure a better quality of life for everyone.

The UAE has accordingly launched a range of innovative technology initiatives, namely The Smart Government and The Smart City initiatives, which secured it a global leadership position in record time. Moreover, Mubadala wholly owns Global Foundries, the world's second largest semiconductor manufacturer. In addition, the UAE developed a multitude of advanced technology research centers including: The Institute Center for Microsystems (iMicro), The Institute Center for Smart and Sustainable Systems (iSmart), as well as Khalifa Semiconductor Research Center (KSRC) at Khalifa University.

The NIS aims to promote innovation in technology through the development of smart cities, software and applications, as well as the enhancement of the Information and Communications Technology (ICT) industry to improve the quality of services provided. Innovation in technology will also be achieved through the manufacturing of advanced technology in areas of global interest like artificial intelligence, semiconductors, nanotechnology and 3D printing, in addition to the quick adoption of future technology trends across various industries.

- ***Education***

Education paves the way for a nation's social development and future progress, particularly in light of today's global tendency towards a knowledge-based economy. An advanced education system enhances a nation's capacity to innovate and create.

Hence, the UAE launched a range of innovative projects in the education sector namely Mohammed bin Rashid Smart Learning Program (MBRSLP), established to further advance the UAE's already accomplished education system, and the Emirates Foundation 'Think Science' program aiming at empowering Emirati youth to innovate in all fields of science. In addition, the Abu Dhabi Centre for Technical and Vocational Education and Training (ACTVET) launched 'EmiratesSkills' program which aims to raise awareness of career-based technical education among young Emiratis by organizing competitions, events and technical career activities.

Granted that individuals are at the heart of innovation, the NIS aims to promote innovation in the education sector by introducing creative teaching methods and techniques like Smart Learning, as well as designing and developing innovative curricula that equip pupils with the 21st century skills and knowledge in the fields of science, technology engineering, mathematics and arts. In addition, the NIS will ensure an advanced learning infrastructure supported by the establishment of innovation labs in schools and universities, as well as specialized research centers in universities to promote inventions.

- ***Health***

For a population to be able to participate effectively in the social and economic development of its nation, the majority of individuals should be in good health. Innovation in the health sector is of paramount importance to advanced societies seeking a world-class health system that enhances the quality of life.

The UAE launched a myriad of initiatives to promote innovation in the healthcare sector. Abu Dhabi Vision 2030, for instance, aims to develop

pharmaceuticals, biotechnology and life sciences, while the recently established Abu Dhabi Telemedicine Centre offers high quality, confidential medical consultations over the phone. Abu Dhabi is to witness as well the construction of the first anti-cancer drug manufacturing plant in the GCC, besides hosting the first biotechnology innovation incubator in Abu Dhabi University. In addition, The Dubai Biotechnology & Research Park (DuBiotech) is a free zone that provides Life Sciences companies with an ultimate platform to set up their operations in Dubai.

The NIS aims to promote innovation in the delivery of health and therapeutic services using advanced technologies such as robotic surgery and telemedicine techniques. It focuses on developing pharmaceutical industries and biotechnology, and enhancing medical research on the treatment of prevalent diseases, namely diabetes and obesity. Moreover, the NIS aspires to develop advanced health system management technology and promote a healthy lifestyle by deploying smart technology in disease control and prevention, as well as engineering and developing innovative cities and facilities that prompt sports and movement.

- ***Water***

As indicated by multiple studies, water scarcity is becoming one of the biggest global concerns with over 880 million people having no access to clean healthy water, 95% of whom are under the age of five.

Given the global water scarcity challenge, the UAE launched an international prize of $1Million for finding sustainable solutions for water shortage all over the world, using solar energy to desalinate and purify water. In this regard, the UAE Water Aid Foundation was launched with the aim of conducting research and studies to

support the production of clean water using solar energy. It aims to provide new innovative solutions for millions around the world who suffer from water scarcity and polluted drinking water. Additionally, Masdar Institute Center for Water and Environment (iWater) aims to create knowledge and technologies that address challenges linked to clean water production, climate change and water resource management.

The NIS aims to promote innovation in the water sector by enhancing the production, purification and desalination of water using solar energy, effectively managing water demand in household, industrial and agricultural uses, as well as addressing future regional and global water scarcity challenges.

- ***Space***

Governments of developed countries around the world are keen on becoming scientific innovation advocates through the implementation of leading scientific practices and advances in space research.

In the UAE, a total of AED 20 billion was invested in space technologies. Under the leadership of an Emirati pool of experts, the UAE Space Agency was launched in 2014, along with the national project to build and send the first Arabic-Islamic Unmanned Probe to Mars by 2021. Furthermore, the UAE embraces a range of space institutions namely the Emirates Institution for Advanced Science and Technology (EIAST) that is currently building KhalifaSat, the first satellite to be built, manufactured and launched to space by Emirati nationals by 2017. Al Yah Satellite Communications Company (Yahsat) is also working on manufacturing and launching its third satellite (Al Yah 3) by the end of 2016. Finally, yet importantly, the first largest

space center in the Middle East and North Africa is currently being developed in Abu Dhabi, with the aim of hosting space trips for touristic and scientific research purposes.

Ultimately, the NIS aims to promote space innovations by enhancing research and technology relating to the exploration of celestial bodies such as spaceships, probes and telescopes, besides developing satellite communications technology. It also aspires to deploy the latest space technologies in terrestrial applications, making the UAE one of the leading countries in the field of space research.

2.8 RTA Innovation Strategy

The RTA trusts in the significance of innovation and imagination and their part in enhancing and upgrading the transportation products and administrations. The RTA also sees it as essential to enable social media and unlock its potential for innovation and other possible benefits. This was a common theme across almost all individuals of the selected population sample. Additionally, the RTA has confidence in its employees and their competencies for making and improving the capacity for critical thinking and presenting choices and arrangements through proposing imaginative arrangements. To accomplish the procedure objectives, the RTA drafted the innovation technique to safeguard development and high quality, and to accomplish the best administration in the field of transportation and mobility.

Applying the RTA technique incorporates the internally proposed creative thoughts that were presented by the representatives and that were or can be recommended by clients, partners, merchants or the members of the public. The methodology incorporates an exhaustive operational model that speaks to its connections (both inside and outside), the components for the imagination and

advancement condition (culture, administration and HR), the primary techniques and the supporting devices.

The operational model plans to institutionalise and arrange the endeavours of the RTA divisions and areas for dealing with the hierarchical innovation and locate a far-reaching umbrella for development in the organisation as a whole.

The vision of the RTA is to provide safe and smooth transportation for all. Consequently, innovation is the outstanding change that powers the improvement and upgrades the items, administration and the approaches to accomplish practical incentive for all group individuals.

Innovation strategy objectives:

1. Pioneering in the transportation domain in the regional and global levels.
2. Excelling in providing services at all aspects.
3. Enforcing a significant influence on the social, financial and environmental aspects through facing the challenges to achieve safe and smooth transportation to everybody.
4. Moving forward towards the global expectation to Dubai currently and in the future.

The RTA innovation strategy depends on achieving the authority's vision through the objectives and defined pillars such as: The Smart City and technological integration; service and product excellence: transportation integrity; environmental safety; and sustainability of the internal efficiency of Dubai's economic development.

The RTA defines the innovation resources as:

1. The business path including competitors' analysis, agent's opinions and market expanding plans.
2. Ideas generated from workshops, campaigns and e-gates.
3. The employees' ideas.
4. Ideas from external sources including vendors, academics, technology providers and the industrial sector.
5. Market trends, customers' behaviour and consumption analysis.
6. External visits and invitations to regional and global transportation authorities.
7. Internal brainstorming, knowledge interchanging and discussion groups.
8. Customers' ideas and perspectives.
9. Social media.
10. Government's innovation labs.
11. H.H. Mohammed bin Rashid's Smart committee.
12. Scientific research awards.
13. Comparative studies.

In terms of innovation environment, the RTA offered knowledge resources (scientific research award, experts, field visits, library, memberships to prestigious organisations, training and scholarships, the innovation week, reports and frequent statistics, organisational knowledge management, conferences and exhibitions), technological systems (ideas management system, global database access, organisational performance system, Geographical information system (GIS), customer relationship management system (CRM), online projects management system (OPMS), iDashboard and the internal communication and collaboration network) and

suitable infrastructure (research, development and innovation department, innovation supervision committee, innovation teams, revenue development and expenditures award, innovation club, innovation financing, external cooperation, rewards and incentives system) for its employees.

To manage the innovation and creativity process, the RTA's innovation management board was designed to manage, organise and governance innovation. The board is to guarantee the cooperation of all RTA sectors (associations, sectors, innovation strategy supervising committee and innovation research and development department that are responsible for managing, organising and coordinating the innovation strategy. The duties of the innovation board are as follows:

1. Innovation supervising committee: A governance committee consisting of designated departments' managers in every sector. It supervises the innovation orientation through the sectors and departments. The committee also follows up the innovative projects and frequently reviews the RTA's innovation policies and suggests amendments and updates. The committee members are responsible for managing the innovation teams in their departments. Frequently, the innovation supervising committee reports the innovation updates to the general manager and COE office.
2. The Innovation Research and Development Section is responsible for the functional innovation management and is also the link between the innovation teams in the departments. It is responsible for applying the innovation strategy and all activities related to innovation.

3. Innovation teams in the RTA departments and sections consist of employees engaged in activities related to innovation. A team manager represents the team innovation plan.
4. The innovation pioneers are innovation team members with specific experience. The innovation pioneer is responsible for receiving the ideas from the business unit and communicating with the innovation research and development section, introducing technical interventions and managing the innovation feasibility studies and coordinating the innovation activities for the team leader.
5. The suggestions management committee is responsible for receiving employees' ideas and suggestions, categorising them according to innovation type, and then forwarding the creative ideas to the innovation management department.
6. The Customer Service Strategic Department deals with the customers' suggestions.
7. The Associates Section deals with the associated companies' suggestions.
8. The Vendors' Relation Section deals with the vendors' suggestions.

It is essential to the RTA to establish an innovation strategy to move forward with introducing or enhancing products and services, and also essential to protect its ideas, methods and the new services. Therefore, RTA has endorsed applying the intellectual property procedures as innovation and new ideas are considered one of the valuable assets. The intellectual property helps the RTA to execute its operations effectively. RTA realises that managing the intellectual property is a continues process

and the life cycle of the ideas including defining the patents, protect it and register it according to the intellectual property law of the UAE and rewards the innovators.

Individual employees from the selected population sample see it as necessary to revisit the RTA innovation policy drafted in 2015, which listed an innovation operating model that in principle should guide employees on how innovation can and should be adapted in RTA. Some believe it is a bit complex, simplicity is a missing factor, others said it is a generic framework and does not list steps or practices to follow. Others believe it is meant to be generic as innovation should be left to entities or individuals to come up with what they believe useful for breakthrough (or what are classified as disruptive innovations).

The Operation Model classifies ideas based on impact and complexity into three main categories:

1. Gradual innovation: develop better products and services faster and more economical ways resulting in 5% - 25% improvements in performance, cost and value added to customers or end users.
2. Core innovation: innovation in technology or work approach and methodologies that elevate work above average results resulting in 25% or more improvements in performance, cost and value added to customers or end users
3. Disruptive innovation: innovation that creates a new baseline for competition in technologies, work and approach or methodologies that are completely new and disruptive to the nature of RTA business models. Disruptive innovation introduces new values or services to customers or end users or enables new means of decision making.

Majority of innovation projects and initiatives in RTA falls under gradual innovation (CRM, 2016 and, 2017 data analysis results) and therefore mobility planners in RTA believe that innovation challenge remains in stabilising efforts toward gradual innovation. However, this must be further enhanced to introduce more disruptive innovations to keep up with Dubai government initiative and vision, especially with the recent mandate by His Highness Shaikh Mohammad Bin Rashid Al Maktoom announced at the world government summit 2017, under the name 10X. This is a challenging initiative for all Dubai government entities to – in simple words – position Dubai 10 years ahead of other world leading cities in ten years (www.dm.gov.ae). RTA leaders believe that such a challenge can be only achieved through introducing new sources of ideas in collaboration with the public.

As an immediate recommendation from this study, it was suggested to add social media as a main source of innovation idea sources defined in RTA innovation operating model and update the innovation framework.

The marketing department of RTA was hoping to have better results for understanding customers' needs as an alternative to conducting repeated focus groups, which are lengthy processes and in some cases costly. 'If we can reach to the pain or gain area of a customer easily through a tweet then it will be fantastic' said by Marketing Director RTA. There is also an opportunity to hopefully replace ethnographic interviews and instead have a social media analytics that can generate results of multiple interviews and group them together under a specific subject or a need to better reach out to customers through new products and services

The Customer Service department continues to focus on their main objective that is customer happiness, it may sound similar to what the marketing department is

focusing on however, with more depth in the actual services and processes through the customer's journey. Customers' journey maps were developed as an expensive and intensive exercise to ensure capturing different possible scenarios based on best practices and previous consultant experiences. However, this unique simple step triggers customers' bad experience that we want to innovate around to fix and enhance. Journey maps may identify the 'unmet' needs, however they may miss the unseen needs. Those, in the opinion of the customer service department director, are usually identified on the spot and can be only reported with quality if captured instantly when customers are facing or experiencing that need and so social media offers different tools to enable capturing those needs at the right time with the right quality.

The Corporate Technology Chief Executive Officer foresees social media as the new electronic spreadsheet, mainly from an opportunity point of view but also from the adaption challenge and resistance of change. His main observations were around the fear of government entities to be open enough to share their data and their insights with the public for feedback. Limiting the use of social media to only a receiving channel may not introduce the breakthrough innovation rather than having a two-way collaborative communication channel with public and private sectors to collaborate and innovate.

Chapter 3: Research Model and Hypotheses

In this chapter, discussion based on previous research and studies will be stated in order to support the current study hypotheses. This chapter consists of a theoretical framework including the theory behind the study hypotheses, and hypotheses development.

3.1 Theoretical Framework

Social media is an innovation community enabler for organisations and its value has been measured by number of ideas generated and implemented before and after the innovation program being adapted (Dahlander & Gann, 2010). Bertot et al. (2012) argue that social media has great potential to extend government services in introducing new ideas and improving decision making and problem solving, perhaps by collaboration and greater communication that social media can introduce. The rationale being that employees' contributions to social computing technologies will allow the exchange of thoughts and ideas, allow them to learn from their peers and maximise organisational value through a workforce that is greatly connected (Walker, 2014).

The innovation process, is a challenging phase because of the inextricably intertwined fuzziness of high uncertainty, little information and influence. Herstatt and Verworn (2004). Such complexity in the innovation process is due to its non-linear nature (Van de Ven et al., 2008). As much of the information necessary to the innovation process is generated by individual employees within the companies, to improve the input of the information at the front end of the innovation is to motivate people to generate more ideas (Petrick & Juntiwasarakij, 2011). In this regard,

companies need a tool designed to elicit ideas from their people and connect them to the decision-makers in the companies' information loops. Here, social media would be a practical conveyance (Petrick & Juntiwasarakij, 2011).

Because 'no one knows everything, everyone knows something', communication technology and collaboration are the ultimate tools to capture the wisdom of the crowds (Levy, 2009).

As a company grows, simple processes such as communication and collaboration become more complex and could eventually prevent the company from optimally operating and flourishing. In addition, companies are themselves multidimensional when examined from different cultural and economic perspectives. Traditional computer-supported cooperative work (CSCW) off-the-shelf or home-grown applications have been used in an attempt to tackle this problem. However, such an approach ends up creating even more complications and frustrations for users and for organisations, as the applications themselves create segregation in communication and collaboration, as shown in Figure 4. The findings showed that segregation was associated with the multidimensional nature of the companies. Organisational and hierarchal business process- and project specific and local, time and cultural factors are the major elements that influenced the design of CSCW and the legacy groupware systems.

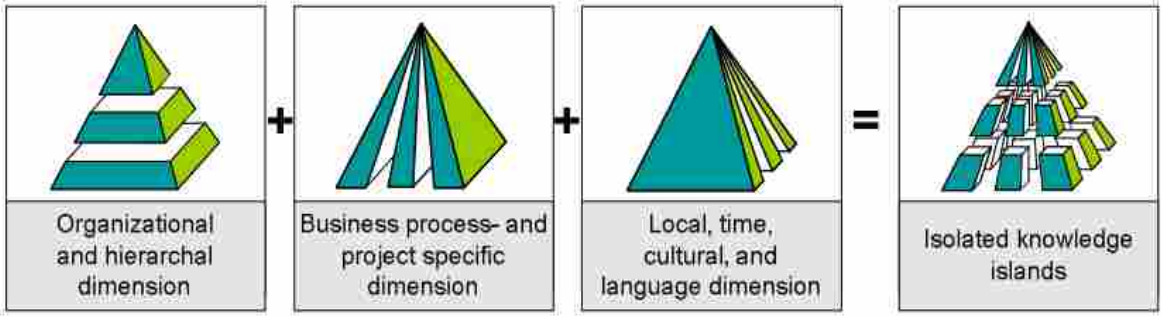


Figure 4: Island of knowledge

Unlike CSCW, the social media platform, at the heart of its design philosophy, embraces complexity by providing a flexible means of communication that collaboratively produces and shares knowledge (Petrick & Juntiwasarakij, 2011). Social media can be used to break down knowledge silos and direct employees' intelligence and creativity into a company's innovation and information loop (Petrick & Juntiwasarakij, 2011).

Many organisations desire to leverage the capabilities embedded in social media for organisational benefits. For example, companies like USAA (Gonzalez et al., 2013) and IBM (DiMicco et al., 2008); (Majchrzak et al., 2013) are implementing internal social media technologies to connect employees, facilitate mass collaboration, improve communication, provide a social and work life balance (Koch et al., 2011) and a global services organisation uses social media to motivate and influence employee innovativeness (Gray et al., 2011).

It is through online participation that individuals are exposed to new ideas, prospective ties and collaboration efforts (Jarvenpaa & Majchrzak, 2010). Companies are pursuing the implementation of social media tools with the intent to increase mass collaboration, increase innovation and create value (i.e., (Koch et al., 2011); (Majchrzak et al., 2013)).

(Boeddrich, 2004) gave an example of a successful case of implementing in-house social media software which helped Wella A.G. boost its innovativeness and motivate workers to develop new ideas.

(Malhotra & Schuler, 2005) investigated a breakthrough case of Boeing-Rocketdyne's radical innovation using computer-mediated collaborative technology, resulting in reducing the cost of a rocket engine by 10,000% and commercialising the rocket engine 1,000% faster than conventional collaboration.

According to (Majchrzak et al., 2013), IBM uses a variety of social media tools as the means to facilitate innovation through mass collaboration because it reaches across time, distance, function and interests. In addition, social media tools such as social bookmarking are increasingly being used in many organisations (McAfee, 2006) and may serve as digital resources for innovation because employees with access to social bookmarking are more likely to view novel information, leading to a higher level of individual innovativeness (Gray et al., 2011). Similarly, IBM uses social media to allow for a transparent innovation process in which employees openly share ideas and comment on other's ideas as well which increase productivity and creativity through open communication channels (Majchrzak et al., 2013). As mentioned, world class organizations are interested in social media to enable creativity and innovation.

In sum, majority of the previous studies emphasize the role of social media in knowledge management and how social media could be considered as one of the most important sources for information. Moreover, it has been found also that studies investigated social media role on open innovation in organizations and the impact of social media on organization performance. However, the studies that investigated the role of social media, specifically, in service, process or organizational innovation are

too limited and even too little. Therefore, it's essential to formulate the research hypothesis based on fundamental studies and theories. The development of the research hypothesis is presented in the next sections.

Moreover, studies investigating the antecedents of innovation have concluded that 'creativity is a necessary factor enabling innovation' (Amabile, 1988; Carayannis & Gonzalez, 2003; Prajogo & Ahmed, 2006) and that there is a positive relation between creativity and organizational innovation.

3.2 Hypotheses Development

3.2.1 Social Media and Creativity

Creativity is generally related with the production of new and useful ideas on products, practices, services or procedures that are both novel and potentially useful to the organization (Madjar et al., 2002; Shalley et al., 2004). Thus, to be creative, ideas must provide business value, e.g. by creating new products and services, taking advantage of business opportunities, and/or improving organization effectiveness. Two major types of creativity were identified to provide business value and increase the organizational innovativeness: path breaking radical new behavior, ideas or things; and defensive problem-solving behaviour (Sundbo, 2009).

However, recent research provides significant evidence showing that in order to maximize the efficiency of the individuals' creativity, firms have to primarily nurture and support collective thinking rather than individual cognitive processes (Baer, 2010). Indeed, research in creativity is immigrating from an individual focus to a social and KM perspective (Aubke, 2014; Hemphälä & Magnusson, 2012) and it stresses the need to identify the factors influencing the individual cognitive processes

by focusing on people's accessibility to diverse knowledge such as, the employees' social structures (Hemphälä & Magnusson, 2012) and their collaborative networking ties (Aubke, 2014; Baer, 2010). This is in line with Csikzentmihalyi's system model (Csikszentmihalyi, 2014) wherein creativity was posited to result from the interconnection of three elements in the system comprising individuals, knowledge domains and innovation experts. In that context, the use of social media enables individuals to aggregate, share, store and synthesize knowledge from various domains for creating new meta-knowledge which is validated by different experts. To elaborate, the use of social media helps individuals identify and join social networks in order to stay informed professionally and participate in collective knowledge generation processes by sharing experiences, criticizing theories and findings within various communities of practices; and to manage their own meaning making and knowledge management (KM) processes (Sigala & Chalkiti, 2015) all of which will positively impact their creative generating processes. Thus, the characteristics of social media facilitates collaboration with others allowing different perspectives which may lead to "out of the box" solutions to problems. Therefore, from the above, we hypothesize:

H1: Use of social media enhances the employee's creativity.

The hypothesis model is presented in Figure 5.

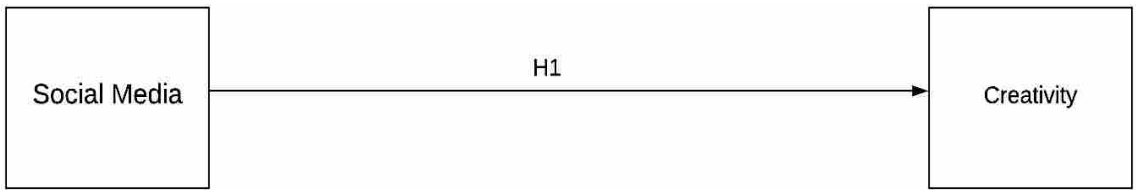


Figure 5: Model of hypothesis 1

3.2.2 Social Media And Innovation

Many studies have investigated the relation between social media, creativity, KM and related that to the innovation in organization. For example, an empirical study by Sigala and Chalkiti (2015) investigated the role and influence of social media on supporting, enhancing and transforming KM, and explored the relation between social media exploitation (for KM purposes) and employee creativity. Findings from the study revealed significant relations between the use of social media exploitation and employee creativity performance. Findings from another study by Behringer and Sassenberg (2015) showed that the interplay between the importance and deficits concerning knowledge exchange, perceived usefulness of social media for knowledge exchange, and experience in social media use jointly affect the intention to apply social media for knowledge exchange after their implementation. Results from the above studies indicate that knowledge sharing and exchange using social media has great value on innovation in organizations. Use of social media promotes knowledge sharing by affecting how knowledge workers learn. Collaboration using social media allows experiential (direct) and vicarious learning (indirect) which impacts creativity and consequently innovation.

Recent studies have also indicated that the impact of social media on innovation and new product development is also dependent on the strategies that tie social media activity to the latter (Roberts & Piller, 2016). Strategies could range anywhere from getting customer insights, to exploring market trends, working with customers to co-create value and finally, to communicating information about brands and products using social media channels. We posit success of those strategies depends on knowledge workers. Knowledge workers are the power of an organization

especially when the employees know how to collect and utilize knowledge to benefit their organization using collaboration (Argote, 2012). The knowledge could come in the form of new ideas, suggestions and recommendations to improve the efficiency of products, processes, and services which consequently will lead to a more productive organization. The role of the organization is then to shift these ideas and recommendation from theory to application. As indicated by (Schroeder et al. (2002)), the organizations that can successfully deploy the expertise that their workers have to offer will succeed in generating innovation, higher productivity, and effectiveness in the marketplace. As discussed above, social media tools will facilitate collaboration and knowledge sharing among employees thereby positively impacting the introduction of new service offerings or the development of a new way of delivery. Therefore, we hypothesize the following:

H2: Use of social media has a positive impact on service innovation.

The hypothesis model is presented in Figure 6.

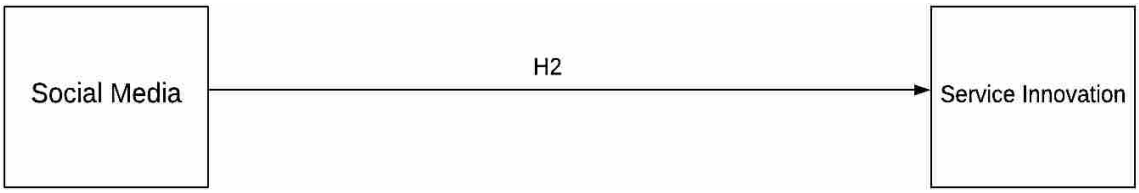


Figure 6: Model of hypothesis 2

Process innovation concerns the implementation of a new or significantly improved production or delivery method (including significant changes in techniques, equipment and/or software). This would require extensive collaboration and knowledge sharing because the nature of knowledge would be technical and not easily transferable. As discussed above, we argue that the use of social media enables

employees to communicate and collaborate not only internally, but also with the external professional community in order to learn, share knowledge and find new ways to improve the existing production and delivery processes. Therefore, we hypothesize the following:

H3: Use of social media has a positive impact on process innovation.

The model of the hypothesis is presented in Figure 7.

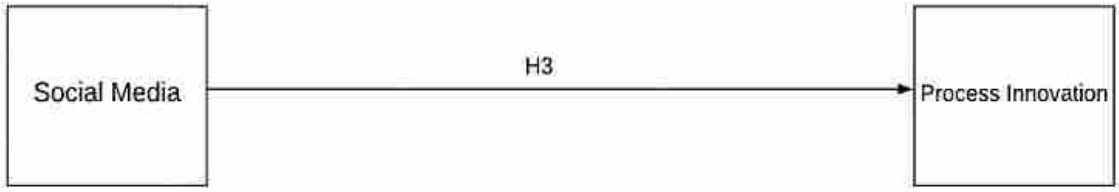


Figure 7: Model of hypothesis 3

By definition, organizational innovation could refer to the changes in organization or changes in the organizational procedures in order to foster the innovation process (Damanpour, 1991). According to the author, both external and internal communications impact organizational innovation. Use of social media facilitates knowledge sharing/exchange with the external environment leading to innovative ideas. Similarly, use of social media impacts internal communication by increasing the dispersion, diversity and the number of ideas-both new and old. Therefore, it can be inferred that the impact of the use of social media on communications leads to more innovativeness and consequently positively impacts organizational innovation. This is stated below as:

H4: Use of social media has a positive impact on organizational innovation.

The model of the hypothesis is presented in Figure 8.

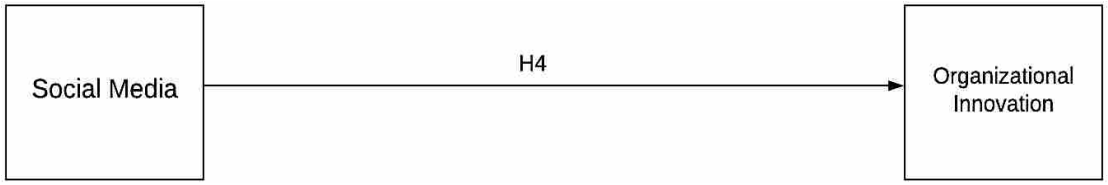


Figure 8: Model of hypothesis 4

3.2.3 Creativity as a Mediator

Creativity is an interactive process and it is important for individuals to understand how it can be embodied in a group setting, particularly in the social media context, which involves individuals interacting on an online context. More recently creativity has been seen as having more of a complementary function to innovation management in the competitive global economy. This is due to a link between creative activity and innovation because of the increased number of new ventures enabled by changing technological innovation. Part of this linkage is because innovation and creativity have a symbiotic relationship, which has been recognized in the management literature as being important (Sigala & Chalkiti, 2015). This has meant creativity is often seen as an antecedent of innovation because of its ability to induce change (Amabile et al., 1996).

This means that the study adopts the view that creativity involves thinking outside the box and looking at things differently (Gaál et al., 2015). This ability to produce innovative results that have original and useful content is important to firms. Use of social media facilitates generation and dispersion of new ideas that add to the innovation taking place in the organization. This ability to transform a technological innovation into reality is important because innovation often needs a creative approach

or a novel approach (Amabile, 1988). The use of social media allows individuals to think outside the box which leads them to be creative. Such creativity generated by individuals involving in social media affects their innovativeness as they became able to suggest new ideas and develop and evolve existing ideas, especially in service, process and organizational innovation. In other words, creativity mediates the relation between social media and the different kinds of innovation, which includes service, process and organizational. Therefore, we hypothesize the following:

H5: Creativity significantly mediates the effect of social media use on service innovation.

H6: Creativity significantly mediates the effect of social media use on process innovation.

H7: Creativity significantly mediates the effect of social media use on organizational innovation.

The models of these hypotheses are presented in Figure 9, Figure 10 and Figure 11, respectively.

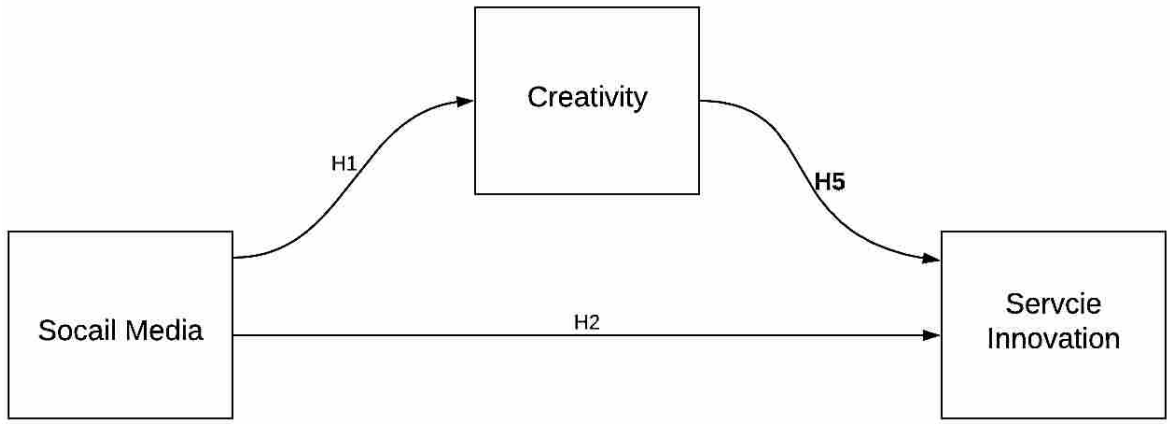


Figure 9: Model of hypothesis 5

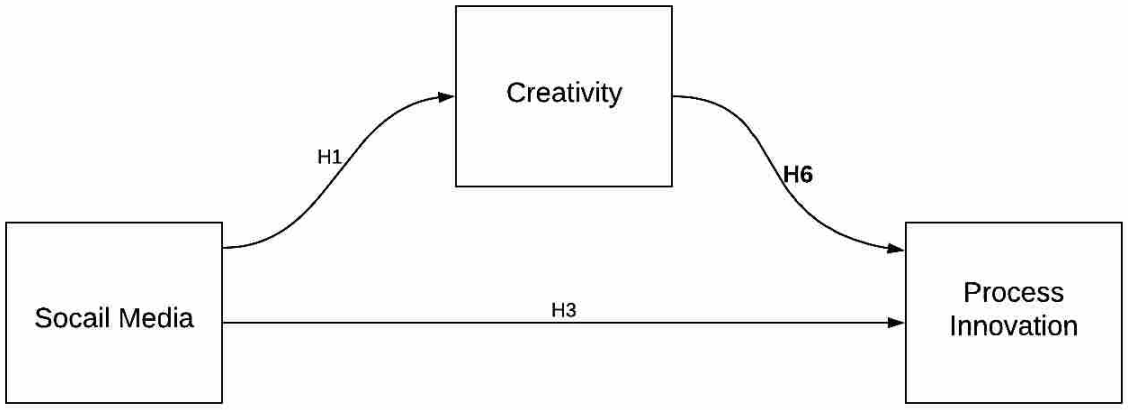


Figure 10: Model of hypothesis 6

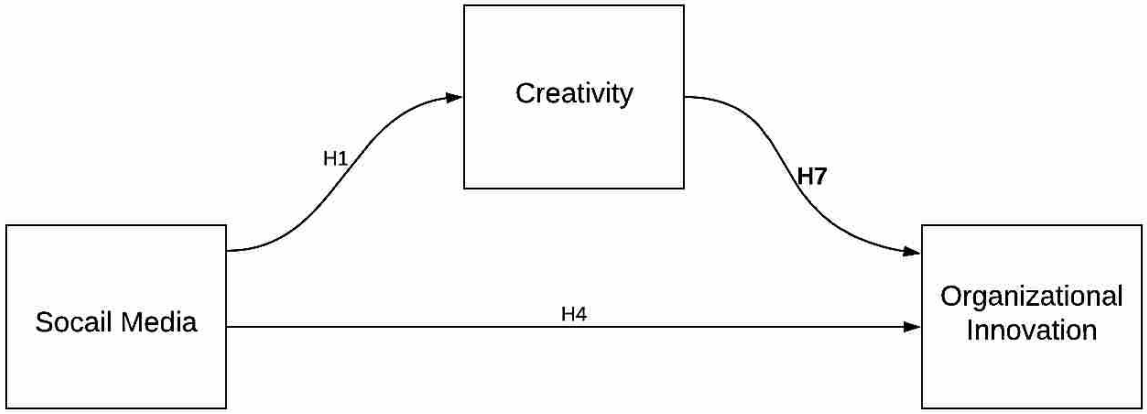


Figure 11: Model of hypothesis 7

3.2.4 Organizational Innovation as a Mediator

As discussed earlier, organization innovation refers to the creation or adoption of an idea or behaviour new to the organization (Damanpour et al., 2009); (Damanpour & Gopalakrishnan, 2001). In general, organizational innovation can be defined as a new organizational method in the firm's business practices, workplace organization or external relations that can be intended to increase the firm's performance (Mortensen & Bloch, 2005), and also as the process of translating an idea or innovation into a good or services that creates organizational value (Kasemsap, 2016).

The existing literature on organizational innovation is indeed very diverse and not well integrated into a coherent theoretical framework. The phenomenon of 'organizational innovation' is subject to different interpretations within the different strands of literature. The literature can be broadly classified into three different streams, each with a different focus and a set of different questions which it addresses. Organizational design theories focus predominantly on the link between structural forms and the propensity of an organization to innovate (Burns & Stalker, 1961); (Lawrence & Lorsch, 1967); (Mintzberg, 1989). In addition, (Baumol, 2005) emphasizes that while innovation is important for the development of organizations and sectors, the scientific literature on the subject has found it difficult to follow the development of a theoretical point of view, especially when dealing with organizational innovations.

Although less prominent in the studies that seek to raise the indicators of technological innovation activities in the national domain, organizational innovations began to receive attention from researchers because of its contribution to the development of other types of innovation, such as product, service or process innovations (Hamel, 2007, Lam, 2005). However, despite this interrelationship, Lam (2005) notes that the literature is diverse and not integrated into a consistent theoretical framework. Nevertheless, the focus of this type of innovation is essentially linked to the creation or adoption of new forms of management and organization, which may or may not be supported by technology, once it comes to fundamental aspects of social organization.

The Oslo Manual (Mortensen & Bloch, 2005), which is the main conceptual and methodological framework for collecting and interpreting innovation data,

justifies the need to expand the concept of innovation including non-technological innovations, such as organizational and marketing innovation. According to the Oslo Manual, the innovation perspectives has changed over time, and there is a need for indicators that capture these changes, and that provide policy makers with appropriate tools of analysis.

The degree of organizational innovation focuses on the internal micro-perspective. Profound innovations are frequently associated with new, formal, organizational structures and processes. However, they also affect informal characteristics of organizations, for example by changing corporate culture. This is reflected, for example, in intensified and more open collaboration with external business partners which can significantly increase the complexity of the processes (Peters, 2011). Strategic realignment is also a feature of innovations with a high degree of organizational innovation.

From our earlier discussion, it is well-documented that the use of social media can play an important role in supporting the innovation process. Social approaches are most commonly thought to be useful in either idea generation, as in open innovation approaches, or in idea diffusion. However, while the connection between social media and innovation success has been established, the mechanics of how the overall organizational innovation impacts other kinds of innovation at lower levels are less well understood. We posit social media can be considered as a constantly updated environment that give ability to individuals to think outside the box which leads them to be creative and innovative. Organizational innovation through organization practices and administrative work may enable or limit implementation of generated ideas and may therefore affect their innovativeness. In other words, organizational

innovation may have an broad overarching influence on the relation between social media and the different innovation types.

Specifically, in the context of service innovation, the organizational structuring and procedures could have an impact in implementing new services in an organization because any new service to be implemented should follow specific organizational procedures and adhere to specific policies. Therefore, we hypothesize that the implementing of new services and delivery methods (service innovation) enabled by the use of social media should be mediated by organizational innovation and state the hypothesis as (see Figure 12):

H8: Organizational Innovation significantly mediates the effect of social media use on service innovation.

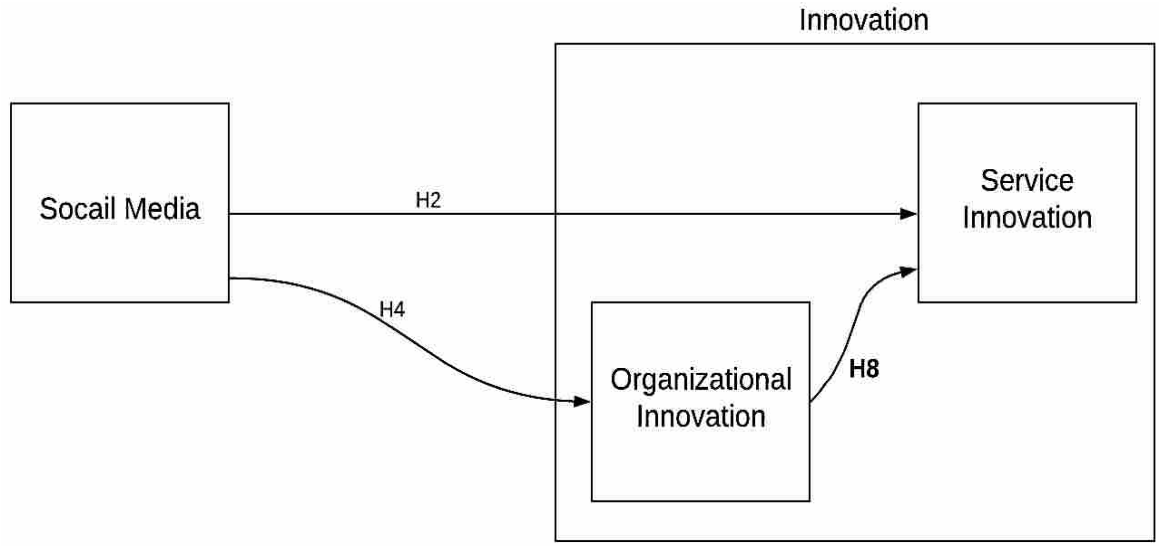


Figure 12: Model of hypothesis 8

Similarly, any implementation of new processes, application or operational equipment should have organizational procedures to control it and hypothesize the following (see Figure 13):

H9: Organizational Innovation significantly mediates the effect of social media use on process innovation.

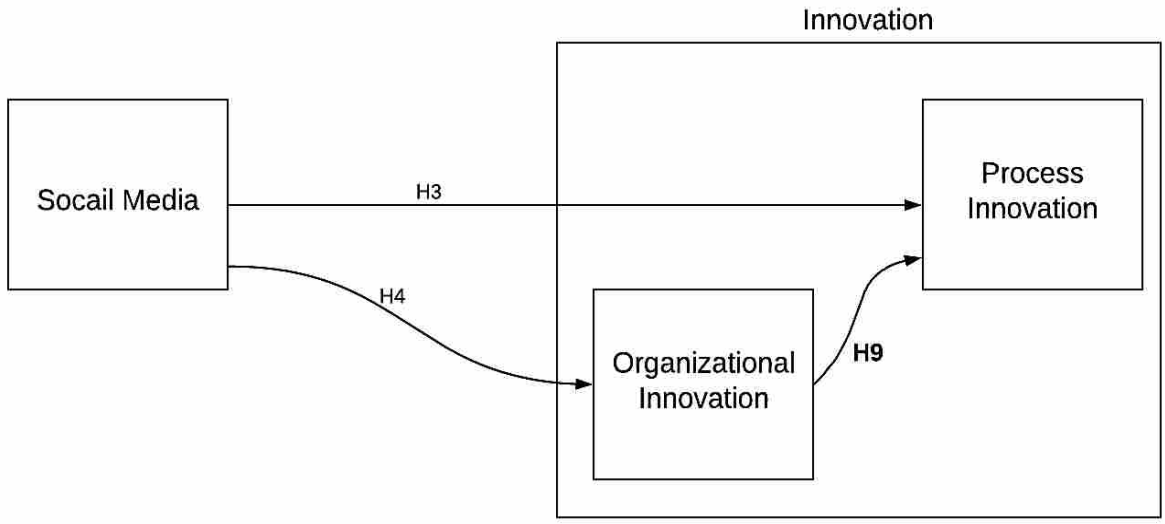


Figure 13: Model of hypothesis 9

Based on the above discussion, the research study theoretical model can be summarized on the following (see Figure 14).

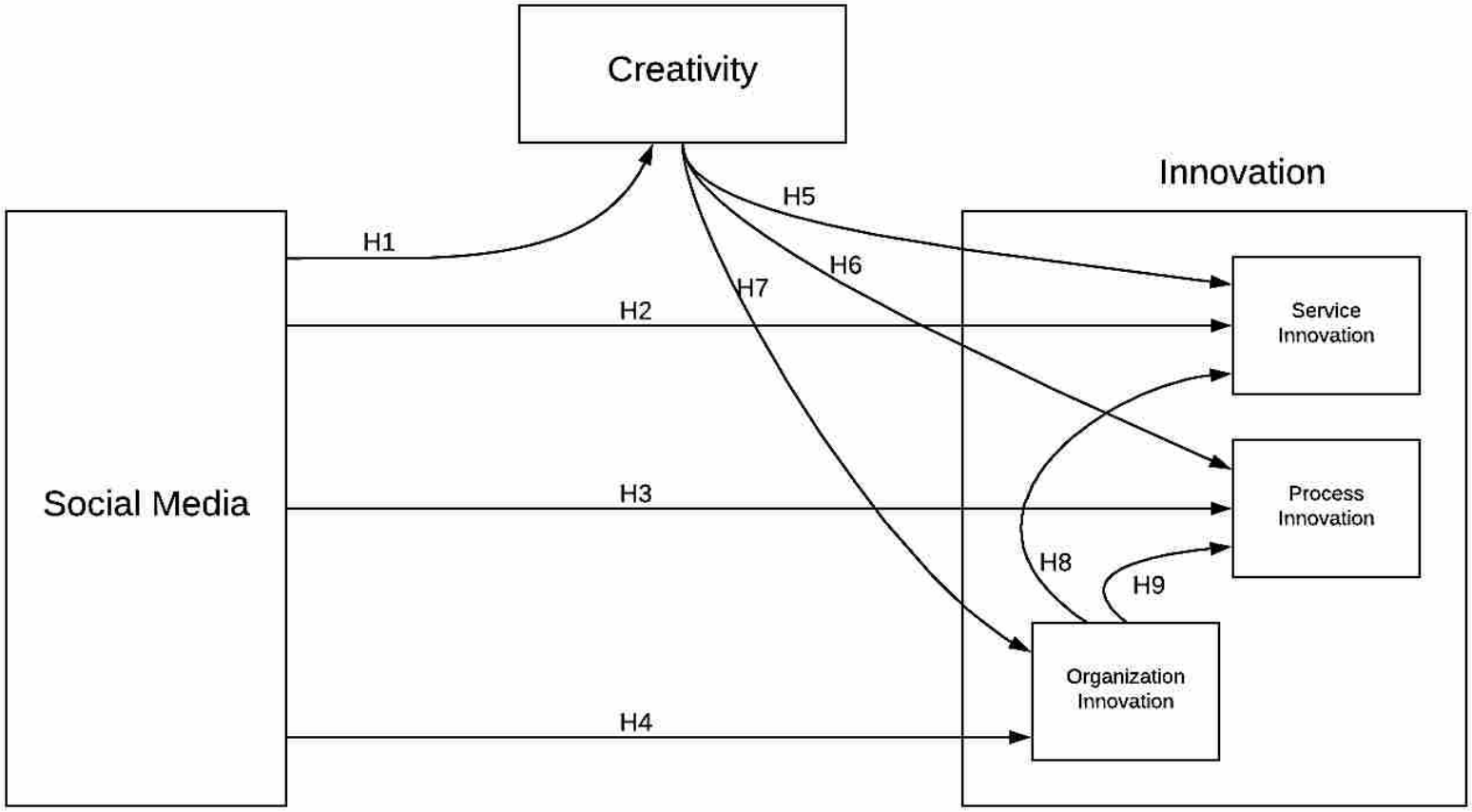


Figure 14: Research study theoretical model

Chapter 4: Research Methodology

Researchers are guided by certain assumptions, either personal or shaped by the collective beliefs of society, which influence their study. In this chapter, the philosophical assumptions that researchers are guided by and how they can ensure an objective study and analysis of the phenomenon are discussed in detail. The chapter further discusses the research context, the data collection methods, sampling techniques, validity and reliability and the data analysis approach.

Academic research is guided by assumptions about the phenomenon being studied, which gives it direction. It also guides the researcher in defining what data is required to fulfil the aims and objectives of the study, in choosing the appropriate methods and research instruments for data collection that are ideal and justified for the study (Gill & Johnson, 2010). It is important to adopt a systematic process of research so that the assumptions, the methods, the tools used, and the data analysis approach adopted are all in sync with one another and ideal for answering the research questions.

In this chapter, the research methodology used to answer the research question and test the suggested hypothesis is presented.

4.1 Ontological and Epistemological Considerations

Literature on research highlights several philosophical assumptions, however, ontological and epistemological assumptions are the widely reported assumptions about knowledge and phenomenon that are essential to be understood and clearly defined. How best to study the nature (reality) of a phenomenon or what is the best ways to study are epistemological questions that guide a researcher (Cooper et al., 2006). Easterby-Smith et al. (2015) state that epistemology is a ‘general set of

assumptions about the best ways of inquiring into the nature of the world'. What is the right approach to study a phenomenon?

This is a continuing debate among the research community. The debate primarily concerns whether to adopt a scientific/objective/positivist approach, which is based on empirical research, the findings of which can be replicated by other researchers under similar conditions hence enhancing the validity and reliability of the study; or to adopt a qualitative subjective approach which provides a contextual background to the study and builds a narrative based on the subjective views of the participants. The subjective views may not be generalizable and the findings from such a study may not be highly reliable as compared to the objective positivist approach, which is a quantitative data-driven approach based on hard facts.

It is therefore important to understand the underlying assumptions about a phenomenon which guide a researcher to adopt either the objective or subjective approach. The phenomenon being studied in this study is the impact of social media use on innovation; in reality the society in general and the researcher in particular is aware about social media, its pervasiveness in society and the general beliefs about the usefulness or otherwise of social media as a tool of instant communication and information sharing. A reality about the phenomenon exists independent of the researcher and his views. The researcher may or may not be fully aware of the potential of social media as a tool of communication and collaboration or the challenges of social media use in organisations as society perceives social media as an unproductive tool for people who have free time. In short, an independent reality about social media exists, that is the nature of the phenomenon with certain inherent characteristics. This reality or nature of a phenomenon is known as ontology (Paradigms, 1979).

Researchers who assume that a phenomenon is independent of social actors and can be studied on its own without being influenced by pre-existing views / perceptions about that phenomenon adopt the objective, scientific quantitative approach (Easterby-Smith et al., 2015). On the other hand, researchers who assume that a phenomenon is influenced and shaped by social actors adopt a constructionist, subjective, qualitative approach (Bryman & Bell, 2015). The decision to adopt a quantitative or qualitative approach is shaped by the assumptions about a phenomenon, which can lead to very different and new interpretations (Teddlie & Tashakkori, 2009).

For this study, we adopt a positivist approach and test our hypotheses using data following which we attempt to explain or interpret the findings. It is ideal to study the views and opinions of members in this public sector organisation about their views about social media as a tool of innovation, analyse their views and derive suitable conclusions.

(Morgan, 1980), provided a framework to better understand the ontological and epistemological foundations of any business research. All business activities can be viewed as a set of processes that can be studied systematically in an objective and detached way or businesses can be viewed as social constructions driven by individuals or groups who give meaning to it. This clarity helps in his decision to adopt a quantitative or qualitative approach.

4.2 Research Methods

A research method is the way that data will be collected and obtained for the study (Bryman & Bell, 2015). In this study, a survey was used to collect data and conduct quantitative analysis. This chapter includes a description of the design of the

study and the survey instrument, a discussion of the data collection procedures and a description of the data analysis process.

The research method adopted is also influenced by the kind of data required. Due to sample population, and to incorporate the opinions of a sample population which can be representative of the entire population, the whole organisation and quantitative survey will be conducted.

4.3 Data Collection

This research focuses on social media impact on services, process and organizational innovation. In this study, the starting place was social media and how it impacts the employee's creativity and innovation (*H1: Use of social media enhances the employee's creativity*). A framework was adopted from a previous study that investigated the impact of social media on KM and creativity in tourism sector (Sigala & Chalkiti, 2015). To explore the relationship between social media and service (*H2: Use of social media has a positive impact on service innovation.*) and process innovation (*H3: Use of social media has a positive impact on process innovation.*), factors adopted from (Agarwal & Ndubisi, 2014). The factors of the organizational innovation (*H4: Use of social media has a positive impact on organizational innovation.*) adopted from (Hassan et al., 2013).

Furthermore, as creativity is the force for innovation, it's studied as a mediator between social media and service, process and organizational innovation (*H5: Creativity significantly mediates the effect of social media use on service innovation, H6: Creativity significantly mediates the effect of social media use on process innovation and H7: Creativity significantly mediates the effect of social media use on*

organizational innovation). As per definition of the organizational innovation impacts the process of implementing and adopting the innovative ideas in organizations, (*H8: Organizational Innovation significantly mediates the effect of social media use on service innovation and H9: Organizational Innovation significantly mediates the effect of social media use on process innovation).*

Data was collected through a large-scale web-based survey. The questionnaire was pre-tested by the ethics committee for content reliability and usability. The questionnaire was distributed through a clickable banner to employees of different departments of Road and Transport Authority (RTA), Dubai. The invites for participation and the survey link were sent through emails.

In this study, the social media is the independent variable used to investigate the impact on the employee's creativity and the propensity to conduct service, process and organizational innovations, (dependent variables). The instrument is attached in Appendix A.

4.4 Responses Format

In the current study, Likert scale was used. There are three common response format used: 5-point Likert extent scale, 7-point Likert extent scale and 7-point frequency scale (Truss et al., 2013).

The 7-point frequency scale which include the timeframe references used to measure the employee's engagement with social media. This will provide respondents enough freedom to select their best choice from Never, Almost Never (a few times a year), Rarely (once a month or less), Sometimes (a few times a month), Often (once a week), Very Often (a few times a week), and Always (every day) (Truss et al., 2013).

Likewise, for the case of how the knowledge extracted from social media is related to creativity, service, process and organizational innovation study, it is opted to use the 7-point Likert scale and the 7-point extent scale on all measurement scales. Several employee engagement studies had showed that the 7-point Likert extent scale is more suitable than the 5-point Likert extent scale (Finstad, 2010). Respondents with the 7-point Likert extent scale have enough choices for their best response match from Strongly Agree, Agree, Slightly Agree, Neutral, Slightly Disagree, Disagree, and Strongly Disagree.

4.4.1 Measurement Scale of Social Media Use

The measurement scales of the social media use were adopted from Sigala and Chalkiti (2015). The scales investigate employees involvements in social media and the way how they use social media for work and professional purposes. The question asked is How often you practice the following social media activities at RTA with at least one of the social media tools? The items are:

1. Read information
2. Search for collecting information
3. Upload information online for storing it for personal use
4. Upload information online for storing it for public use
5. Update my personal profile and status
6. Share information for discussing it
7. Become a member of professional networks
8. Identify experts for debating information
9. Participate in online discussions for creating new knowledge
10. Compare information for creating new knowledge

4.4.2 Measurement Scale of Creativity

Sigala and Chalkiti (2015) suggested that using social media is positively impacts employee's creativity. To test the assumption, they adopted scales from Hargadon and Bechky (2006). Hargadon and Bechky (2006) suggested that certain activities play a major role in instilling and triggering moments and events for starting the creativity developing processes. The activities are:

1. I suggest new ways to achieve goals or objectives
2. I come up with new and practical ideas to improve performance
3. I search out new technologies, processes, techniques and/or services ideas
4. I suggest new ways to increase quality
5. I am a good source of creative ideas
6. I am not afraid to take risks
7. I promote and champion ideas to others
8. I exhibit creativity on the job when given the opportunity
9. I develop adequate plans and schedules for the implementation of new ideas
10. I often have new and innovative ideas
11. I come up with creative solutions to problems
12. I often have a fresh approach to problems
13. I suggest new ways of performing work tasks

The mentioned activities used in the current study to measure the impact of social media on employee's creativity by how frequent they practice them.

4.4.3 Measurement Scale of Service Innovation

The survey investigated service innovation from two perspectives, the first is that how social media impact employee's ability to propose and suggest new ideas for service innovation at employees' level. While the second perspective is the impact at the organization level.

The survey scales at the employees' level adopted from the fundamental definition of the service innovation. For example, as defined by Witell et al. (2016), the service innovation is changing the way you serve your customers to create greater value for them and deliver more revenue for your organization. Hence, the definition in addition to the service innovation dimension as studied by Van der Have et al. (2007) adopted to measure social media use impact on service innovation. The items are as follows:

1. Suggest new ways of designing and producing services.
2. Suggest ideas to improve ways of designing and producing services.
3. Suggest new ways of delivering services system.
4. Suggest ideas to improve ways of delivering services system.
5. Suggest new ways of service technological tools.
6. Suggest ideas to improve the service technological tools.

The items of measuring the impact of social media at the organizational level have been adopted from Oly Ndubisi and Agarwal (2014). Oly Ndubisi and Agarwal (2014) examine how innovation and entrepreneurial orientation (EO) affect organizational performance on quality in Asian small enterprise context. The items adopted are:

1. Our organization has introduced many new services to the market.

2. Our organization has introduced many modifications to the existing services.

3. Our organization constantly seeks to find new services.

4. Our organization has introduced more new services than other mobility service providers in UAE.

5. The new services we introduced have caused significant changes in the industry.

4.4.4 Measurement Scale of Process Innovation

The survey investigated process innovation from two perspectives, the first is that how social media impact employee's ability to propose and suggest new ideas for process innovation at employees' level. While the second perspective is the impact on the process at the organization level.

The survey items at the employees' level adopted from the fundamental definition of the process innovation. For example, as defined by Mortensen and Bloch (2005), the process innovation is the implementation/adoption of new or significantly improved production or delivery methods. It may involve changes in equipment, human resources, working methods or a combination of these. Hence, we added items measuring the above in addition to the process innovation dimension as studied by Sisaye and Birnberg (2012) adopted to measure social media use impact on process innovation. The items are as follows:

1. Suggest new ways of designing and producing techniques.

2. Suggest new ways of designing and producing equipment.

3. Suggest new ways of designing and producing software.

4. Suggest ideas to improve the way of designing and producing techniques.

5. Suggest ideas to improve the way of designing and producing equipment.
6. Suggest ideas to improve the way of designing and producing software.

The items measuring the impact of social media at the organizational level have been adopted from Oly Ndubisi and Agarwal (2014). Oly Ndubisi and Agarwal (2014) examine how innovation and entrepreneurial orientation (EO) affect organizational performance on quality in Asian small enterprise context. The scales adopted are:

1. We constantly benchmark our operating systems to world-class standards
2. Work practices are constantly updated to increase productivity
3. We constantly use technology to enhance service quality
4. Our organization invests heavily in developing new processes
5. We continuously train our people in emerging industry technologies

4.4.5 Measurement Scale of Organizational Innovation

In general, organizational innovation can be defined as a new organizational method in the firm's business practices, workplace organization or external relations that can be intended to increase the firm's performance (Mortensen & Bloch, 2005), and also as the process of translating an idea or innovation into a good or services that creates organizational value (Kasemsap, 2016). From the definition, this study adopted scales in order to investigate the organizational innovation enabled by social media. In sack of reliability, scales suggested by Hassan et al. (2013) adopted to explore the effects of innovation types including product, process, marketing and organizational innovation on different aspects of firm performance such as innovative, production, marketing and financial performance in Pakistani manufacturing companies. And the items are:

1. RTA’s lays emphasis on developing new services

2 RTA’s rate of introduction of new services into the market is higher (or comparable) to other mobility service providers in UAE.

3. RTA's spending on new service development activities is higher than industry average

4. RTA’s rate of adoption of new services for the first time on the market is higher (or comparable) to other mobility service providers in UAE.

4.5 Procedures

4.5.1 Pilot Study

The modified scales were used in the pilot study. The pilot study was conducted in RTA using a total of 15 line managers and employees. The participants were asked to use the survey and comment on their understanding of the questions to ensure that there was no confusion in the meaning of the items. The results indicated face validity for our instrument, following which we used it in the main study. The results also indicated high reliability, which is discussed in the next chapter.

4.5.2 Main Study

A total of 53 items hypothesised to represent ten scales were developed for use in the present study. These scales were developed based on a thorough review of relevant theoretical and empirical literature, which provides some evidence of their content validity. The research instrument consists of seven sections collecting information about: (1) the respondents’ demographic and working profile; (2) their experience with the internet; (3) professional use of social media, (4) Social media use for Knowledge Management and employee creativity (Sigala & Chalkiti, 2015), (5) social media use for service innovation (Agarwal & Ndubisi, 2014), (6) social media

use for process innovation (Agarwal & Ndubisi, 2014), and (7) social media use for organizational innovation (Hassan et al., 2013). This instrument was modified and submitted to the Institutional Review Board at UAE University for approval. Consequently, based on the feedback given, the instrument was modified along with the instructions to ensure that the safety and anonymity of participants was preserved. The modified scale was subsequently approved.

The survey was first distributed to 10 mobility planners in RTA-Dubai for reviewing the professional content and the consistency of the questions with the innovation plan of involving the social media. The mobility planners showed satisfaction with the content of the survey in term of simplicity, topics of the questions, orientation and the practical significance added to the innovation plan. This confirmed the face validity of the survey.

Following this, a random sample of employees who have engaged in contributing innovative ideas were selected for the pilot and main studies. We used the survey to collect data on 15 experts in the pilot study and a sample of 151 employees were included in the main study. As indicated, the members were selected randomly based on historical data of members who contributed innovative and valid ideas according to the CRM, who have a high ability to capture new ideas based on the analysed data sets extracted from the CRM system, categorised into agencies and sectors in Table 3. As a supplement, an extract of number of ideas generated by each agency and sector was used to correlate and indicate innovation culture and agency support in terms of idea generation. Age, gender, years of experience, educational level and department were also recorded.

Table 3: RTA agencies

Category	Characteristics
PTA (Public Transportation Agency)	Public Transportation Services of Buses and Taxies, (Include ITS of Buses and Taxi dispatch)
TRA (Traffic & Roads Agency)	Traffic controls, Roads construction and all Traffic and Roads services (includes ITS of Traffic and Roads)
Rail Agency	Dubai Metro, Dubai Tram and all control rooms
Licensing Agency	Car and driving licenses registration and issuance
Corporate support	That will include Strategic Planning, Governance, Risk Management, Finance, HR, IT, Procurement, Asset Management, building and facilities, Administration, Corporate performance and any other supporting unit.

4.5.3 Data Analysis

Firstly, a descriptive analysis was conducted to investigate the relationship between social media and creativity, service innovation, process innovation and organizational innovation. Then, the hypotheses were tested using simple regression analysis. The results of the testing are presented in Chapter 5.

The collected data was analyzed using the IBM SPSS and XLSTAT statistical packages in Microsoft Excel in the following plan. Firstly, IBM SPSS was used for conducting the preliminary data analysis and screening including the assessment of the simple regression assumptions. Then, it is used to present the respondents' demographic, profile analysis and the descriptive statistics of research constructs. Followed by, performing the Exploratory Factor Analysis (EFA) using the IBM SPSS. Lastly, XLSTAT package was used to perform the simple and multiple regression analysis in order to test the research hypotheses.

In summary, the data analysis and data research management were performed using mainly the IBM SPSS and XLSTAT statistical packages while applying the quantitative approach type of methodology.

4.6 Chapter Summary

This chapter presented the research methodology that was used in this present research study. The research philosophical context of the present study on social media and creativity and innovation along the research design different aspects were presented at the beginning and followed by the research instrumentation in term of measurement scales of all research theoretical model constructs for the development of the survey questionnaire. Then, the research procedures in term of data collection and survey administration were discussed. Lastly, the research field access and ethical considerations along the data analysis plan were presented.

Chapter 5: Results and Discussion

In this chapter, the results of the main study conducted by a web-based survey are presented. As mentioned in Chapter 3, the study covered all RTA departments and specifically the mobility planners including, CEOs, directors and managers. The results are structured according to the survey sections with relation to the hypothesis then a summary of the relation between various sections is presented. To begin with, we will present the psychometric properties of the scales used.

5.1 Reliability and Validity Tests

This section describes the selection of items for and the evaluation of the reliability and validity of these measurement scales. In this study, the reliability of scales was measured using Cronbach's coefficient Alpha based on internal consistency of the items in each scale. The acceptable and unacceptable levels of the Cronbach's Alpha coefficient (Cronbach, 1951) as presented in Table 4.

Table 4: Acceptable and unacceptable levels of coefficient

Alpha coefficient	Implied reliability
Below .60	Unacceptable
Between .60 and .65	Undesirable
Between .65 and .70	Minimally acceptable
Between .70 and .80	Respectable
Between .80 and .90	Very good

Accordingly, the scale reliability of 0.70 and above is preferred. It is also suggested that items that have less than values of 0.30 to total correlation could be deleted to improve the reliability of the scale.

The results of this study show that the value of Cronbach's coefficient Alpha for scales is 0.96 (way above 0.7) indicating a very high reliability (see Table 5).

Table 5: Reliability test

Measured Constructs (scales were based on these constructs)	Reliability
Employee creativity	0.97
Service innovation	0.92
Process innovation	0.91
Organizational innovation	0.81
Overall questionnaire	0.96

5.1.1 Factor Loading

We ran factor analysis to check for construct validity. Results from the factor analysis of the items indicated that the items measuring the constructs were loading on the same construct thereby indicating that the scales were valid (see Table 6).

Table 6: Factor analysis of the survey items

Constructs	Items	Loadings				
Social media	Read information	0.757				
	Search for collecting information	0.811				
	Upload information online for storing it for personal use	0.730				
	Upload information online for storing it for public use	0.806				
	Update my personal profile and status	0.652				
	Share information for discussing it	0.670				
	Become a member of professional networks	0.642				
	Identify experts for debating information	0.762				
	Participate in online discussions for creating new knowledge	0.732				
	Compare information for creating new knowledge	0.563				
Creativity	I suggest new ways to achieve goals or objectives		0.719			
	I come up with new and practical ideas to improve performance		0.741			

Table 6: Factor analysis of the survey items (Continued)

Constructs	Items	Loadings				
	I search out new technologies, processes, techniques, and/or services ideas		0.762			
	I suggest new ways to increase quality		0.788			
	I am a good source of creative ideas		0.789			
	I am not afraid to take risks		0.669			
	I promote and champion ideas to others		0.744			
	I exhibit creativity on the job when given the opportunity		0.761			
	I develop adequate plans and schedules for the implementation of new ideas		0.754			
	I often have new and innovative ideas		0.812			
	I come up with creative solutions to problems		0.855			
	I often have a fresh approach to problems		0.819			
	I suggest new ways of performing work tasks		0.796			
Service Innovation	Suggest new ways of designing and producing services.			0.857		
	Suggest ideas to improve ways of designing and producing services.			0.848		
	Suggest new ways of delivering services system.			0.880		
	Suggest ideas to improve ways of delivering services system.			0.863		
	Suggest new ways of service technological tools.			0.880		
	Suggest ideas to improve the service technological tools.			0.906		
	RTA has introduced many new services to the market			0.837		
	RTA has introduced many modifications to the existing services			0.843		
	RTA constantly seeks to find new services			0.751		
	RTA has introduced more new services than other mobility service providers in UAE			0.794		
	The new services we introduced have caused significant changes in the industry			0.810		

Table 6: Factor analysis of the survey items (Continued)

Constructs	Items	Loadings				
Process Innovation	Suggest new ways of designing and producing techniques.			0.701		
	Suggest new ways of designing and producing equipment.				0.807	
	Suggest new ways of designing and producing software.				0.871	
	Suggest ideas to improve the way of designing and producing techniques.				0.893	
	Suggest ideas to improve the way of designing and producing equipment.				0.866	
	Suggest ideas to improve the way of designing and producing software.				0.839	
	We at RTA constantly benchmark our operating systems to world-class standards				.876	
	Work practices at RTA are constantly updated to increase productivity				0.752	
	We at RTA constantly use technology to enhance service quality				0.815	
	RTA invests heavily in developing new processes				0.764	
	We continuously train our people in emerging industry technologies				0.684	
Organizational Innovation	RTA lays emphasis on developing new services					0.725
	RTA's rate of introduction of new services into the market is higher (or comparable) to other mobility service providers in UAE.					0.845
	RTA's spending on new service development activities is higher than industry average					0.785
	RTA's rate of adoption of new services for the first time on the market is higher (or comparable) to other mobility service providers in UAE.					0.761

5.2 Methods and Sources of Data Collection

The information and data required by the study were obtained through two main sources: secondary sources, which included books and periodicals related to the search topic and the online information available on the subject and the primary sources which were represented in the questionnaire related to the topic of the study, which was adopted from (Sigala & Chalkiti, 2015).

As this study involved human subjects, it required approval from the Institutional Review Board (IRB). The proposal and the survey were submitted to IRB for review. After resolving minor modification, the survey was approved.

To measure the level of the sample's approval of the dimensions, Likert scale consisting of seven degrees of approval (1-7) is adopted, where 7 means strongly agree with a very high degree, 6 agree with a high degree, 5 slightly agree with a medium degree, 4 neither agree nor disagree, 3 slightly disagree, 2 disagree and 1 strongly disagree.

5.3 Results Analysis and Discussion

5.3.1 The Demographic Characteristics

The study sample respondent were 163 male and female employees (117 males and 46 females) (see Figure 15). They were selected by the simple random sampling method, whereby their names were selected from the overall pool of employees using a computer program. Following this, 300 questionnaires were distributed by email to the participants, which resulted in 151 valid responses. There were 12 invalid questionnaires due to incompletion. The ages of the participants ranged from 21 and

60 years old where the highest percentage of participation was the age between 31-40 with 51.97% while the lowest participation was from age 51-60 with 7.89%. In addition, university graduates showed highest participation in the study with 49.34% while the doctorate level of education was the lowest with 2.63% (see Figure 16). as the survey was distributed randomly, variation found in the work experience of the participants where 65.79% of the participants worked with RTA for more than 3 years (see Figure 17).

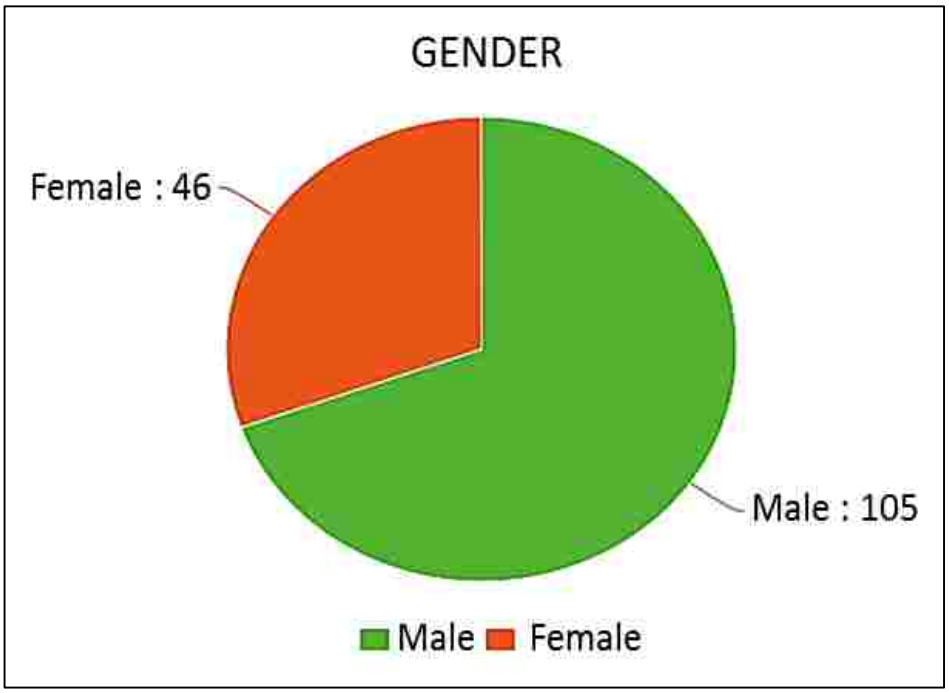


Figure 15: Distribution of the gender of the participants at RTA

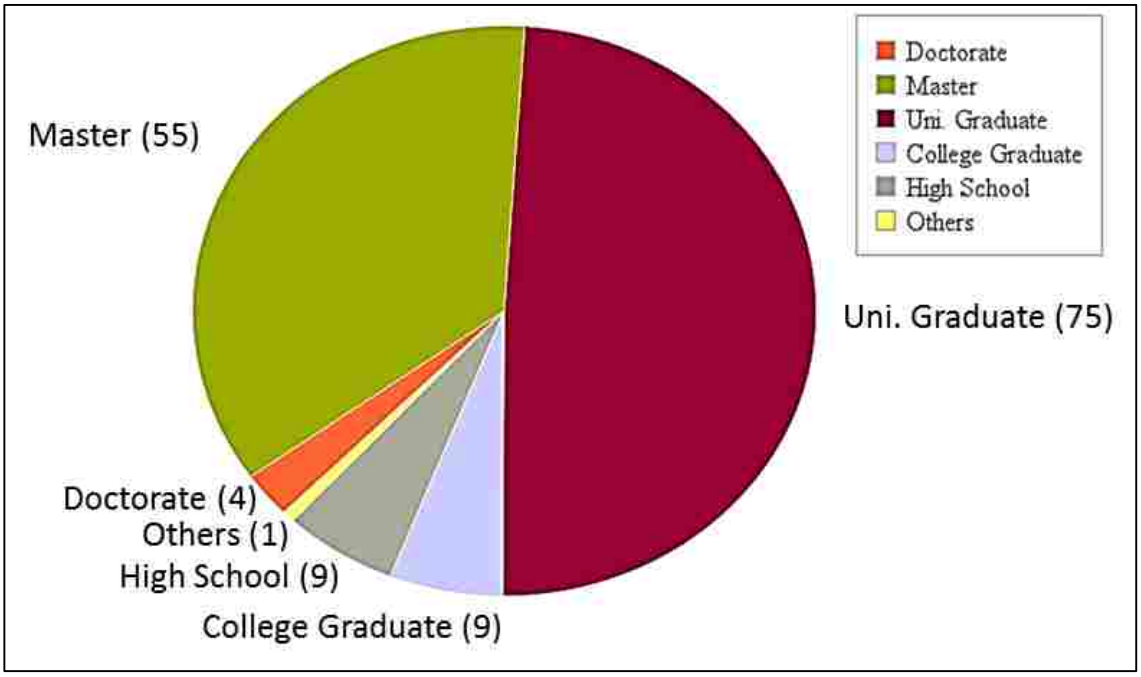


Figure 16: Distribution of the education level

Figure 17: Distribution of work experience

5.3.2 Professional Use of Social Media

The arithmetic means and standard deviations for the sample's approval of professional use of social media were extracted. Table 7 illustrates this.

Table 7 shows that the arithmetic means for the sample's approval for practising the use of social media ranged between 4.32 and 5.98 and the highest was item No. 1, which reads: 'Read information ', while the lowest was item No. 4, which reads:' Compare information for creating new knowledge '; the overall average for the area as a whole was 5.13 by a medium assessment degree, which shows that the level of use of social media was medium.

Table 7: Arithmetic means and standard deviations - social media

No.	Rank	item	Arithmetic mean	Standard deviation
1	1	Read information	5.98	1.12
2	2	Search for collecting information	5.76	1.46
3	9	Upload information online for storing it for personal use	4.58	1.91
4	10	Compare information for creating new knowledge	4.32	1.86
5	7	Become a member of professional networks	4.86	1.73
6	8	Update my personal profile and status	4.71	1.66
7	4	Share information for discussing it	5.31	1.50
8	5	Identify experts for debating information	5.11	1.47
9	6	Upload information online for storing it for public use	5.01	1.62
10	3	Participate in online discussions for creating new knowledge	5.61	1.23
Use of social media			5.13	1.56

5.3.3 Social Media use for Employee Creativity

The arithmetic means and standard deviations for the sample's approval of professional Social media use for employee creativity were extracted (see Table 8). Table 8 shows that the arithmetic means for the sample's approval for practicing the Social media use for Knowledge Management and employee creativity ranged between 5.30 and 5.78 and the highest was item 3, which reads: 'I often have a fresh approach to problems', while the lowest was 6, which reads: 'I am not afraid to take risks'; the overall average for the area as a whole was 5.46 by a medium assessment degree, which shows that the level of social media use for employee creativity was medium.

Table 8: Arithmetic means and standard deviations - employee creativity

No.	Rank	Item	Arithmetic mean	Standard deviation
1	4	I search out new technologies, processes, techniques and/or services ideas	5.54	1.17
2	2	I exhibit creativity on the job when given the opportunity	5.56	1.19
3	1	I often have a fresh approach to problems	5.78	1.28
4	2	I suggest new ways of performing work tasks	5.56	1.23
5	8	I come up with creative solutions to problems	5.40	1.24
6	10	I am not afraid to take risks	5.30	1.39
7	7	I promote and champion ideas to others	5.44	1.25
7	5	I often have new and innovative ideas	5.52	1.24
9	9	I develop adequate plans and schedules for the implementation of new ideas	5.35	1.20
10	7	I am a good source of creative ideas	5.44	1.18
11	3	I come up with new and practical ideas to improve performance	5.55	1.15
12	6	I suggest new ways to increase quality	5.46	1.12
13	2	I suggest new ways to achieve goals or objectives	5.56	1.14
Social media use for employee creativity			5.46	1.21

5.3.4 Social Media and Service Innovation

The arithmetic means and standard deviations for the sample's approval of professional social media and service innovation were extracted (see Table 9).

Table 9 shows that the arithmetic means for the sample's approval for practicing the social media and service innovation ranged between 4.66-5.91; the highest was item 9, which reads: 'RTA constantly seeks to find new services', while the lowest was item No. 1, which reads: 'Suggest ideas to improve ways of delivering services system'; the overall average for the area as a whole was 5.23 by a medium assessment degree, which shows that the level of social media and service innovation was medium.

Table 9: Arithmetic means and standard - service innovation

No.	Rank	Item	Arithmetic mean	Standard deviation
1	9	Suggest ideas to improve ways of delivering services system.	4.66	1.53
2	8	Suggest new ways of delivering services system.	4.70	1.54
3	7	Suggest new ways of designing and producing services.	4.77	1.48
4	6	Suggest ideas to improve ways of designing and producing services.	4.85	1.45
5	7	Suggest new ways of service technological tools.	4.77	1.55
6	7	Suggest ideas to improve the service technological tools.	4.77	1.51
7	2	RTA has introduced many new services to the market	5.73	1.12
8	3	RTA has introduced many modifications to the existing services	5.70	1.12
9	1	RTA constantly seeks to find new services	5.91	1.06
10	4	RTA has introduced more new services than other mobility service providers in UAE	5.56	1.28
11	5	The new services we introduced have caused significant changes in the industry	5.55	1.20
Social media and service innovation			5.23	1.33

5.3.5 Social Media and Process Innovation

The arithmetic means and standard deviations for the sample's approval of professional social media and process innovation were extracted (see Table 10).

Table 10 shows that the arithmetic means for the sample's approval for practicing the social media and process innovation ranged between 4.15 and 5.71 the highest was item 9, which reads: 'We at RTA constantly use technology to enhance service quality', while the lowest was item No. 5, which reads: 'Suggest ideas to improve the way of designing and producing software.'; the overall average for the area as a whole was 4.90 by a medium assessment degree, which shows that the level of social media and process innovation was medium.

Table 10: Arithmetic means and standard deviations - process innovation

No.	Rank	item	Arithmetic mean	Standard deviation
1	6	Suggest new ways of designing and producing techniques.	4.55	1.50
2	10	Suggest new ways of designing and producing software.	4.22	1.65
3	9	Suggest ideas to improve the way of designing and producing techniques.	4.33	1.65
4	7	Suggest new ways of designing and producing equipment.	4.54	1.58
5	11	Suggest ideas to improve the way of designing and producing software.	4.15	1.75
6	8	Suggest ideas to improve the way of designing and producing equipment.	4.38	1.64
7	2	We at RTA constantly benchmark our operating systems to world-class standards	5.59	1.27
8	4	Work practices at RTA are constantly updated to increase productivity	5.38	1.32
9	1	We at RTA constantly use technology to enhance service quality	5.71	1.15
10	3	RTA invests heavily in developing new processes	5.48	1.29
11	5	We continuously train our people in emerging industry technologies	5.21	1.45
Social media and process innovation			4.90	1.48

5.3.6 Social Media and Organizational Innovation

The arithmetic means and standard deviations for the sample's approval of professional social media and organizational innovation were extracted (see Table 11).

Table 11: Arithmetic means and standard deviations – org. innovation

No.	Rank	item	Arithmetic mean	Standard deviation
1	1	RTA lays emphasis on developing new services	5.58	1.20
2	2	RTA's rate of introduction of new services into the market is higher (or comparable) to other mobility service providers in UAE.	5.52	1.25
3	3	RTA's spending on new service development activities is higher than industry average	5.28	1.24
4	2	RTA's rate of adoption of new services for the first time on the market is higher (or comparable) to other mobility service providers in UAE.	5.52	1.24
Social media and organizational innovation			5.37	1.31

Table 11 shows that the arithmetic means for the sample's approval for practicing the social media and process innovation ranged between 5.28 and 5.58 the highest was item 1, which reads: 'RTA lays emphasis on developing new services', while the lowest was item No. 3, which reads: 'RTA's spending on new service development activities is higher than industry average'; the overall average for the area as a whole was 5.37 by a medium assessment degree, which shows that the level of social media and organizational innovation was medium.

5.3.7 Testing the Study Hypotheses

HYPOTHESIS 01: Usage of Social media enhances the employee's creativity.

This hypothesis was validated using the simple regression test. The simple linear regression model was used to analyse how an employee's creativity was impacted by the usage of social media. Simple linear regression is a simple but powerful technique and was appropriate for our quantitative study because we were testing the effect of one independent variable: social media usage on one dependent variable: creativity. Simple linear regression makes several key assumptions, which we tested for, as explained below:

Linear regression needs at least 2 variables of metric (ratio or interval) scale. A rule of thumb for the sample size is that regression analysis requires at least 20 cases per independent variable in the analysis. Our sample consisted of 151 observations meeting this requirement.

Firstly, linear regression needs the relationship between the independent and dependent variables to be linear. The line fit plot between creativity and social media usage is linear suggesting that it was largely satisfied (See Figure 18 and Figure 19).

The residual plot shows that most of the residuals are scattered randomly indicating that the assumption of linear relationship is reasonable. The plot also indicates that the error variance is constant. As a conclusion from the results above, the assumptions of the simple regression test were met.

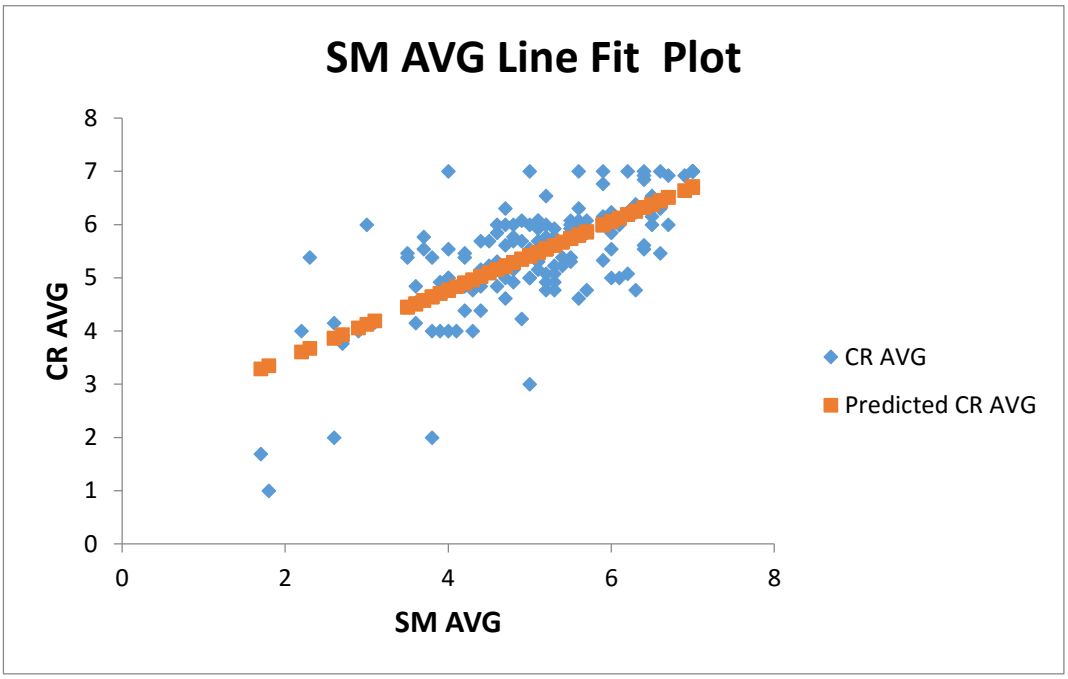


Figure 18:Regression of creativity by social media use

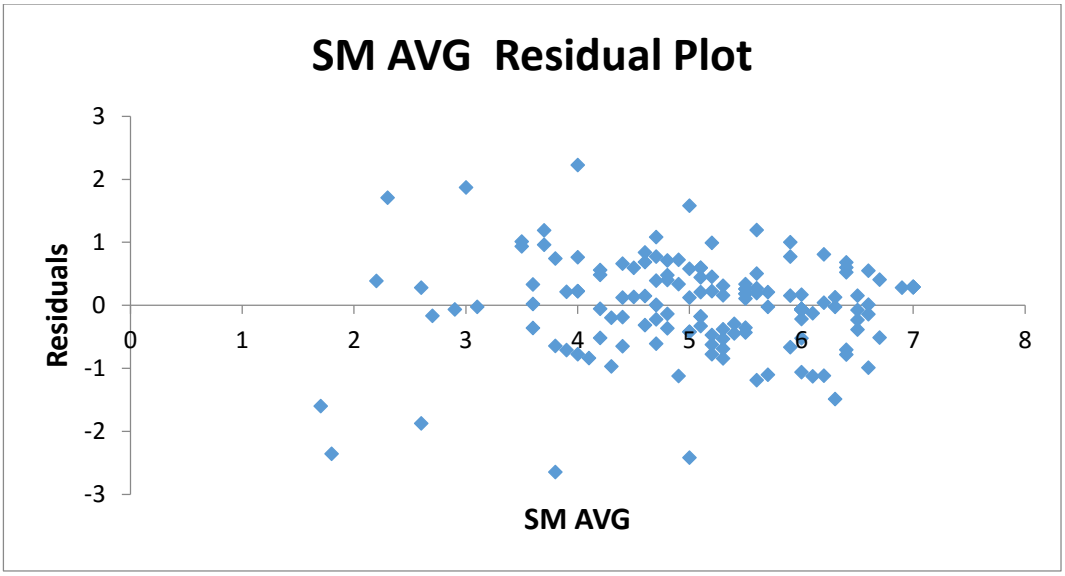


Figure 19: The residual plot of creativity and social media usage

The simple regression test results are provided in Table 12.

As shown in Table 12 and Table 13, the results of the regression test show that the effect is highly significant. In other words, usage of social media positively impacts an employees' creativity.

Table 12: Regression model parameters (creativity)

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	**2.194444**	0.277895	7.89666	**5.78E-13**	1.645319	2.743568
SM AVG	**0.644584**	0.05293	12.17803	**4.09E-24**	0.539994	0.749175

Table 13: Analysis of variance (creativity)

ANOVA	*df*	*SS*	*MS*	*F*
Regression	1	80.98263	80.98263	148.3043
Residual	149	81.36251	0.546057	
Total	150	162.3451		

The positive impact of social media usage on creativity can be captured in the following equation (see below)

Creativity = 2.194+0.644*social media use

This result may be attributed to the professional use of various social media which granted employees to quickly access features and to obtain the necessary information at any time and any place. They acquired the skills to search for new ideas and techniques to propose innovative solutions and to offer a variety of views to solve the problems they face. These tools provide workers with the freedom to express their opinions and ideas in their minds, which in turn can generate new ideas that improve performance and enhance creativity.

HYPOTHESIS 02: Usage of social media has a positive impact on service innovation.

Similar to testing Hypothesis 1, a simple linear regression test was used to validate Hypothesis 2. Hypothesis 2 consists of testing if there is positive impact of social media use on service innovation. The use of social media was considered as the independent variable and the service innovation was considered the dependent variable. As explained earlier for Hypothesis 1, we tested for the assumptions of simple linear regression.

Firstly, linear regression needs the relationship between the independent and dependent variables to be linear. As shown in Figure 20 and Figure 21, the line plot indicating normal distribution with leads to a result that the regression is justified.

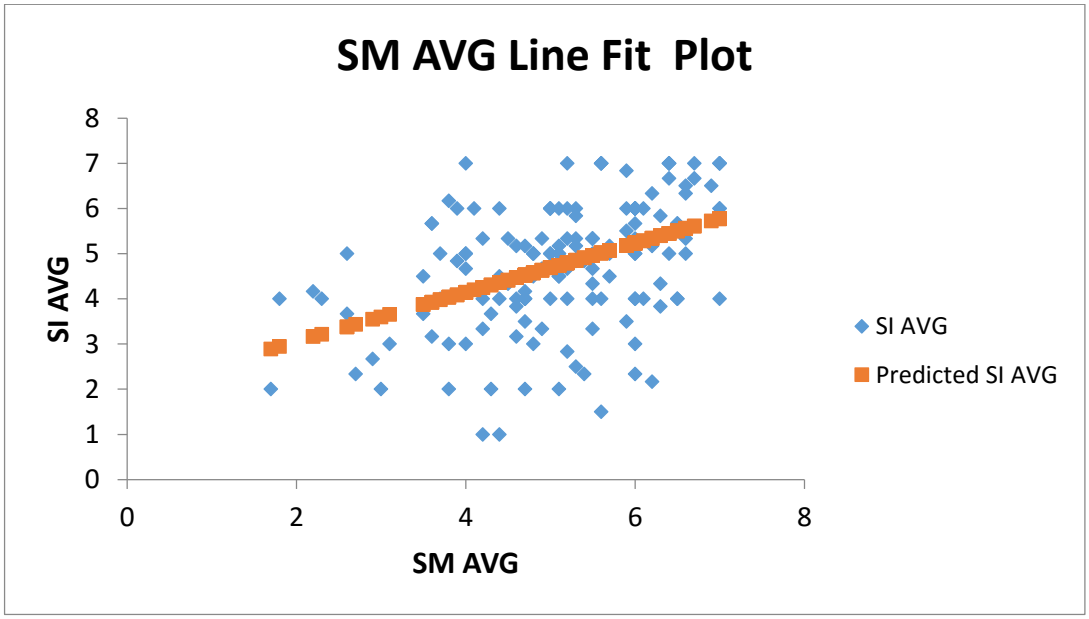


Figure 20: Regression of service innovation by social media use

The residual plot shows that most of the residuals are scattered randomly indicating that the assumption of linear relationship is reasonable. The plot also

indicates that the error variance is constant. As a conclusion from the results above, the assumptions of the simple regression test were met.

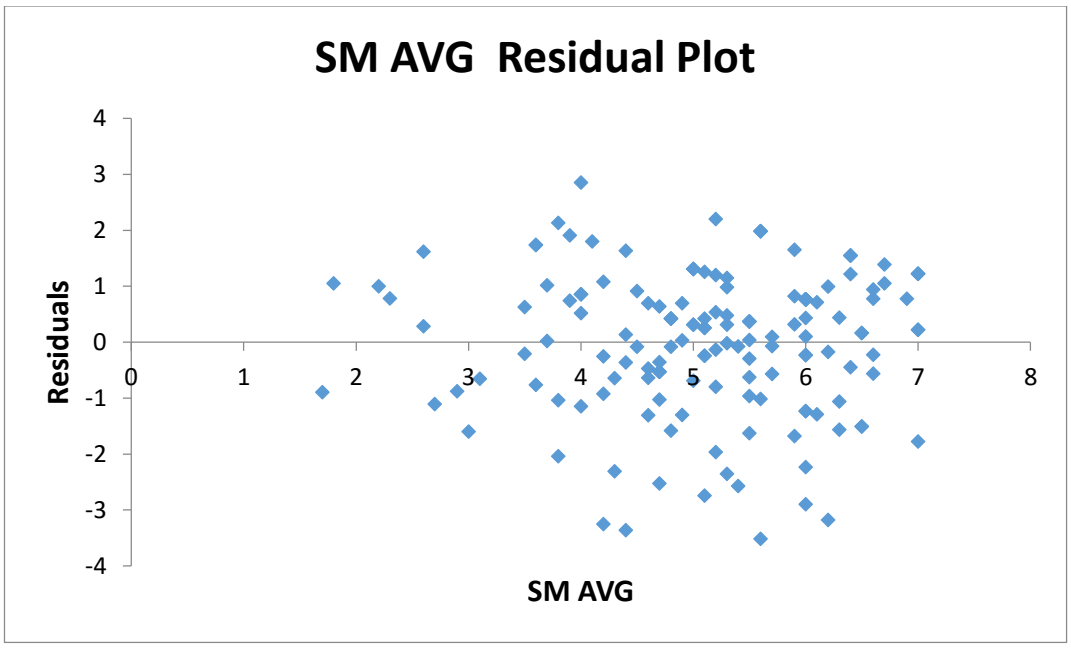


Figure 21: Residual plot of service innovation and social media use

The results provided in Table 14 and Table 15, show that the effect is significant. In other words, usage of social media positively impacts service innovation.

Table 14: Regression model parameters (service innovation)

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	**1.965859**	0.47734	4.118361	**6.3E-05**	1.022629	2.90909
SM AVG	**0.544128**	0.090918	5.984824	**1.55E-08**	0.364473	0.723783

Table 15: Analysis of variance (service innovation)

ANOVA	*df*	*SS*	*MS*	*F*	*Significance F*
Regression	1	57.70786	57.70786	35.81812	1.55E-08
Residual	149	240.0593	1.611136		
Total	150	297.7671			

Our analysis indicated a positive impact of social media usage on service innovation and resulted in the following equation (see below)

Service innovation = 1.966+0.544*social media use

This result can be explained by the professional use of different social media informing the RTA employees of the different experiences of the other leading institutions in how they provide their services to the public, thus motivating employees to come up with new ideas to improve service delivery and propose new ways to deliver them. This gives employees the opportunity to exchange their knowledge, expertise and skills among themselves to express their views and ideas on the policies, work procedures and technology for providing different services to the public. The social media allows employees to communicate with the public directly and continuously, conveying ideas and new information to them and receive feedback from the general public and identify their needs and desires regarding the services provided to them; hence improving the quality and speed of delivery.

HYPOTHESIS 03: Usage of social media has a positive impact on process innovation.

Similar to testing previous Hypothesis, a simple linear regression test was used to validate Hypothesis 3. Hypothesis 3 consists of testing if there is positive impact of

social media use on process innovation. The use of social media was considered as the independent variable and the process innovation was considered the dependent variable. As explained earlier for Hypothesis 1 and 2, we tested for the assumptions of simple linear regression.

Firstly, linear regression needs the relationship between the independent and dependent variables to be linear. As shown in Figure 22 and Figure 23, the line plot indicating normal distribution with leads to a result that the regression is justified.

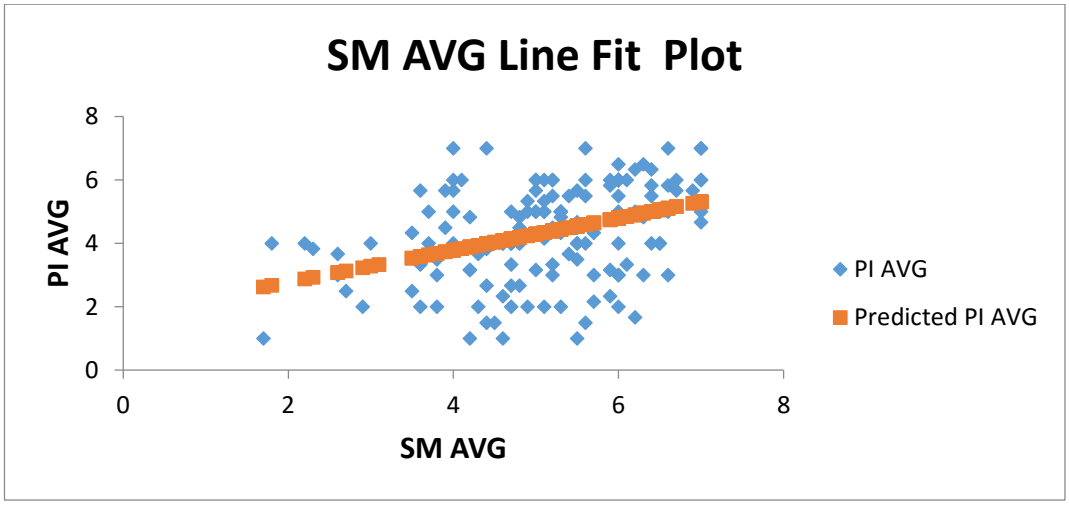


Figure 22: Regression of process innovation by social media use

The residual plot shows that most of the residuals are scattered randomly indicating that the assumption of linear relationship is reasonable. The plot also indicates that the error variance is constant. As a conclusion from the results above, the assumptions of the simple regression test were met.

The results provided in Table 16 and Table 17, show that the effect is significant. In other words, usage of social media positively impacts service innovation.

Our analysis indicated a positive impact of social media usage on process innovation and resulted in the following equation (see below)

Process innovation = 1.765+0.506*social media use

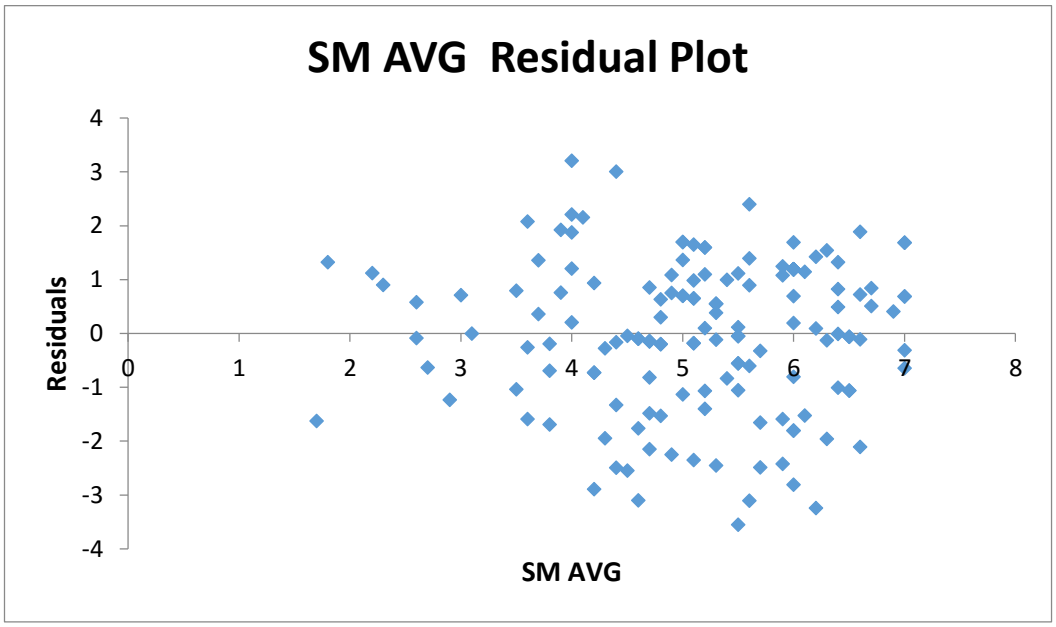


Figure 23. Residual plot of process innovation and social media use

This result can be explained by the professional use of different social media informing the RTA employees of the different experiences of the other leading institutions in how they provide their services to the public, thus motivating employees to come up with new ideas to improve process of service delivery and propose new ways to deliver them. This gives employees the opportunity to exchange their knowledge, expertise and skills among themselves to express their views and ideas on the policies, work procedures and technology for providing different services to the public. The social media allows employees to communicate with the public directly and continuously, conveying ideas and new information to them and receive feedback

from the general public and identify their needs and desires regarding the services provided to them; hence improving the quality and speed of delivery.

Table 16: Regression model parameters (process innovation)

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	**1.765024**	0.523018	3.374692	**0.000942**	0.731534	2.798514
SM AVG	**0.506436**	0.099618	5.083775	**1.09E-06**	0.309589	0.703283

Table 17: Analysis of variance (process innovation)

ANOVA	*df*	*SS*	*MS*	*F*	*Significance F*
Regression	1	49.98981	49.98981	25.84476	1.09E-06
Residual	149	288.2008	1.934233		
Total	150	338.1906			

HYPOTHESIS 04: Usage of social media has a positive impact on organizational innovation.

Similar to testing previous Hypothesis, a simple linear regression test was used to validate Hypothesis 4. Hypothesis 4 consists of testing if there is positive impact of social media use on organizational innovation. The use of social media was considered as the independent variable and the organizational innovation was considered the dependent variable. As explained earlier Hypothesis, we tested for the assumptions of simple linear regression.

Firstly, linear regression needs the relationship between the independent and dependent variables to be linear. As shown in

Figure 24, the line plot indicating normal distribution with leads to a result that the regression is justified.

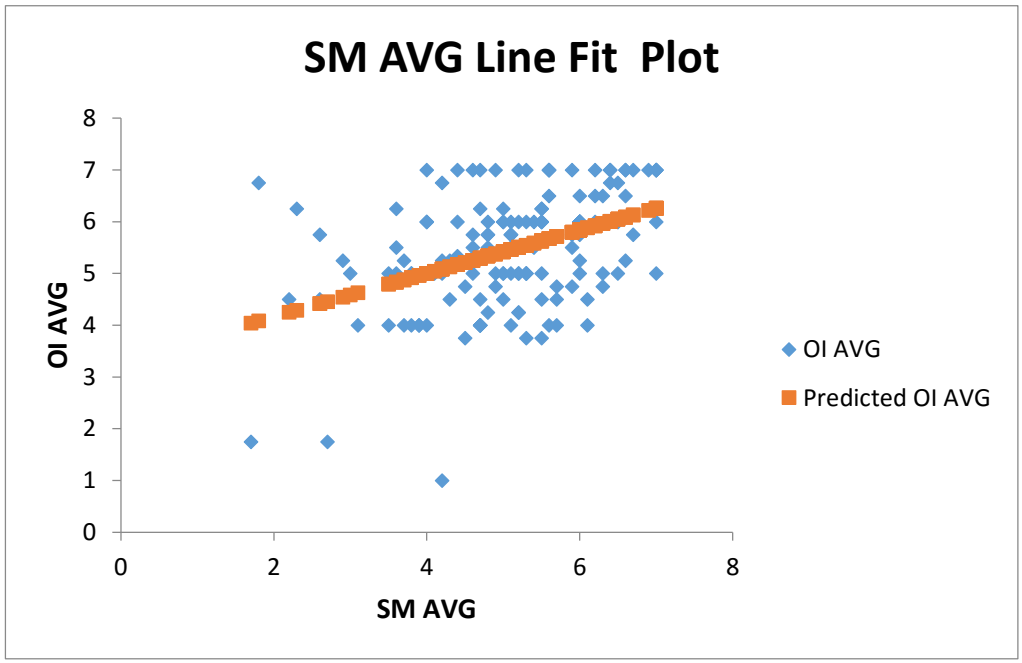


Figure 24: Regression of organizational innovation by social media use

The residual plot shows that most of the residuals are scattered randomly indicating that the assumption of linear relationship is reasonable (see Figure 25). The plot also indicates that the error variance is constant. As a conclusion from the results above, the assumptions of the simple regression test were met.

The results provided in Table 18 and Table 19, show that the effect is significant. In other words, usage of social media positively impacts service innovation.

Our analysis indicated a positive impact of social media usage on process innovation and resulted in the following equation (see below)

Organizational innovation = 3.33+0.419*social media use

This result can be explained by the professional use of different social media informing the RTA employees of the different experiences of the other leading

institutions in how they provide their services to the public, thus motivating employees to come up with new ideas to improve the organizational process of service delivery and propose new ways to deliver them. This gives employees the opportunity to exchange their knowledge, expertise and skills among themselves to express their views and ideas on the policies, work procedures and technology for providing different services to the public. The social media allows employees to communicate with the public directly and continuously, conveying ideas and new information to them and receive feedback from the general public and identify their needs and desires regarding the services provided to them; hence improving the quality and speed of delivery.

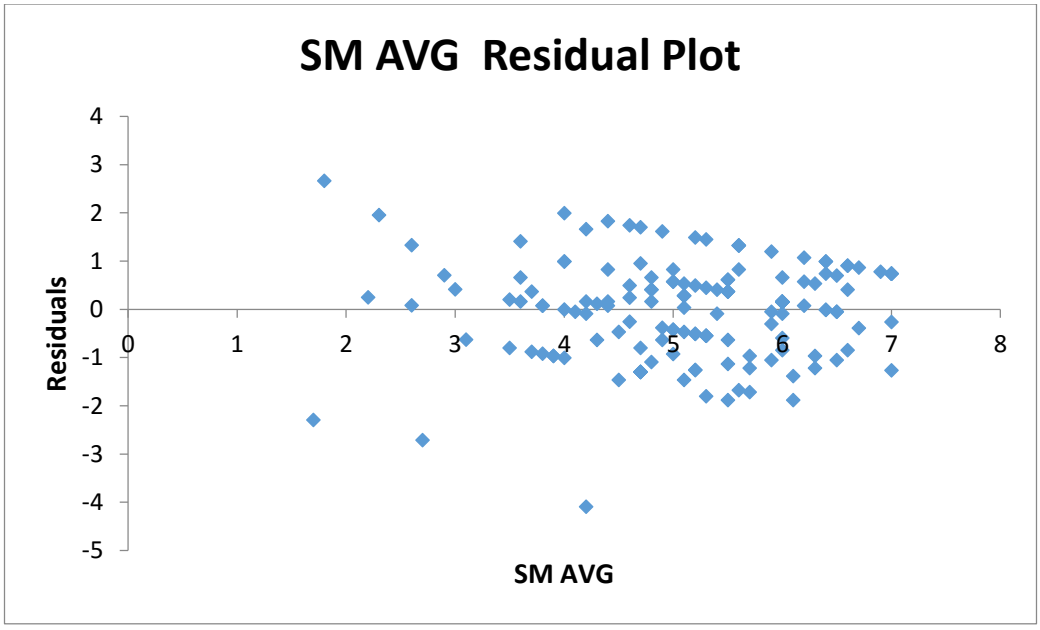


Figure 25: Residual plot of org. innovation and social media use

Table 18: Regression model parameters (organizational innovation)

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	**3.330116**	0.379	8.795	**3.26E-15**	2.582	4.0782
SMAVG	**0.418586**	0.072	5.804	**3.75E-08**	0.2762	0.5612

Table 19: Analysis of variance (organizational innovation)

ANOVA	*df*	*SS*	*MS*	*F*	*Significance F*
Regression	1	34.15094	34.15094	33.69018	3.75E-08
Residual	149	151.0378	1.013676		
Total	150	185.1887			

5.3.8 Creativity as Mediator

In this section, the influence of creativity as mediator on the relation between social media use and service, process and organizational innovation is discussed. multiple regression analysis is conducted. In this context, creativity is considered as a median factor between social media and innovation. In addition, a SOBEL test used to measure if the mediating variable (creativity) carries influence of the independent variable (social media) to dependent variables (service, process and organizational innovation).

The Sobel test is basically a specialized t-test that provides a method to determine whether the reduction in the effect of the independent variable, after

including the mediator in the model, is a significant reduction and therefore whether the mediation effect is statistically significant.

HYPOTHESIS 05: Creativity significantly mediates the effect of social media use on service innovation.

A multiple regression test was used to explore the influence of creativity as a median factor between social media and service innovation. The social media use and creativity was considered the independent variable and the service innovation was considered the dependent variable. As the assumptions of the regression have been tested in the previous section, so we assume the assumptions are met in the following analysis.

As before, we tested for the assumptions of linear regression as explained below:

Firstly, linear regression needs the relationship between the independent and dependent variables to be linear. As shown in Figure 26 and Figure 27, the line plot indicating normal distribution with leads to a result that the regression is justified.

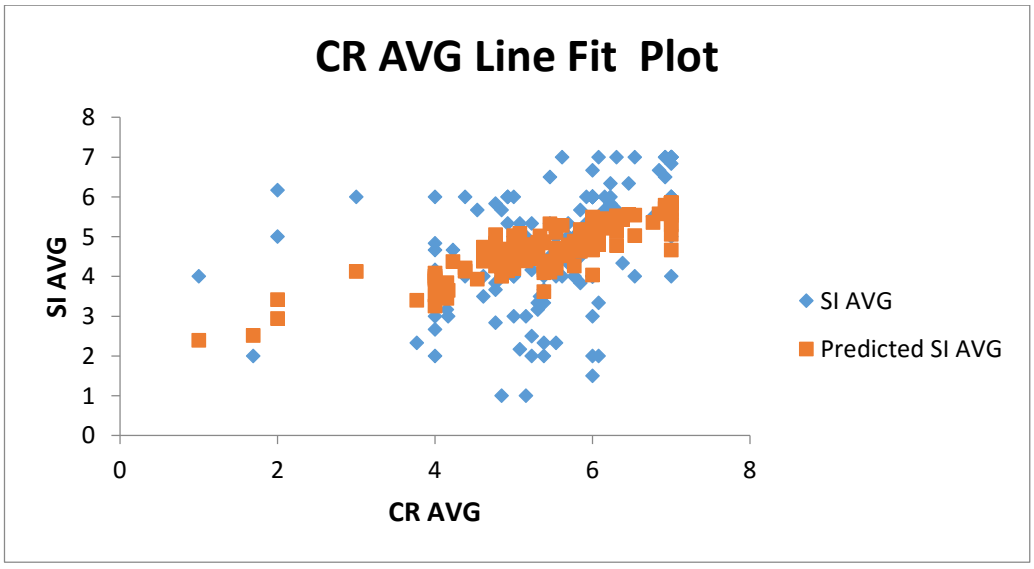


Figure 26: Regression of service innovation by creativity

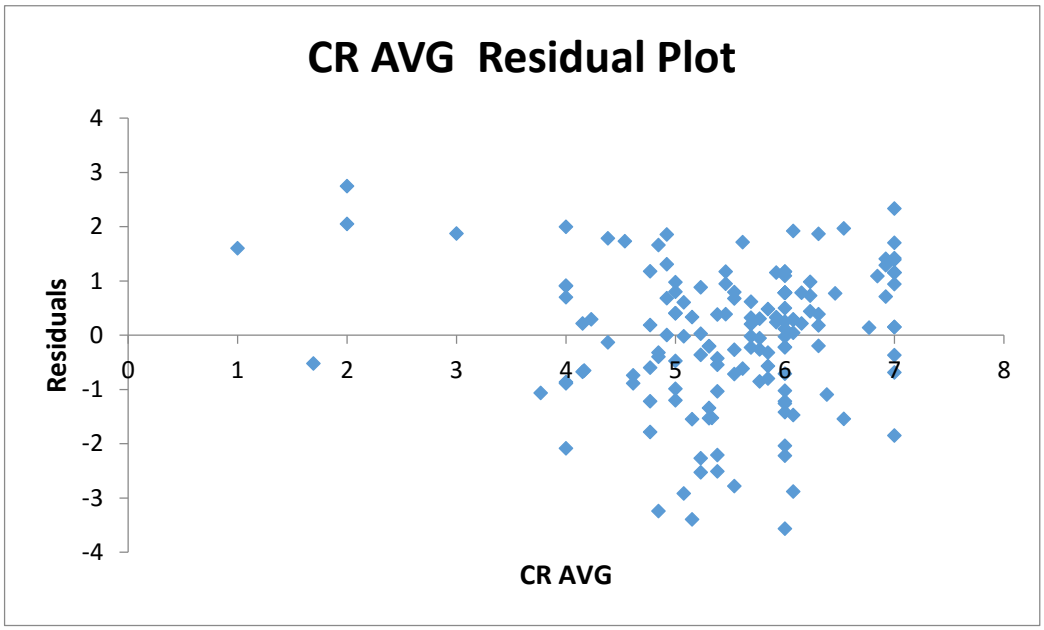


Figure 27: Residual plot of service innovation and creativity

Surprisingly, the results provided in Table 20 show that the effect is not significant. In other words, the creativity has no impact as a mediator between social media and service innovation.

Table 20: Regression of social media and creativity (service innovation)

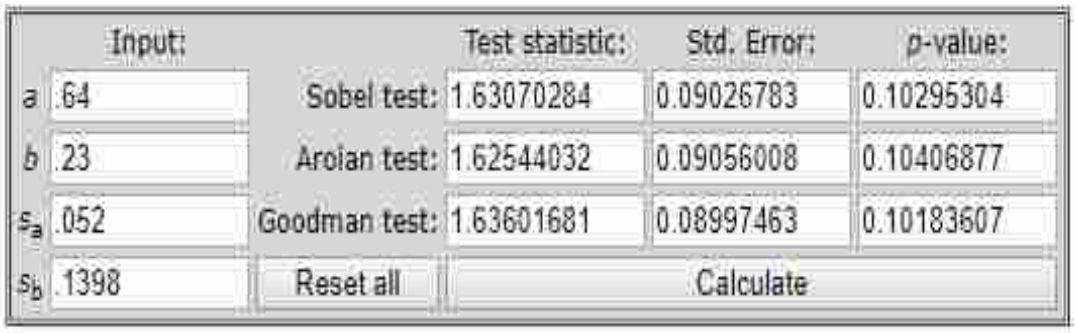
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	**1.453279**	0.565136	2.571558	**0.01111**	0.336502	2.570056
SM AVG	**0.393566**	0.127663	3.082837	**0.002446**	0.141287	0.645844
CR AVG	**0.233581**	0.139882	1.669839	**0.097065**	-0.04284	0.510006

Table 21: Analysis of variance (Mediator-service innovation)

ANOVA	*df*	*SS*	*MS*	*F*	*Significance F*
Regression	2	62.14701	31.0735	19.51819	3E-08
Residual	148	235.6201	1.592028		
Total	150	297.7671			

Despite the significance impact social media on creativity and service innovation, when the creativity tested as a mediator between social media use and service innovation, results exhibited in Table 20 and Table 21 show that there is significance of social media use on service innovation ($p<0.01$) and no significance of creativity as a mediator on service innovation ($p>0.05$).

However, results from the Sobel test shows that there is no significance of creativity as a mediator with social media and service innovation ($p>0.05$) as shown in Figure 28.



Input:			Test statistic:	Std. Error:	p-value:
a	.64	Sobel test:	1.63070284	0.09026783	0.10295304
b	.23	Aroian test:	1.62544032	0.09056008	0.10406877
s_a	.052	Goodman test:	1.63601681	0.08997463	0.10183607
s_b	.1398	Reset all	Calculate		

Figure 28: SOBEL test for mediator creativity (service innovation)

HYPOTHESIS 06: Creativity significantly mediates the effect of social media use on process innovation.

A multiple regression test was used to explore the influence of creativity as a median factor between social media and process innovation. The social media use and creativity was considered the independent variable and the process innovation was considered the dependent variable. As the assumptions of the regression have been tested in the previous section, so we assume the assumptions are met in the following analysis.

As before, we tested for the assumptions of linear regression as explained below:

Firstly, linear regression needs the relationship between the independent and dependent variables to be linear. As shown in

Figure 29, the line plot indicating normal distribution with leads to a result that the regression is justified. The residual plot is showen in Figure 30.

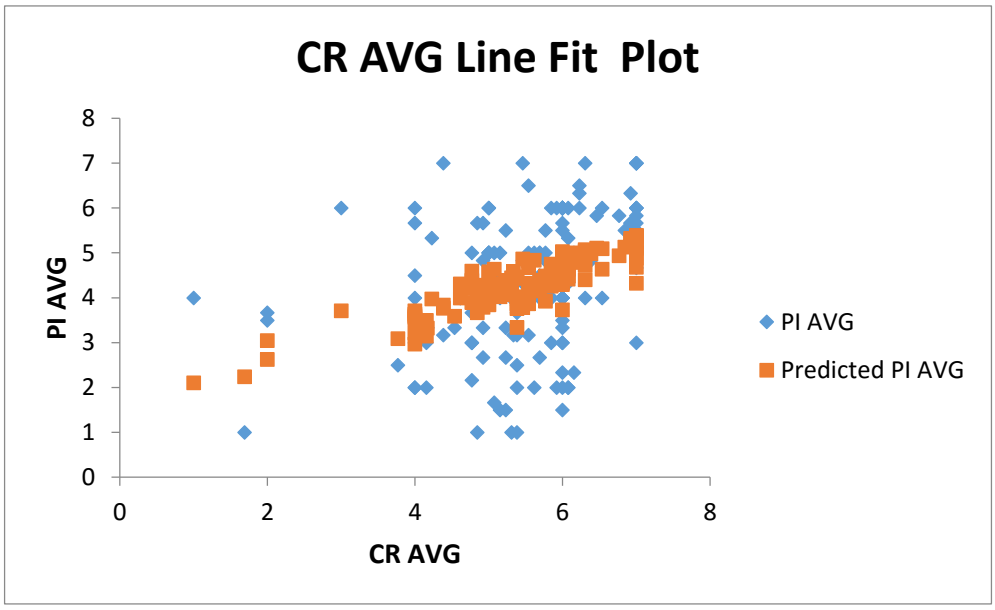


Figure 29: Regression of process innovation by creativity

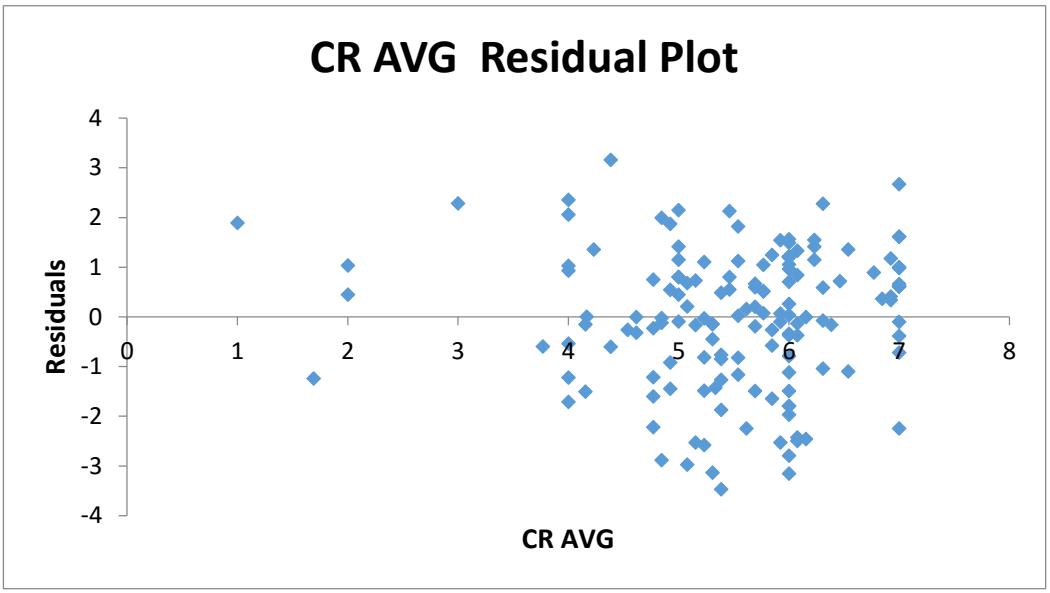


Figure 30: Residual plot of process innovation and creativity

Surprisingly, the results provided in Table 22 show that the effect is not significant. In other words, the creativity has no impact as a mediator between social media and service innovation.

Table 22: Regression social media and creativity (process innovation)

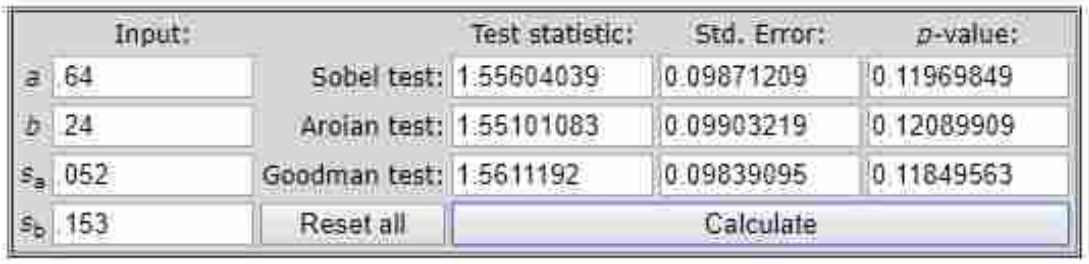
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	**1.235347**	0.619859	1.992949	**0.048106**	0.01043	2.460264
SM AVG	**0.350851**	0.140025	2.505628	**0.013306**	0.074144	0.627559
CR AVG	**0.241372**	0.153428	1.573197	**0.117808**	-0.06182	0.544563

Table 23: Analysis of variance (Mediator process innovation)

ANOVA	*df*	*SS*	*MS*	*F*	*Significance F*
Regression	2	54.73001	27.36501	14.28778	2.12E-06
Residual	148	283.4606	1.915274		
Total	150	338.1906			

Despite the significance impact social media on creativity and service innovation, when the creativity tested as a mediator between social media use and process innovation, results exhibited in Table 22 and Table 23 show that there is significance of social media use on process innovation ($p<0.05$) and no significance of creativity as a mediator on process innovation ($p>0.05$).

SOBOL test indicates no significance while measuring creativity influence ($p>0.05$) as a mediator with social media and process innovation ($p>0.05$) as shown in Figure 31.



Input:			Test statistic:	Std. Error:	p-value:
a	64	Sobel test:	1.55604039	0.09871209	0.11969849
b	24	Aroian test:	1.55101083	0.09903219	0.12089909
s_a	052	Goodman test:	1.5611192	0.09839095	0.11849563
s_b	153	Reset all	Calculate		

Figure 31: SOBEL test for mediator creativity (process innovation)

HYPOTHESIS 07: Creativity significantly mediates the effect of social media use on organizational innovation.

A multiple regression test was used to explore the influence of creativity as a median factor between social media and organizational innovation. The social media use and creativity was considered the independent variable and the organizational innovation was considered the dependent variable. As the assumptions of the regression have been tested in the previous section, so we assume the assumptions are met in the following analysis. As before, we tested for the assumptions of linear regression as explained earlier.

Firstly, linear regression needs the relationship between the independent and dependent variables to be linear. As shown in Figure 32**,** the line plot indicating normal istribution with leads to a result that the regression is justified. The residual plot of organizational innovation and creativity is shown in Figure 33.

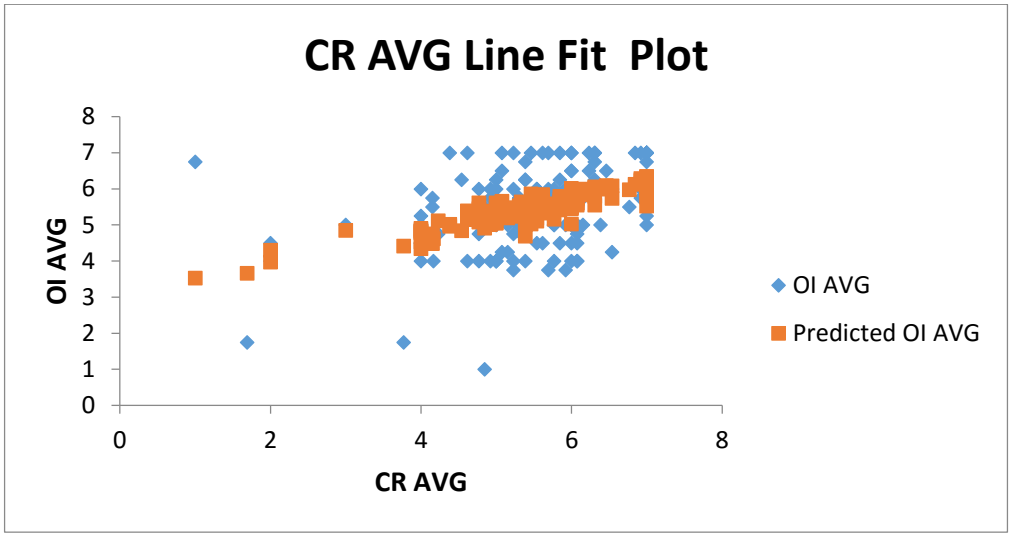


Figure 32: Regression of organizational innovation by creativity

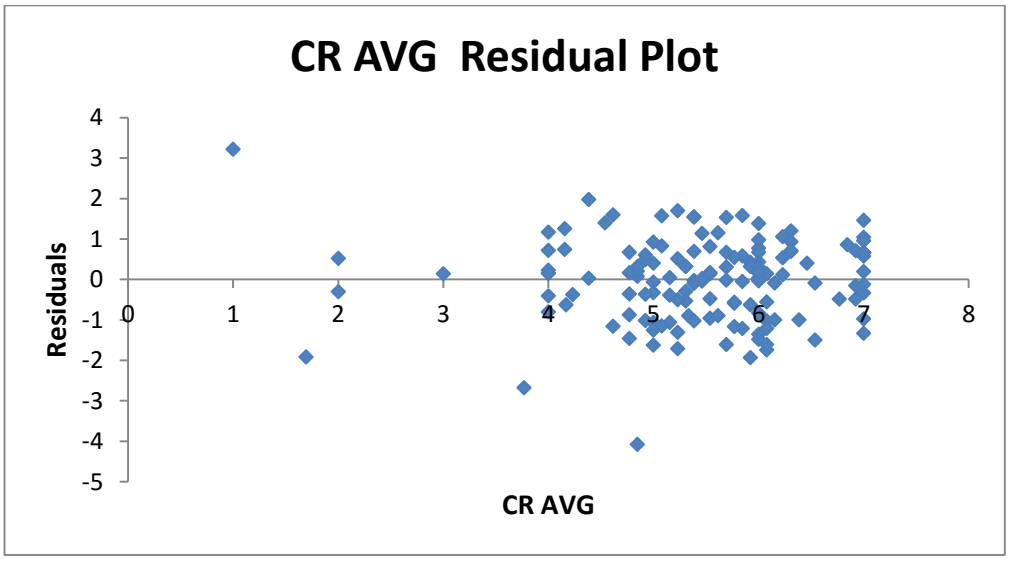


Figure 33: Residual plot of organizational innovation and creativity

Surprisingly, the results provided in Table 24 show that the effect is not significant. In other words, the creativity has no impact as a mediator between social media and organizational innovation.

Table 24: Regression social media and creativity (org. innovation)

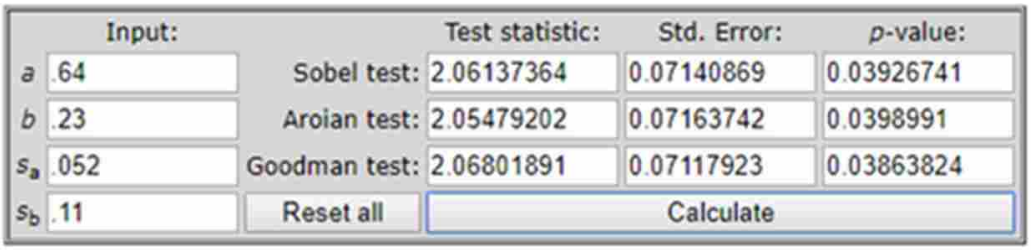
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	**2.813134**	0.445654	6.312368	**3.02E-09**	1.932466	3.693801
SM AVG	**0.266731**	0.100673	2.649485	**0.008937**	0.067789	0.465673
CR AVG	**0.235587**	0.110308	2.13571	**0.034349**	0.017604	0.45357

Table 25: Analysis of variance (Mediator organizational innovation)

ANOVA	*df*	*SS*	*MS*	*F*	*Significance F*
Regression	2	38.66665	19.33333	19.52833	2.97E-08
Residual	148	146.5221	0.990014		
Total	150	185.1887			

Despite the significance impact social media on creativity and organizational innovation, when the creativity tested as a mediator between social media use and organizational innovation, results exhibited in Table 24 and Table 25 show that there is high significance of social media use on organizational innovation ($p<0.01$) and significance of creativity as a mediator on organizational innovation ($p<0.05$).

On the other hand, there was significance of the influence of creativity as a mediator ($p<0.05$) between social media and organizational innovation (see Figure 34).



Input:			Test statistic:	Std. Error:	*p*-value:
a	.64	Sobel test:	2.06137364	0.07140869	0.03926741
b	.23	Aroian test:	2.05479202	0.07163742	0.0398991
s_a	.052	Goodman test:	2.06801891	0.07117923	0.03863824
s_b	.11	Reset all	Calculate		

Figure 34: SOBEL test for mediator creativity (org. innovation)

5.3.9 Organizational Innovation as a Mediator

By definition, organizational innovation as the organizational procedures that manage and govern the innovation process might have impact on implementing the creative ideas to produce innovation. In this section, we are testing the influence of organizational innovation as a mediator that impact the process of service and process innovation enabled by social media. Multiple regression and Sobel test are used while considering organizational innovation mediator with social media (independent variable) and service and process innovation (dependent variables).

H8: Organizational innovation significantly mediates the effect of social media use on service innovation.

A multiple regression test was used to explore the influence of organizational innovation as a median factor between social media and service innovation. The social media use and organizational innovation was considered the independent variable and the service innovation was considered the dependent variable. As the assumptions of the regression have been tested in the previous section, so we assume the assumptions are met in the following analysis. As before, we tested for the assumptions of linear regression.

The results provided in Table 26 show that the effect is significant (*p<0.01*). In other words, the organizational innovation has an impact as a mediator between social media and service innovation.

Table 26: Regression SM and org. innovation (service innovation)

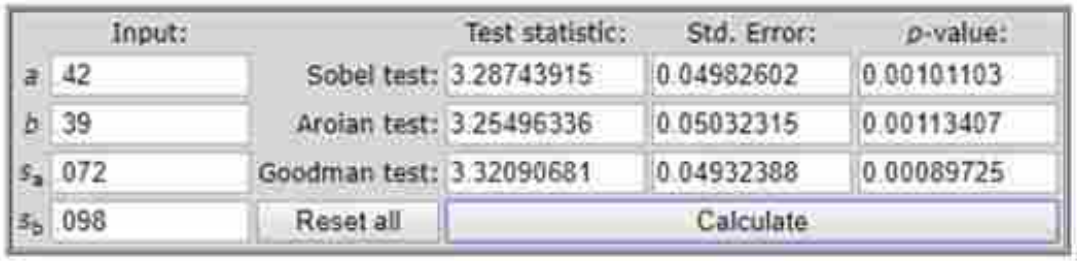
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	**0.667775**	0.561402	1.189478	**0.236156**	-0.44162	1.777174
SM AVG	**0.380963**	0.096063	3.965749	**0.000114**	0.19113	0.570795
CR AVG	**0.389802**	0.098552	3.955283	**0.000118**	0.19505	0.584553

Table 27: Analysis of variance (SM and Org. innovation)

ANOVA	*df*	*SS*	*MS*	*F*	*Significance F*
Regression	2	80.65733	40.32867	27.49136	7.04E-11
Residual	148	217.1098	1.466958		
Total	150	297.7671			

Results exhibited in Table 26 and Table 27 show that there is significance of social media use on service innovation (*p<0.01*) and significance of organizational innovation as a mediator on service innovation (*p<0.01*).

Furthermore, the influence of organizational innovation as a mediator between social media and service innovation found to be significant (*p<0.05*) (see Figure 35).



Input:			Test statistic:	Std. Error:	p-value:
a	42	Sobel test:	3.28743915	0.04982602	0.00101103
b	39	Aroian test:	3.25496336	0.05032315	0.00113407
s_a	072	Goodman test:	3.32090681	0.04932388	0.00089725
s_b	098	Reset all	Calculate		

Figure 35: SOBEL test for mediator organizational (service innovation)

H9: Organizational innovation significantly mediates the effect of social media use on process innovation.

A multiple regression test was used to explore the influence of organizational innovation as a median factor between social media and process innovation. The social media use and organizational innovation was considered the independent variable and the process innovation was considered the dependent variable. As the assumptions of the regression have been tested in the previous section, so we assume the assumptions are met in the following analysis. As before, we tested for the assumptions of linear regression.

The results provided in Table 28 show that the effect is significant ($p<0.01$). In other words, the organizational innovation has an impact as a mediator between social media and process innovation.

Table 28: Regression SM and org. innovation (process innovation)

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	**0.403739**	0.617847	0.653461	**0.514473**	-0.8172	1.62468
SM AVG	**0.335326**	0.105722	3.171782	**0.001842**	0.126407	0.544245
CR AVG	**0.40878**	0.108461	3.768919	**0.000236**	0.194448	0.623112

Table 29: Analysis of variance (SM and Org. innovation)

ANOVA	*df*	*SS*	*MS*	*F*	*Significance F*
Regression	2	75.2284	37.6142	21.16997	8.21E-09
Residual	148	262.9622	1.776772		
Total	150	338.1906			

Results exhibited in Table 28 and Table 29 show that there is significance of social media use on process innovation ($p<0.01$) and significance of organizational innovation as a mediator on process innovation ($p<0.01$).

On the other hand, no significance of the influence of organizational innovation as a mediator ($p>0.05$) between social media and process innovation. (See Figure 36).

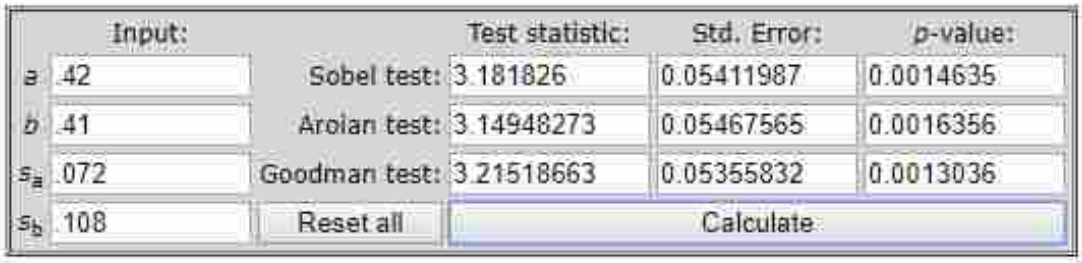


Figure 36: SOBEL test for mediator organizational (process innovation)

5.3.10 Qualitative Perception – Innovation in RTA

Following the significant results, we conducted a series of interviews with the participants including mobility planners across many departments to help understand the role of social media in enhancing employees' creativity and how social media use enhances service, process and organizational innovation. The interviews questioned the subjects about their opinions and perceptions of how the use of social media could help in enhancing employees' creativity, and their propensity to create service, process and organizational innovations. Furthermore, how social media helps them to

accomplish their work at RTA. In addition, the participants of the survey were asked to answer specific question in briefly how social media impact their work in term of creativity, service innovation, process innovation and organizational innovation.

Interviews

The answers to the interview questions revealed the understanding of the mobility planners on the role of social media and its role in developing the organisation in many aspects. The interviews were conducted with many RTA departments' planners and decision-makers across different departments such as marketing, general business, information technology, bus and taxi, and the Director General's office. The responses of the designated departments mainly were related to the department responsibilities, for example:

1. Marketing Department

The Marketing Department officials use social media in enhancing their employees' creativity and increasing the role of social media for communicating with mobility customers. In addition, they use social media technologies as an open channel for customers' complaints and suggestions. The officials pointed out that social media along with RTA mobile services was offering a clear insight about the current mobility situation that would help the marketing department in deciding the future mobility services. This was an example of service innovation.

2. Bus and Taxi Departments

The bus and taxi departments shared the same interest of using social media as they considered themselves as one family in the public transportation service and used

the same platform. They pointed out that they use social media for better accessibility and communicating with transportation customers. In addition, they used social media to follow the updates of the customers on a real time basis. They also pointed out that social media that was widespread and widely used was an advantage to follow customers' opinions and it kept them updated about the customers' satisfaction regarding the bus and taxi services. According to them, this was an example of both process and service innovations.

3. Information Technology Department

The IT department is one of the most important departments in RTA. Besides its responsibility of managing the information technologies in RTA, it is responsible for implementing and developing the communications, collaboration and services technologies. It was pointed out by IT officials that creativity and innovation were the fuel of the technological advancement of the RTA. The IT department director remarked: 'The IT department is the engine of the technological advancement of the mobility sector in Dubai, and the creativity and innovation is the fuel that keep this engine running and one of the main sources of this fuel is the social media'. According to him, use of social media and IT systems allowed employees to think of new ideas and ways of doing things and therefore the use of social media was leading to creativity and innovation in all aspects including as a source of knowledge. Therefore, in the IT department, they train, encourage and motivate employees to use social media to enhance their skills of communication and collaboration with professionals around the world and use social media for searching and finding solutions for challenges and IT issues.

4. Director General's Office

The RTA decision-makers believed that developing the workforce was essential for any development process regardless of their location or position. Therefore, creativity and innovation has always been an important topic in their organisational agenda. In 2015, the RTA approved the innovation strategy that included plans to enhance employees' creativity skills, creativity programmes and innovation in all aspects including service and process. Details of RTA innovation strategy have been provided in Section 2.4.6.

As included in the innovation strategy, the RTA decision-makers considered social media as one of the richest sources of innovative ideas, with a great role in enhancing the employees' creativity skills through communicating, collaborating and sharing thoughts and feedback internally and externally.

In their response to the interviews, they pointed out that they use social media at RTA to enhance employees' creativity and innovation through connecting experts, developers, companies, innovators and customers from all over the world and allowing them to collaborate and innovate (collaborative innovation). In addition, they take advantages of the communication facilities that social media provided for helping in enhancing the employees' communication skills. Furthermore, they use social media to look for cutting-edge techniques and technologies to make transportation smarter and safer.

5. Strategic Planning Department

The core business of the Strategic Planning Department consisted of planning the future of roads and transportation through developing master plans that reflected the overall RTA strategy. Master plans were developed using massive surveys distributed randomly to collect commuters' demands and challenges. This was in addition to the actual facts and figures calculated based on predefined mobility key factor indicators (KPIs).

In this department, the social media was introduced as an additional source of input perceived by the strategic planners to be used as a good source of information to enhance the process of generating master plans. Employees were encouraged and trained to use social media to help the planners in deciding the mobility master plans. For example, enhancing the presentation of the master plans and supporting the master plans by similar practices from around the world.

Their exposure to social media was perceived as an eye-opener, to expose them to alternatives and suggestions for perhaps better ways of running their processes. For them, this was an example of the impact of social media on process innovation.

6. Customer Service Department

The focus of the Customer Service department was on customer happiness. Although similar to the Marketing Department's focus, it was however different with a more in-depth look at the actual services and processes through a customer's journey. Customer journey maps were developed along with expensive and intensive exercises to ensure capturing different possible scenarios based on best practices and previous

consultant experiences; however, it was this unique simple step of capturing a customer's bad experience that needed to be fixed and enhanced.

The customer service employees revealed that they use social media extensively to communicate directly and indirectly with customers. Through the social media technologies such as Facebook, Twitter, Youtube and LinkedIn, the employees were able to become closer to customers, satisfy their need, response to their questions and requests, and collect feedbacks to enhance the services.

Through an open communication channel with the customers, the Customer Service Department of RTA began to have better results in understanding customers' needs, as an alternative to conducting repeated focus groups, which were time-consuming and in some cases costly as well. A senior manager stated the value of social media as

'If we can reach to the pain or gain area of a customer easily through a tweet then it will be fantastic.'

Furthermore, the manager added:

'It's an opportunity to hopefully replace the ethnographic interviews and instead have social media analytics that can generate results of multiple interviews and group them together under a specific subject or a need to better reach out to customers through new products and services.'

The examples above illustrated how the use of social media was impacting process innovation.

To summarise, as indicated by the quantitative result of how the employees using social media; our interviews with the mobility planners across departments indicated consistency with the survey results. Majority of the participants stated that they are using social media for accessing information to enhance their work, find solution for problems, and searching for developing opportunities to develop their work.. The interviews with the mobility planners in RTA indicated that they considered social media to be of great importance for innovation in service and process, creativity and as a source of knowledge. This was supported by the results of our quantitative study, which indicated that using social media had a highly significant positive impact on enhancing employees' creativity, service and process innovation.

As a current and continuous plan to consider the social media as a source in knowledge and innovative ideas, the RTA is encouraging its employees to engage more with social media tools and technologies to gain ideas and methods to enhance and improve the services and products. The main orientation towards social media came from the mobility planners and decision-makers who are keen to ensure customers' safety and comfort. In addition, social media is being used as a source of getting latest news and events alerts that may help the mobility planners to prioritise their focus, as suggested by the Director General's office. The social media could be used to create innovation and positively change the people's way of thinking and processes, for example, considering a voting system filled by the customers to apply, enhance or even stop services.

Survey Questions

In the survey, question to investigate the employees' perception about social media and how social media affect their creativity and innovation performance were included. For example, how did social media enhances employees creativity and how social media use impact employees innovativeness in term of service, process and organizational innovation?. In the following sections, description of the employees perception in unswering the qualitative questions of the survey with examples.

In brief, how did social media use enhance your creativity skills at RTA?

The employee's responses indicated different point of views about social media benefit, such as, access to information and latest news, learning and self-upgrade including learning from others mistakes to avoid them, expanding knowledge, staying up-to-date and co-up with technology trends, benchmarking and data access worldwide, access to creative ideas and generate new ideas including validation of ideas and suggestions as well as improving existing ideas. In addition, collaborating with others including colleges from inside and outside workplace.

"social media incorporated all creative ideas in one place and made it easy for me to see the innovative ideas implemented around the world and discuss the possibility to implement such ideas in RTA. Innovation week was a good opportunity to meet companies and service providers participating and share their ideas and ways to enhance RTA services"

1. Access to information and latest news

Information and knowledge are shared with people, not organizations. It is known that creating relationships is essential to business success; social networking connects people, who often establish relationships lasting a lifetime.

Majority of employees have reported that they use social media for accessing latest information about innovations, technologies, services and products. Which from their point of view is essential in the development process of any organization. In fact, following the trend of the advancement at all aspects is essential for any organization for sustainability and development.

"I think this should be limited on some work, as scope of work that required new ways to know what's the new at around the world regarding RTA scope of work".

Furthermore, employees pointed out that they can use social media as a form of communication to discover and deliver job-related information. Social media in the workplace is another avenue for workers to find information that is relevant to the job or discover new information they can apply while on their job. More importantly, it's a tool to verify and get information from reliable sources. It is also a way for employees to spread information. This transmission of information can help with brand awareness and open up new recruiting and business opportunities. For instance, participant's responses were:

"simply social media became a major source of information, practices, reviews, opinions, debates .... etc. that cannot be neglected despite of its non-scientific and bias basis."

"Search for information for creating new knowledge to develop adequate plans and schedules for the implementation of new ideas. Exploring the ideas and look for best international practice and in this field and applying different methodology and approach to implement these ideas"

2. Learning and self-upgrade

Employees consider social media in the context of learning is an open ware with no limitation. They pointed out that social media is a school that has no opening and closing time and you can attend whatever, whenever and however class you need with almost free of charge. In contrast, social media is defined as learning that takes place independently from structured instructor-led classes or course-specific work such as Massachusetts Intitute of Technology open course ware (MIT-OCW). More than 60 percent of the survey sample, felt that social media offered valuable learning opportunities for employees. For instance,

"*Many of the educational institutions and design bodies use different social networks to share their news and resources. Many students prefer to follow these bodies on social network websites because it is easier to reach and allow them to follow all the resources and projects directly from their Facebook, tweeter...etc.*"

Social media is an enabler for motivation and encouragement through external communication and collaboration. Participants pointed that through social media they could access to experts and learn from them to develop and learn from their mistakes to avoid it.

3. Collaborate with others Experts & Influencers access, opinions and feedback

Social media creates personal networks of friends and professional networks of colleagues available to offer information at the click of a mouse. Meeting others through online conversations creates and strengthens relationships, alerting employees to who knows what, and where to go for information. Through social networks, people share common interests or needs who wouldn't normally meet; they support each other in knowledge sharing and problem solving. Furthermore, the great thing about using social media is that employees learn who the experts are in particular fields. When they start following these experts they learn more and gain useful content from them, this empowers them to produce great ideas and improvement. It also increases the speed of getting reliable information, which increases agility. Social media has the ability to broaden employees' perspective on various fields and gives illuminating, instant content that is new. They also have the opportunity of engaging experts to get knowledge according to their expertise.

4. Enhancing communication

Social media allows people to get and stay in touch, minimizing the need for endless email streams or the wait for an 'expert'. Online users are surprised by how quickly they get responses from employees in other organizations in response to questions and complaints posted on company websites. Timely communication fosters customer satisfaction, which creates brand loyalty and contributes to the bottom line.

Social media at work facilitate continuous employee communication, which promotes awareness of and helps employees better understand the roles and

responsibilities of colleagues in other departments. This helps employees feel a part of the whole, increasing employee satisfaction at work.

"I seldom use social media for RTA, when i do, it's to promote an event I'm managing and its done via marketing and corporate communication team, which is the approved process in RTA".

Furthermore, participants suggested that organizations can make use of social media in a variety of ways. Departments can hold brainstorming sessions or maintain ongoing conversations with questions and answers on a blog; teams can use wikis to manage projects, share best practices and research case studies; the CEO can keep a blog or record a podcast; and organizations can immediately deliver news to employees.

Collaborative technologies are valuable in the workplace because of their effectiveness in improving understanding and teamwork, building relationships and developing lateral communication. The novel aspect of social media is their conversational tone: Knowledge sharing takes place through processes including discussion with questions and answers (online forums), collaborative editing (wikis) or storytelling with reactions (blogs).

5. Finding creative ideas

Constant idea sharing in a cutting-edge environment creates a culture of innovation and collaboration. Social media allows organizations to easily conduct virtual brainstorms and focus groups by tapping into a broad base of diverse thinking and creativity.

"Getting to know new ideas and methods when reviewing and listening or watching new content on YouTube or Ted talks that suggest new ways to do things at work".

"social groups such as Facebook groups, LinkedIn groups, and Google Plus groups were built to gather people with the same interests to share ideas and collaborate together. Many students and designers have started to build learning groups based on schools, classes, and even specific courses. In these groups, students and designers use groups as method to learn, discuss assignments, and share projects together. The digital learning group replaced many of the local school learning groups because it allows students to communicate during travels or summer breaks."

Agreement of employees to the idea that social media is a virtual place where all people from different backgrounds, education level, experiences, specialization and more importantly widely scattered, indicates that the employees are aware to the importance of social media for creativity.

"Providing tools and technique for thinking out of the box, ex: online session, training, group discussion and knowledge sharing and show cases. Hearing how other came up with new innovative ways where we can adopt and customize it in a way that suit the company and it is encouraging and spreading the culture of being innovative".

Social media provide access to connections with a variety of perspectives and non-redundant resources such as information or knowledge across departments and organizations, which in turn may establish social relationships and resources that facilitate creativity. Consequently, the dominant logic is that social relationships with

heterogeneous groups may benefit creativity due to the amount of diverse information they bring.

In the context of innovation, the participant's responses were almost identical while answering the theoretical question about the impact of social media use on service, process and organizational innovation. Unsurprisingly, the employees understanding about innovation is that a new idea implemented to become a service or product that has value and generate revenue to the organization. Therefore, in the next paragraph, the qualitative analysis is merged to include employee's perception about the impact of social media on service, process and organizational innovation.

In brief, how did social media use impact your innovativeness in term of service, process and organizational innovation at RTA?

Social media consists of a set of tools that enables users to become aware of and react to real-time information and evolving content. The number of social media users is growing rapidly and, for example, the amount of information passing daily is huge. The information passing over social media channels are in form of knowledge, expertise, social posts and multimedia. This huge amount of information is a great opportunity to employees to get involved in order to increase their knowledge and to extract ideas that foster the development in their workplace. Furthermore, employee's engagement is as the energy or the passion that employees harbour for their jobs and their employer, which result in emotional and intellectual commitment to their organization. Moreover, it's an impetus for an employee to employ his/her discretionary efforts, experience, and energy, which engender generating creative solutions that, in turn, directly benefit the employers without any explicit assurance of

personal gain. “Engagement ultimately comes down to people's desire and willingness to give discretionary effort” to their jobs.

On the other hand, collaboration operationalizes knowledge diversity in such a way as to create value. It facilitates the link between various types of knowledge deployed by connected actors and leads to innovation through dynamic synergies, resulting in new knowledge being applied and created. Connectivity can also be considered as a social mechanism that is an engine of innovation, through its capacity to forge interactions inside and outside the firm, to unleash expertise, creativity and knowledge combinations. Learning derived from these connections and the consequent combinations of various subjects, domains, people and organizations, underpins innovative activity. Indeed, SM increase the exploitation of existing knowledge through the re-use of lessons learned and best practices. And boost the exploration of novel opportunities drawing on new sources of knowledge inside or outside the firm. These participants insist on the fact that innovation processes have become increasingly interactive and require simultaneous networking across multiple ‘communities of practice’’ on connected platforms, defining networking as a process of interrelating and sense making. For instance;

“new ideas shared in social media are often related to new services, people are proud to share their experience in using a new service or even trying it, image if they are as well trying to market and promote those services, they will always highlight the positive side of services that could be a way to improve or introduce a new service to RTA”.

"we should be use media to impact our innovation for new services and this should be compare around the world and be updated for the new service and look to the future to proceed that".

In term of process innovation, they responded;

"Social media gives access to information that may not easy to be found otherwise, the related subjects could be offered as a service by one entity that results in an internal process improvement, in the field of technology social media suggests many ways to improve processes from defining to automation".

"The ease of access to brilliant, innovative and sometimes crazy ideas from all sorts of people, organizations create wider awareness and opens avenue for greater understanding of things in and around RTA. It then enables the application/introduction of changes that can lead to improvement in the organization".

And in the context of organizational innovation,

"social media facilitate knowledge in networks across organizations; all of these features are essential for company innovativeness and competitiveness".

"Organizations adapt the culture of innovation and provide the environment and tools for being innovative and try to enhance the service to be innovative rather the traditional way of delivering the services".

In the conclusion, the responses of the participants to the question of the impact of social media on creativity, service, process and organisational innovation was mainly about the communication and collaboration that social media facilitate for sharing and exchanging knowledge. Moreover, the majority agreed that social media is a great enabler to creativity and innovation and suggested that the organization have to have a policy enables the employees to be more exposed to social media during work especially for professional purposes.

5.4 Discussion

Social media is changing the face of our personal interactions, with an unprecedented rate of adoption that outpaces previous innovations such as the radio, telephone, television, and even the iPod. These tools are intuitive to use and allow people to share information, collaborate, discuss common interests and build relationships. With this trend well underway, businesses are beginning to explore how social media can help them grow and improve business through innovation, not just with common practices such as outbound marketing, but to enhance business interactions as part of the innovation and development process. An increasing number of companies are trying to make sense of the world of Web 2.0, Enterprise 2.0, social media applications and social computing technologies, and align their innovation and strategic development priorities with social initiatives. How far social media can enables employee’s creativity and innovation in order to enhance business development?

In the current study, the impact of social media uses on creativity, service innovation, process innovation and organizational innovation has been investigated.

The social media as it is wide range platform for communicating, collecting and sharing knowledge give the advantages to employees to communicate with experts, collaborate with other entities, and share information. One of the most important advantages of social media is the huge amount of knowledge that transforming every day from the numerous amount of users. Accordingly, it provides faster and less costly access to knowledge facilitating product development and innovation due to users' input (Siwek, 2014); (Stelzner, 2014). As examples show, external information is utilised by firms for products and services across all innovation stages ranging from idea generation contests, user feedback through polls and competitions to whole co-creation campaigns. Beyond anecdotal evidence of sourcing knowledge from users of social media, there is no large-scale empirical evidence on whether or not firms' external focus through social media presence significantly enables corporate innovation.

The central question analysed in this paper is whether social media serving as a knowledge-sourcing tool to enhances firms' innovative capabilities. The analysis is based on quantitative and qualitative data collected from RTA employees. 151 employees participated in the study responding to questions regarding their use of social media, how social media affected their creativity, to what extent the ideas extracted from social media is useful for service, process and organizational innovation.

In order to answer the research questions, simple regression analysis is conducted on the survey responses. The findings revealed that social media use have a positive impact on employees' creativity. Furthermore, social media can be consider as a source of knowledge that enhance employees' ability to suggest, propose new

ideas and improvement to and existing services, processes and organizational procedures. Hence, the social media could be consider as an enabler for innovation in organization.

In the impact of social media on employees creativity, the results revealed that 85.43% of the participants believes that social media provides identical platform for reading, sharing, collaborating, communicating and discussing knowledge regarding their work at RTA. They also believe that the open communication and collaboration facility that social media provides, helped them to be more creative and enhanced their cognitive processes for a creative thinking. Unsurprisingly, the analysis of the responses exhibits that there is a high significant of the impact of social media use on employees creativity. In addition, the findings here are not far from what have been concluded by many studies that open discussion and sharing knowledge enhances employee's creativity, for example, (Amabile et al., 1996; Gumusluoglu & Ilsev, 2009; Shalley & Gilson, 2004; Zhou & Shalley, 2003), the role of social media in enhancing employee's creativity (Baer, 2010; Hemphälä & Magnusson, 2012; Shalley & Gilson, 2004; Sigala & Chalkiti, 2015; Zhou & Shalley, 2003).

Consequent to the fact of that social media is a source of huge amount of knowledge in almost all fields, in the current study; an exploration of the impact of social media use on service innovation in RTA carried out. The research question asked is to what extent the suggested ideas are for new or improvement of an existing services. 79.5% of the participants found that using social media helped them to find new services, improvement to an existing services, solves for problems and consumers feedback about implemented services. The statistical testing revealed that the social media is significantly impact service innovation. In other words, social media found

to has positive impact on enhancing service innovation in organization. The results are consistent with previous studies (Carroll & Helfert, 2015; Hartley, 2005; Ojasalo, 2016). Social media applications are becoming more embedded into our everyday lives, both professionally and personally. With over two-third of survey respondents indicating that they are using social media for service innovation, there is a clear movement underway to leverage social media to help drive higher levels of product (services) innovation and profitability. While the majority of the efforts today are small in scale, the early results are very promising. The most successful Social Product Innovation initiatives are those that align with the company's overall product development and innovation strategies as found consistent with recommendation from Kenly and Poston (2011).

Social media can provide access to novel information about customer needs and technological solutions unknown to the organization. There is widespread acceptance that incorporating knowledge from a broad scope of external sources into the new product development process leads to higher innovation performance (Foss et al., 2011). In the current study, it has been found that majority of the employees have recognised that the vast number of individuals and communities that converge around social media sites embody a large and rich source of external knowledge. Indeed, fundamentally the term social media refers to "a group of internet-based technologies that allows users to easily create, edit, evaluate, and/or link to content or to other creators of content" (Majchrzak et al., 2013). As employee have recognized the potential applications and benefits of using social media for process innovation, forecasts for attention from management are set to increase. With regard to RTA, it has been suggested that social media use will broadly influence the innovation process.

Users can share experiences, needs, and problems with current products, but also can take part in a range of firm initiated activities from posting comments on product ideas to participating in co-creation activities. The findings of the current study as it finds positive impact of social media use on process innovation is consistent with that collaboration, sharing, exploring and communicating using social media will foster the development process and innovation (Brem & Bilgram, 2015; Culnan et al., 2010; Kaplan & Haenlein, 2010); ; .

In term of organizational innovation, the current study investigated the impact of social media on organizational innovation from the point of how innovation affected the organization to be called an innovative organization. the organization to be distinguish as innovative organization, certain criteria have to be met, for example, lays emphasis on developing new services, rate of introduction of new services into the market is higher (or comparable) to other service providers, spending on new service development activities is higher than industry average, and rate of adoption of new services for the first time on the market is higher (or comparable) to other service providers (Hassan et al., 2013). The findings of the study exhibited that more than 70% of the participants agreed that RTA is fulfilling these criteria as innovative organization. From another perspective, the innovation in organization required development in the organizational procedures to implement the creative ideas and implement them to innovations. Which in other words refers to the definition of organizational innovation. The relation between social media and organizational innovation is that how the organization is open to adopt ideas extracted from social media to implement and process them to convert them to useful services. Many researchers considered organizational innovation as essential dimension of process

innovation (Mergel, 2015; Papinniemi, 1999; Rochina-Barrachina et al., 2010). At both perspectives, the findings of this study prove the role of social media as enabler to either changing in the organizational structure for implementing ideas and convert them to innovations, or the development of the organizational innovation as part of the process innovation which it's consistent with previous studies (Amabile, 1988; Damanpour, 1991; Foss et al., 2011; Gumusluoglu & Ilsev, 2009; Mergel, 2015; Papinniemi, 1999; Rochina-Barrachina et al., 2010).

In order to further exploring the impact of social media on innovation, and as the creativity considered the force of innovation, multiple regression analysis is conducted to explore the mediating influence of creativity between social media and service, process and organizational innovation. Surprisingly, no significant influence of creativity o mediates the relationship between social media and service and process innovation found. However, the findings indicate that creativity mediates the relationship between social media usage and organizational innovation. The contradiction of the current findings may be resulted from the understanding of the employees to the difference between innovation and creativity. In addition, it might be resulted from the nature of using social media for extracting knowledge for innovation. Indeed, how employees use social media is highly subjective. In another words, some employees revealed that they use social media to follow the updates of the implemented services and process and some they use social media to look for improvement ideas to the existing services and process. In sum, the nature of using social media for innovation may limit the influence of creativity that fosters innovation. However, the findings cannot be generalized as it limited to specific organization (RTA).

The organizational innovation can be seen from two perspectives in term of innovation. First, is that organizational innovation is the restructuring of the organization for optimal implementation of the innovation, the organizational innovation has great impact on implementing innovations. Second perspective is that organizational innovation is part of the process innovation, the process of implementing ideas to convert them to useful innovation is critical for development and advancement. For the data collected to cover both perspectives, multiple regression analysis is conducted to explore the influence of organizational innovation as a mediator between social media and service and process innovation. The results of the analysis revealed that there is high significant of the organizational innovation as a mediator.

To the extent that the effectiveness of social media for new product development is influenced by so many different skills and competences tied to different functional areas, departments, and individuals, it's critical that top leadership play an active role by encouraging cooperation and idea sharing among the various players (Damanpour, 1991; Shalley & Gilson, 2004). In some organizations, there may be the need for a "social media innovation leader" whose job is to align the different strategies and tools and help define a coherent social media strategy for new product development. The job would not only be to manage relationships with users and contributors (vital as this is) but also to manage the relationships among the various colleagues in the company's different social media camps (Gumusluoglu & Ilsev, 2009; Shalley & Gilson, 2004; Weeks et al., 2017).

In sum, the findings of the qualitative and quantitative analysis together support that social media use has great impact on creativity and innovation in organization. the

importance of this study is from the research questions that explore the impact of social media on innovation. Despite to the mount of research on the role of social media in innovation, the current study considers the first of its kind to investigate the role of social media on specific types of innovation. Which add great value to the community of research and organizations.

Chapter 6: Conclusion and Recommendations

6.1 Conclusion

Although technological advances in social media support innovation by changing the way people search, read, share and discuss information, no previous research has investigated the specific role and influence of social media on employee creativity and its role in service and process innovation. This is in contrast to recent arguments highlighting the need to study the influence of employees' social interactions on their creativity. This study has explained and examined the role of social media in employee creativity by showing how the use of social media can enrich people's cognitive processes and support conversational and collaborative KM processes, whose inter-play at an intermediate level can fuel and enhance creative processes and outcomes. It has also provided a better understanding of the relation between social media and service and process innovation. The results show that there is a significant impact of social media on enhancing the employees' innovation and creativity, and that social media has a similar significant and positive effect on service and process innovation. Thus, the use of social media as a rich source of information has proven to have a significant effect on employees' knowledge management skills, innovation and creativity. The enhancement of these skills is related to the social media tools that allow the users to post, share and interact openly and globally leading to collaborative innovation.

6.1.1 Implications for Research

Firstly, findings from the study indicate that social media positively impacts creativity and contributes to the existing studies on creativity by providing primary

evidence of the existence and relation of an intermediate level (links/relations amongst people and their use for communication/interaction) with employee creativity. This is in line with prior studies which indicated the positive role of social media in introducing new ideas (Bertot et al., 2012) and enabling exchange of thoughts and ideas (Walker, 2014). This is important because it indicates that the use of social media could positively affect innovation in the public sector organisations by influencing creativity through enhanced collaboration. Future research could explore this further by using a different domain, and check whether all types of creativity influence innovation the same way.

Secondly, findings indicate that social media positively affects service innovation. Whether the effects apply for both kinds of innovation and whether they are incremental or radical could be investigated further. While prior studies have suggested that, the cumulative benefit of incremental innovations is higher than that of radical innovations, these needs to be investigated further.

Thirdly, findings indicate that social media had a significant impact on process innovation as well. This is in line with the literature where the effects of social media on process innovation have been documented. Since we chose the internal processes within a service firm, future research could extend this study to examine other processes in other domains and firms.

Fourthly, findings of investigating the impact of creativity on the relation between social media and innovation as a mediator revealed that there is no significant role of creativity to mediate the relation between social media and service and process innovation. However, it was found that creativity significantly mediates the relation

between social media and organizational innovation. This bears more explanation and future studies could examine whether creativity impacts process and service innovation in other kinds of organizational structures and in different kinds of firms across different nations. It must be noted that this study was conducted in the context of a public utility and so it remains to be seen if findings vary.

Furthermore, the organizational innovation was investigated as a mediator on the relation between social media and service and process innovation. Unsurprisingly, significant influence was found for the organizational innovation as a mediator. Therefore, future research should focus on investigating other mediators that affect the relation between social media and innovation. For example, social experience, level of education, years of experience, type of the job (indoor or outdoor) and any other mediator could affect employees involvement in creativity and innovation activities. Future studies could also investigate whether organizational innovation remains a significant mediator across different kinds of organizations including private firms.

Finally, the findings provide useful ideas for advancing research in the field even further, and a better understanding of the relationship between the use of social media and service and process innovation. Understanding this relationship will form a basis for further research for developing and enhancing the methods and strategies of using different social media tools for innovation and developing public sector organisations. This study also provides numerous practical implications, which are discussed next.

6.1.2 Implications for Practice

Firstly, this study indicates that use of social media is indeed good for organisations because of its impact on creativity and innovation through greater collaboration. Firms should note this and encourage employees to collaborate using social media. This could take a formal or an informal route. Knowledge management literature has also indicated that employees tend to share more knowledge and collaborate more when using informal tools and therefore it would make sense for firms to encourage their employees to use such tools.

Secondly, the findings of testing the impact of social media on employee's creativity revealed that there is a significant impact of that using social media as knowledge source has high impact on enhancing employee's creativity and knowledge management skills. The creativity and knowledge management are interconnected to that managing the knowledge extracted from social media is key for useful and new ideas that are essential for creativity.

Thirdly, the findings of the study revealed that social media is a significant enabler to innovation (service, process and organizational). In fact, the increasing engagement of organizations, experts, scholars and customers of different fields with social media is a great opportunity to employees to expand their knowledge and enables them to be more innovative. Enhancing employee's innovativeness impact not only the employees themselves, but also impact the organization including the services provided and enhancing the process of delivering, producing products and services.

Moreover, findings indicate an impact on service innovation. This is critical to firms that are aiming to serve their consumers by the introduction of new services.

Firms can encourage use of social media to mine new ideas and offer superior customer service. Social media has a potential to deeply engage employees with serving their customers, which will foster loyalty. Service innovation could also enable the firm to be agile. Hence, using social media at work could actually be beneficial.

Fourthly, it has been stated in the literature that creativity is the force for innovation. However, it has not been indicated the source of creativity and left as general statement. In the current study, the creativity tested as a mediator between social media and innovation in order to measure the creativity that enabled by social media influence on innovation. Surprisingly, the findings indicated that there is no significance influence of creativity as a mediator to enhance innovation through social media use. This related to many reasons, among them, the employees understanding of the difference between creativity and innovation, the knowledge of using social media technologies and skills to extract useful knowledge and information essential for creativity and consequently implementation of innovation.

Finally, fundamentally, organizational innovation could be the processes and procedures that organization apply to implement innovation. In this context, the organizational innovation is tested as a moderator between social media and service and process innovation to measure the influence of how organizational procedures could impact implementing the innovation enabled by social media. The findings revealed that there is a significant role and influence of the organizational innovation on the service and process innovation enabled by social media which indicate that the targeted organization, RTA, is open for innovation and willing to carry on with new ideas that might create revenue and in the first place provide better mobility service to the customers.

These findings will help public sector officials, decision-makers and leaders to understand the role of social media use in developing countries by taking advantage of social media to examine other organisations and developing countries, getting closer to their people and inducing them to be a part of the national development plan. As this research was carried out in one of the major public sector-bodies in Dubai, it will add considerable value to the innovation strategy of the RTA for developing road and transportation services, through encouraging designated departments such as the Research and Development Department, Marketing Department and Information Technology Department to consider a new source of knowledge for developing the organisation and the services and solutions it provides.

6.2 Recommendations

The findings gathered from mobility planners revealed relatively high levels of social media exploitation for KM activities (searching, storing and categorising information), but also a critical gap in social media exploitation for higher order KM activities that reflect use of social media for discussing and sharing information with others and for creating new knowledge. Thus, mobility professionals need to enhance their participatory and engagement level in social media by becoming active discussants, analysts, commentators and producers of online content. The results also highlighted that the engagement in higher levels of social media exploitation and joining various social networks and media is necessary, as the latter are related with higher levels of employee creativity performance. This is because participation in social networks can provide employees with access to various types of information (video, audio, hypertext) and perspectives, while the use of social media for higher

level KM activities create an interplay between individual and social cognitive processes.

To achieve that, employees need to advance their social media literacy skills and capabilities. Analytically, the employees need to acquire capabilities for effectively performing all the three levels of social media exploitation. For example, employees need to develop the ability:

- to identify and search content on social media platforms; to use social media for storing and categorising content; and to evaluate and judge the authenticity and reliability of information found on social media (first exploitation level, i.e. become effective collectors and recipients of information).
- to influence the way in which content is diffused, moves through and is being debated in social networks; and to become social influencers who spread and reinforce the message or public opinion influencers (second exploitation level, i.e. become effective distributors and commentators of information).
- to select and combine online content for creating new knowledge; and to reflect on discussions, summaries and synthesise their results (become effective co-creators of knowledge).

6.3 Limitations

Firstly, this study was conducted using limited data from a specific firm in the public sector. Although we tried to increase the relevance and validity of our study by including real-world experts and offering a qualitative interpretation, we acknowledge that this study is limited in its external validity. Therefore, it is important to replicate the study using a larger data set from different firms and industries in the UAE (and

the world) and test the validity of our findings. This also includes investigating how the findings of this study can be adapted to other governmental service organisations in the UAE and worldwide.

Secondly, the study was conducted using categorical data. As technology tools advance very rapidly and the way in which people interact with the technology is also changing, further longitudinal research is required to further understand the dynamics of the human–computer interactions and their influence on people's cognitive and creative processes. In addition, the findings should be refined and tested in other countries and other cultural and industrial-professional contexts, as the variables may also influence the ways in which social media is used and influences employee creativity.

Thirdly, in an organisation like the RTA, the main duty of the managers, planners and officials is to provide safe, easy and sustainable mobility services. And as a step to providing these major services to a Smart City such as Dubai, they should also focus on developing the processes capable of providing such services. Therefore, future studies can investigate how the use of social media could help in the planning, development and implementation of such processes not only in the RTA but in other organisations in other smart cities.

Finally, the RTA Customer Relationship Management (CRM) system is a database recording all the ideas and suggestion of the customers and the employees. Comparing the findings of the study with the orientation of the ideas and suggestion in the CRM will help in identifying the strength and weaknesses in the employees'

innovation and creativity skills. This was beyond the scope of this study, but this is something that future studies could address.

References

Abdullaev, R. (2011). Impact of remittances on economic growth in selected Asian and Former Soviet Union countries. Student Papers. Lund University.

Abernathy, W. J., & Utterback, J. M. (1978). Patterns of industrial innovation. *Technology review*, *80*(7), 40-47.

Abrahamson, E., & Fairchild, G. (1999). Management fashion: Lifecycles, triggers, and collective learning processes. *Administrative science quarterly*, *44*(4), 708-740.

Adler, P. S., & Chen, C. X. (2011). Combining creativity and control: Understanding individual motivation in large-scale collaborative creativity. *Accounting, Organizations and Society*, *36*(2), 63-85.

Agarwal, J., & Ndubisi, N. O. (2014). Quality performance of SMEs in a developing economy: direct and indirect effects of service innovation and entrepreneurial orientation. *Journal of Business & Industrial Marketing*, *29*(6), 454-468.

Ahuja, G. (2000). Collaboration networks, structural holes, and innovation: A longitudinal study. *Administrative science quarterly*, *45*(3), 425-455.

Al Maktoum, M. b. R., & Bishtawi, A. (2006). My vision: Challenges in the race for excellence. *London: Motivate*.

Amabile, T. M. (1988). A model of creativity and innovation in organizations. *Research in organizational behavior*, *10*(1), 123-167.

Amabile, T. M., Conti, R., Coon, H., Lazenby, J., & Herron, M. (1996). Assessing the work environment for creativity. *Academy of Management Journal*, *39*(5), 1154-1184.

Amar, A. D., & Juneja, J. A. (2008). A descriptive model of innovation and creativity in organizations: a synthesis of research and practice. *Knowledge Management Research & Practice*, *6*(4), 298-311.

Amit, R., & Schoemaker, P. J. (1993). Strategic assets and organizational rent. *Strategic management journal*, *14*(1), 33-46.

Anderson, N., Potočnik, K., & Zhou, J. (2014). Innovation and creativity in organizations: A state-of-the-science review, prospective commentary, and guiding framework. *Journal of management*, *40*(5), 1297-1333.

Andrews, K. R. (1971). *The concept of corporate strategy*. Oxford University Press, New York.

Andriole, S. J. (2010). Business impact of Web 2.0 technologies. *Communications of the ACM, 53*(12), 67-79.

Angelidou, M. (2017). Smart city planning and development shortcomings. *Tema. Journal of Land Use, Mobility and Environment, 10*(1), 77-94.

Ansoff, H. (1965). Corporate Strategy: An Analytical Approach to Business Policy for Growth and Expansion. McGraw Hill Book Co.: NY.

Argote, L. (2012). *Organizational learning: Creating, retaining and transferring knowledge*: Springer Science & Business Media.

Asgarian, N. (2012). Knowledge management capacity and innovation performance. *Management Science Letters, 2*(8), 2739-2746.

Aubke, F. (2014). Creative Hot Spots: A Network Analysis of German Michelin-Starred Chefs. *Creativity and Innovation Management, 23*(1), 3-14.

Axtell, C. M., Holman, D. J., Unsworth, K. L., Wall, T. D., Waterson, P. E., & Harrington, E. (2000). Shopfloor innovation: Facilitating the suggestion and implementation of ideas. *Journal of occupational and organizational psychology, 73*(3), 265-285.

Baer, M. (2010). The strength-of-weak-ties perspective on creativity: a comprehensive examination and extension. *Journal of applied psychology, 95*(3), 592-603.

Baldissin, N., De Toni, A. F., & Nonino, F. (2007). Evolution of the management games: Towards the massive multiplayer online role playing game. *Learning with Games 2007, Sophia Antipolis, France–Proceedings*, 9-16.

Barney, J. B. (2001). Is the resource-based "view" a useful perspective for strategic management research? Yes. *Academy of management review, 26*(1), 41-56.

Barras, R. (1986). Towards a theory of innovation in services. *Research Policy, 15*(4), 161-173.

Basadur, M. (2004). Leading others to think innovatively together: Creative leadership. *The leadership quarterly, 15*(1), 103-121.

Baumol, W. J. (2005). Education for innovation: Entrepreneurial breakthroughs versus corporate incremental improvements. *Innovation policy and the economy, 5*, 33-56.

Behringer, N., & Sassenberg, K. (2015). Introducing social media for knowledge management: Determinants of employees' intentions to adopt new tools. *Computers in Human Behavior, 48*, 290-296.

Benner, M. J., & Tushman, M. L. (2003). Exploitation, exploration, and process management: The productivity dilemma revisited. *Academy of management review, 28*(2), 238-256.

Berman, S. L., Down, J., & Hill, C. W. (2002). Tacit knowledge as a source of competitive advantage in the National Basketball Association. *Academy of Management Journal, 45*(1), 13-31.

Bertot, J. C., Jaeger, P. T., & Hansen, D. (2012). The impact of polices on government social media usage: Issues, challenges, and recommendations. *Government Information Quarterly, 29*(1), 30-40.

Birkinshaw, J., Hamel, G., & Mol, M. J. (2008). Management innovation. *Academy of management review, 33*(4), 825-845.

Biygautane, M., & Al-Yahya, K. (2011). *Knowledge management in the UAE's public sector: the case of Dubai.* Paper presented at the Dubai School of Government, paper presented at the Gulf Research Meeting Conference at the University of Cambridge, UK.

Boeddrich, H. J. (2004). Ideas in the workplace: a new approach towards organizing the fuzzy front end of the innovation process. *Creativity and Innovation Management, 13*(4), 274-285.

Boer, H., & During, W. E. (2001). Innovation, what innovation? A comparison between product, process and organisational innovation. *International Journal of Technology Management, 22*(1-3), 83-107.

Bohn, R. E. (1998). Measuring and managing technological knowledge. *The Economic Impact of knowledge, Butterworth-Heinemann, Boston*, 295-314.

Bommert, B. (2010). Collaborative innovation in the public sector. *International public management review, 11*(1), 15-33.

Bonsón, E., & Flores, F. (2011). Social media and corporate dialogue: the response of global financial institutions. *Online Information Review, 35*(1), 34-49.

Borins, S. (2001). *The challenge of innovating in government*: PricewaterhouseCoopers Endowment for the Business of Government Arlington, VA.

Boylan, H. R. (2002). *What works: Research-based best practices in developmental education*: Continuous Quality Improvement Network with the National Center for Developmental Education.

Brem, A., & Bilgram, V. (2015). The search for innovative partners in co-creation: Identifying lead users in social media through netnography and crowdsourcing. *Journal of Engineering and Technology Management, 37*, 40-51.

Bryman, A., & Bell, E. (2015). *Business research methods*: Oxford University Press, USA.

Burns, L. R., & Wholey, D. R. (1993). Adoption and abandonment of matrix management programs: Effects of organizational characteristics and interorganizational networks. *Academy of Management Journal, 36*(1), 106-138.

Burns, T., & Stalker, G. M. (1961). The management of innovation. Oxford University Press, USA.

Cameron, K. S., & Quinn, R. E. (2011). *Diagnosing and changing organizational culture: Based on the competing values framework*: John Wiley & Sons.

Cantner, U., Conti, E., & Meder, A. (2010). Networks and innovation: the role of social assets in explaining firms' innovative capacity. *European Planning Studies, 18*(12), 1937-1956.

Caragliu, A., Del Bo, C., & Nijkamp, P. (2013). 10 Smart cities in Europe. *Smart cities: governing, modelling and analysing the transition*, 173-189.

Carayannis, E. G., & Gonzalez, E. (2003). Creativity and innovation= competitiveness? When, how, and why. *The international handbook on innovation*(Part VIII), 587-606.

Carroll, N., & Helfert, M. (2015). Service capabilities within open innovation: Revisiting the applicability of capability maturity models. *Journal of Enterprise Information Management, 28*(2), 275-303.

Casaló, L. V., Flavián, C., & Guinalíu, M. (2008). Promoting consumer's participation in virtual brand communities: A new paradigm in branding strategy. *Journal of marketing Communications, 14*(1), 19-36.

Chesbrough, H. (2010). *Open services innovation: Rethinking your business to grow and compete in a new era*: John Wiley & Sons.

Chiu, C., Ip, C., & Silverman, A. (2012). Understanding social media in China. *McKinsey Quarterly, 2*(2012), 78-81.

Coe, D. T., & Helpman, E. (1995). International r&d spillovers. *European economic review, 39*(5), 859-887.

Cooper, D. R., Schindler, P. S., & Sun, J. (2006). *Business research methods* (Vol. 9): McGraw-Hill Irwin New York.

Coury, T., & Dave, C. (2010). oil, Labor Markets, and economic Diversification in the GCC: An empirical Assessment. *Topics in Middle Eastern and North African Economies, 12*.

Criado, J. I., Sandoval-Almazan, R., & Gil-Garcia, J. R. (2013). Government innovation through social media: Elsevier.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *psychometrika, 16*(3), 297-334.

Crossan, M. M., & Apaydin, M. (2010). A multi-dimensional framework of organizational innovation: A systematic review of the literature. *Journal of management studies, 47*(6), 1154-1191.

Csikszentmihalyi, M. (2014). Society, culture, and person: A systems view of creativity *The Systems Model of Creativity* (pp. 47-61): Springer.

Culnan, M. J., McHugh, P. J., & Zubillaga, J. I. (2010). How large US companies can use Twitter and other social media to gain business value. *MIS Quarterly Executive, 9*(4), 243-259.

Curry, E., Dustdar, S., Sheng, Q. Z., & Sheth, A. (2016). Smart cities–enabling services and applications. *Journal of Internet Services and Applications, 7*(1), 6-19.

Dahlander, L., & Gann, D. M. (2010). How open is innovation? *Research Policy, 39*(6), 699-709.

Damanpour, F. (1991). Organizational innovation: A meta-analysis of effects of determinants and moderators. *Academy of Management Journal, 34*(3), 555-590.

Damanpour, F., & Gopalakrishnan, S. (2001). The dynamics of the adoption of product and process innovations in organizations. *Journal of management studies, 38*(1), 45-65.

Damanpour, F., Walker, R. M., & Avellaneda, C. N. (2009). Combinative effects of innovation types and organizational performance: A longitudinal study of service organizations. *Journal of management studies, 46*(4), 650-675.

Dameri, R. P. (2013). Searching for smart city definition: a comprehensive proposal. *International Journal of Computers & Technology, 11*(5), 2544-2551.

De Jong, J. P., & Den Hartog, D. N. (2007). How leaders influence employees' innovative behaviour. *European Journal of Innovation Management, 10*(1), 41-64.

Dewar, R. D., & Dutton, J. E. (1986). The adoption of radical and incremental innovations: An empirical analysis. *Management Science, 32*(11), 1422-1433.

Dictionary, C. (2008). Cambridge Advanced Learner's Dictionary: PONS-Worterbucher, Klett Ernst Verlag GmbH.

DiMicco, J., Millen, D. R., Geyer, W., Dugan, C., Brownholtz, B., & Muller, M. (2008). *Motivations for social networking at work.* Paper presented at the Proceedings of the 2008 ACM conference on Computer supported cooperative work.

Drucker, P. F. (2017). *The Theory of the Business (Harvard Business Review Classics)*: Harvard Business Press.

Easterby-Smith, M., Thorpe, R., & Jackson, P. R. (2015). *Management and business research*: Sage.

Edquist, C., & Hommen, L. (2006). *Comparing National Systems of Innovation in Asia and Europe: Growth, Globalisation, Change, and Policy*. Georgia Institute of Technology.

Efthymiopoulos, M. P. (2016). Cyber-security in smart cities: the case of Dubai. *Journal of Innovation and Entrepreneurship, 5*(1), 11-24.

Eijkman, H. (2009). Using Web 2.0 to decolonise transcultural learning zones in higher education. *Campus-Wide Information Systems, 26*(3), 240-255.

Eisenhardt, K. M., & Martin, J. A. (2000). Dynamic capabilities: what are they? *Strategic management journal*, 1105-1121.

Ertürk, A. (2012). Linking psychological empowerment to innovation capability: Investigating the moderating effect of supervisory trust. *International Journal of Business and Social Science, 3*(14), 52-65.

Eveleens, C. (2010). Innovation management; a literature review of innovation process models and their implications. *Science, 800*(2010), 900-908.

Fagerberg, J. (2017). Innovation policy: Rationales, lessons and challenges. *Journal of Economic Surveys, 31*(2), 497-512.

Feist, G. J. (1998). A meta-analysis of personality in scientific and artistic creativity. *Personality and social psychology review, 2*(4), 290-309.

Feldman, M. P., & Florida, R. (1994). The geographic sources of innovation: technological infrastructure and product innovation in the United States. *Annals of the association of American Geographers, 84*(2), 210-229.

Ferreira, A., & Du Plessis, T. (2009). Effect of online social networking on employee productivity. *South African Journal of Information Management, 11*(1), 1-11.

Finstad, K. (2010). The usability metric for user experience. *Interacting with Computers, 22*(5), 323-327.

Flikkema, M. J., de Man, A.-P., & Wolters, M. J. J. (2010). New trademark registration as an indicator of innovation: results of an explorative study of Benelux trademark data. Vrije University.

Ford, C. M. (1996). A theory of individual creative action in multiple social domains. *Academy of management review, 21*(4), 1112-1142.

Foss, N. J., Laursen, K., & Pedersen, T. (2011). Linking customer interaction and innovation: The mediating role of new organizational practices. *Organization science, 22*(4), 980-999.

Frappaolo, C. (2008). Implicit knowledge. *Knowledge Management Research & Practice, 6*(1), 23-25.

Gaál, Z., Szabó, L., Obermayer-Kovács, N., & Csepregi, A. (2015). Exploring the role of social media in knowledge sharing. *Electronic Journal of Knowledge Management, 13*(3), 142-155.

Gabriel, Y. (2000). *Storytelling in organizations: Facts, fictions, and fantasies: Facts, fictions, and fantasies*: OUP Oxford.

Garcia, R., & Calantone, R. (2002). A critical look at technological innovation typology and innovativeness terminology: a literature review. *Journal of product innovation management, 19*(2), 110-132.

Gill, J., & Johnson, P. (2010). *Research methods for managers*: Sage.

Gonzalez, E., Leidner, D., Riemenschneider, C., & Koch, H. (2013). The impact of internal social media usage on organizational socialization and commitment. AIS Electronic Library.

Grace, T. (2009). Wikis as a knowledge management tool. *Journal of knowledge management, 13*(4), 64-74.

Grant, R. M. (2016). *Contemporary strategy analysis: Text and cases edition*: John Wiley & Sons.

Gray, P. H., Parise, S., & Iyer, B. (2011). Innovation impacts of using social bookmarking systems. *MIS quarterly, 12*, 629-643.

Greenhalgh, T., Robert, G., Bate, P., Macfarlane, F., & Kyriakidou, O. (2008). *Diffusion of innovations in health service organisations: a systematic literature review*: John Wiley & Sons.

Grudin, J. (2006). *Enterprise knowledge management and emerging technologies.* Paper presented at the System Sciences, 2006. HICSS'06. Proceedings of the 39th Annual Hawaii International Conference.

Gumusluoglu, L., & Ilsev, A. (2009). Transformational leadership, creativity, and organizational innovation. *Journal of Business Research, 62*(4), 461-473.

Hage, J., & Dewar, R. (1973). Elite values versus organizational structure in predicting innovation. *Administrative science quarterly, 18*, 279-290.

Halvorsen, T., Hauknes, J., Miles, I., & Røste, R. (2005). On the differences between public and private innovation. Innovation in the Public Sector. Publin Report No. D9.

Hamel, G. (2008). The future of management. *Human Resource Management International Digest, 16*(6), 212-219.

Han, J. K., Kim, N., & Srivastava, R. K. (1998). Market orientation and organizational performance: is innovation a missing link? *The Journal of Marketing*, *25*, 30-45.

Hansén, S. O., & Wakonen, J. (1997). Innovation, a winning solution? *International Journal of Technology Management, 13*(4), 345-358.

Hargadon, A., & Sutton, R. I. (1997). Technology brokering and innovation in a product development firm. *Administrative science quarterly*, 716-749.

Hargadon, A. B., & Bechky, B. A. (2006). When collections of creatives become creative collectives: A field study of problem solving at work. *Organization science, 17*(4), 484-500.

Hartley, J. (2005). Innovation in governance and public services: Past and present. *Public money and management, 25*(1), 27-34.

Hassan, M. U., Shaukat, S., Nawaz, M. S., & Naz, S. (2013). Effects of innovation types on firm performance: an empirical study on Pakistan's manufacturing sector. *Pakistan Journal of Commerce and Social Sciences, 7*(2), 243-262.

Haunschild, P. R., & Miner, A. S. (1997). Modes of interorganizational imitation: The effects of outcome salience and uncertainty. *Administrative science quarterly*, *30*, 472-500.

Heckner, M., Mühlbacher, S., & Wolff, C. (2008). Tagging tagging. Analysing user keywords in scientific bibliography management systems. *Journal of Digital Information, 9*(2). 1-19.

Hemphälä, J., & Magnusson, M. (2012). Networks for innovation–but what networks and what innovation? *Creativity and Innovation Management, 21*(1), 3-16.

Henderson, R. M., & Clark, K. B. (1990). Architectural innovation: The reconfiguration of existing product technologies and the failure of established firms. *Administrative science quarterly*, *68*, 9-30.

Hennala, L., Parjanen, S., & Uotila, T. (2011). Challenges of multi-actor involvement in the public sector front-end innovation processes: constructing an open innovation model for developing well-being services. *European Journal of Innovation Management, 14*(3), 364-387.

Herstatt, C., & Verworn, B. (2004). The 'fuzzy front end'of innovation *Bringing technology and innovation into the boardroom* (pp. 347-372): Springer.

Hislop, D. (2013). *Knowledge management in organizations: A critical introduction*: Oxford University Press.

Housing, U., & OTB, M. S. (2017). Smart cities Ranking of European medium-sized cities. Centre of Regional Science (SRF), Vienna University of Technology.

Huang, F., & Rice, J. (2013). Does open innovation work better in regional clusters? *Australasian Journal of Regional Studies, 19*(1), 85-93.

Huizingh, E. K. (2011). Open innovation: State of the art and future perspectives. *Technovation, 31*(1), 2-9.

Jansen, J. J., Van Den Bosch, F. A., & Volberda, H. W. (2006). Exploratory innovation, exploitative innovation, and performance: Effects of organizational antecedents and environmental moderators. *Management Science, 52*(11), 1661-1674.

Jarvenpaa, S. L., & Majchrzak, A. (2010). Research commentary—vigilant interaction in knowledge collaboration: challenges of online user participation under ambivalence. *Information Systems Research, 21*(4), 773-784.

Johnson, J. G., Cohen, P., Smailes, E. M., Kasen, S., & Brook, J. S. (2002). Television viewing and aggressive behavior during adolescence and adulthood. *Science, 295*(5564), 2468-2471.

Kankanhalli, A., Zuiderwijk, A., & Tayi, G. K. (2016). Open innovation in the public sector: A research agenda: Elsevier.

Kanter, R. M. (1988). Three tiers for innovation research. *Communication Research, 15*(5), 509-523.

Kaplan, A. M., & Haenlein, M. (2009). The fairyland of Second Life: Virtual social worlds and how to use them. *Business horizons, 52*(6), 563-572.

Kaplan, A. M., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of Social Media. *Business horizons, 53*(1), 59-68.

Kasemsap, K. (2016). The Fundamentals of Business Intelligence. *International Journal of Organizational and Collective Intelligence (IJOCI), 6*(2), 12-25.

Kenly, A., & Poston, B. (2011). Social Media and Product Innovation: Early Adopters Reaping Benefits amidst Challenge and Uncertainty *A Kalypso White Paper. Kalypso, 9*, 1-8.

King, N., & Anderson, N. (1995). *Innovation and change in organizations*: Routledge. ISBN 9780415128810

Kipp, M. E. (2006). Complementary or discrete contexts in online indexing: A comparison of user, creator and intermediary keywords. University of Arizona.

Klobas, J. (2006). *Wikis: Tools for information work and collaboration*: Elsevier.

Koch, H., Gonzalez, E., & Leidner, D. E. (2011). *Resolving IT-Culture Conflict in Enterprise 2.0 Implementations.* Paper presented at the AMCIS.

Kogut, B., & Zander, U. (1992). Knowledge of the firm, combinative capabilities, and the replication of technology. *Organization science, 3*(3), 383-397.

Kohli, A. K., & Jaworski, B. J. (1990). Market orientation: the construct, research propositions, and managerial implications. *The Journal of Marketing, 21*, 1-18.

Kozinets, R. V. (2002). Can consumers escape the market? Emancipatory illuminations from burning man. *Journal of Consumer research, 29*(1), 20-38.

Lam, A. (2005). Work roles and careers of R&D scientists in network organizations. *Industrial Relations: A Journal of Economy and Society, 44*(2), 242-275.

Lampel, J., Lant, T., & Shamsie, J. (2000). Balancing act: Learning from organizing practices in cultural industries. *Organization science, 11*(3), 263-269.

Lawrence, P. R., & Lorsch, J. W. (1967). Differentiation and integration in complex organizations. *Administrative science quarterly, 5*, 1-47.

Lee, C. S., Goh, D. H.-L., Razikin, K., & Chua, A. Y. (2009). Tagging, sharing and the influence of personal experience. *Journal of Digital Information, 10*(1). 1-15.

Lei, D., Hitt, M. A., & Bettis, R. (1996). Dynamic core competences through meta-learning and strategic context. *Journal of management, 22*(4), 549-569.

Leidner, D., Koch, H., & Gonzalez, E. (2010). Assimilating Generation Y IT New Hires into USAA's Workforce: The Role of an Enterprise 2.0 System. *MIS Quarterly Executive, 9*(4), 229- 242.

Leuf, B., & Cunningham, W. (2001). The Wiki way: quick collaboration on the Web.

Levy, M. (2009). WEB 2.0 implications on knowledge management. *Journal of knowledge management, 13*(1), 120-134.

Lietsala, K., & Sirkkunen, E. (2008). *Social media. Introduction to the tools and processes of participatory economy*. Tampere University Press.

Loukis, E., Charalabidis, Y., & Androutsopoulou, A. (2017). Promoting open innovation in the public sector through social media monitoring. *Government Information Quarterly, 34*(1), 99-109.

Luca, L. M. D., & Atuahene-Gima, K. (2007). Market knowledge dimensions and cross-functional collaboration: Examining the different routes to product innovation performance. *Journal of Marketing, 71*(1), 95-112.

Madjar, N., Oldham, G. R., & Pratt, M. G. (2002). There's no place like home? The contributions of work and nonwork creativity support to employees' creative performance. *Academy of Management Journal, 45*(4), 757-767.

Madjar, N., & Ortiz-Walters, R. (2009). Trust in supervisors and trust in customers: Their independent, relative, and joint effects on employee performance and creativity. *Human Performance, 22*(2), 128-142.

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), 38-55.

Malhotra, A., & Schuler, S. R. (2005). Women's empowerment as a variable in international development. *Measuring empowerment: Cross-disciplinary perspectives, 23*, 71-88.

Mansharamani, V. (2005). *Towards a theory of service innovation: an inductive case study approach to evaluating the uniqueness of services.* Massachusetts Institute of Technology.

McAfee, A. P. (2006). Enterprise 2.0: The dawn of emergent collaboration. *MIT Sloan management review, 47*(3), 21-30.

McKelvie, G., Dotsika, F., & Patrick, K. (2007). Interactive business development, capturing business knowledge and practice: A case study. *The Learning Organization, 14*(5), 407-422.

McSherry, R., & Kell, J. (2007). Practice development or service improvement: are they the same? *Practice Development in Health Care, 6*(4), 245-248.

Meeus, M., & Edquist, C. (2006). Introduction to Part I. Product and Process Innovation. *Innovation, Science and Institutional Change. A Research Handbook*, 23-37.

Mergel, I. (2015). Opening government: Designing open innovation processes to collaborate with external problem solvers. *Social Science Computer Review, 33*(5), 599-612.

Mergel, I., & Desouza, K. C. (2013). Implementing open innovation in the public sector: The case of Challenge. gov. *Public administration review, 73*(6), 882-890.

Mintzberg, H. (1989). The structuring of organizations *Readings in Strategic Management* (pp. 322-352): Springer.

Mohr, L. B. (1969). Determinants of innovation in organizations. *American political science review, 63*(1), 111-126.

Morgan, D. (1980). Sociological Paradigms and Organisational Analysis. *Sociology, 14*(2), 332-333.

Mortensen, P. S., & Bloch, C. W. (2005). *Oslo Manual-Guidelines for Collecting and Interpreting Innovation Data: Proposed Guidelines for Collecting and Interpreting Innovation Data*: Organisation for Economic Cooporation and Development, OECD.

Mumford, M. D., Antes, A. L., Caughron, J. J., Connelly, S., & Beeler, C. (2010). Cross-field differences in creative problem-solving skills: A comparison of health, biological, and social sciences. *Creativity Research Journal, 22*(1), 14-26.

Mumford, M. D., Scott, G. M., Gaddis, B., & Strange, J. M. (2002). Leading creative people: Orchestrating expertise and relationships. *The leadership quarterly, 13*(6), 705-750.

Nam, T., & Pardo, T. A. (2011). *Smart city as urban innovation: Focusing on management, policy, and context.* Paper presented at the Proceedings of the 5th international conference on theory and practice of electronic governance.

Naphade, M., Banavar, G., Harrison, C., Paraszczak, J., & Morris, R. (2011). Smarter cities and their innovation challenges. *Computer, 6*, 32-39.

Nonaka, I. (2008). *The knowledge-creating company*: Harvard Business Review Press.

O'reilly, T. (2005). What is web 2.0. Design Patterns and Business Models for the Next Generation of Software. http://www.oreilly.com/pub/a/web2/archive/what-is-web-20.html

Ojasalo, J. (2016). Building an Open Service Innovation Platform for a City's Needs: An Empirical Study on Smart Cities. pp. 6172-6181, IATED Academy. doi:10.21125/inted.2016.0466

Oly Ndubisi, N., & Agarwal, J. (2014). Quality performance of SMEs in a developing economy: direct and indirect effects of service innovation and entrepreneurial orientation. *Journal of Business & Industrial Marketing, 29*(6), 454-468.

Pak, R., Pautz, S., & Iden, R. (2007). Information organization and retrieval: A comparison of taxonomical and tagging systems. *Cognitive Technology, 12*(1), 31-44.

Palacios Marqués, D., & José Garrigós Simón, F. (2006). The effect of knowledge management practices on firm performance. *Journal of knowledge management, 10*(3), 143-156.

Papinniemi, J. (1999). Creating a model of process innovation for reengineering of business and manufacturing. *International Journal of Production Economics, 60*, 95-101.

Paradigms, S. (1979). Organizational Analysis. London and Exeter, NY: Heinemann.

Pateli, A. M., Patrick. (2017). Configurations explaining the Impact of Social Media on Innovation Performance Completed In Proceedings of the Pacific Asia Conference on Information Systems (PACIS), Langkawi, Malaysia (pp. 16-20).

Perrin, B. (2002). How to—and how not to—evaluate innovation. *Evaluation, 8*(1), 13-28.

Peters, B. G. (2011). *Institutional theory in political science: The new institutionalism*: Bloomsbury Publishing, USA.

Petrick, I. J., & Juntiwasarakij, S. (2011). The rise of the rest: Hotbeds of innovation in emerging markets. *Research-Technology Management, 54*(4), 24-29.

Plsek, P. (2003). Complexity and the adoption of innovation in health care. *Accelerating Quality Improvement in Health Care: Strategies to Accelerate the Diffusion of Evidence-Based Innovations.* Washington, DC: National Institute for Healthcare Management Foundation and National Committee for Quality in Health Care.

Porta, M., House, B., Buckley, L., & Blitz, A. (2008). Value 2.0: eight new rules for creating and capturing value from innovative technologies. *Strategy & Leadership, 36*(4), 10-18.

Prajogo, D. I., & Ahmed, P. K. (2006). Relationships between innovation stimulus, innovation capacity, and innovation performance. *R&D Management, 36*(5), 499-515.

Rahimli, A. (2012). Knowledge management and competitive advantage. *Journal of Information & Knowledge Management, 2*, 56-63.

Ray, G., Barney, J. B., & Muhanna, W. A. (2004). Capabilities, business processes, and competitive advantage: choosing the dependent variable in empirical tests of the resource-based view. *Strategic management journal, 25*(1), 23-37.

Razmerita, L., Kirchner, K., & Sudzina, F. (2009). Personal knowledge management: The role of Web 2.0 tools for managing knowledge at individual and organisational levels. *Online Information Review, 33*(6), 1021-1039.

Reichstein, T., & Salter, A. (2006). Investigating the sources of process innovation among UK manufacturing firms. *Industrial and Corporate change, 15*(4), 653-682.

Ridings, C. M., Gefen, D., & Arinze, B. (2002). Some antecedents and effects of trust in virtual communities. *The Journal of Strategic Information Systems, 11*(3), 271-295.

Roberts, D. L., & Piller, F. T. (2016). Finding the right role for social media in innovation. *MIT Sloan management review, 57*(3), 41-52.

Rochina-Barrachina, M. E., Mañez, J. A., & Sanchis-Llopis, J. A. (2010). Process innovations and firm productivity growth. *Small Business Economics, 34*(2), 147-166.

Rogers, E. W., & Wright, P. M. (1998). Measuring organizational performance in strategic human resource management: Problems, prospects and performance information markets. *Human resource management review, 8*(3), 311-331.

RTA. (2016). Smart Dubai White Paper. Retrieved 10/10/2017, from https://www.rta.ae/links/magazine/masar/Al_Masar_99_Eng.pdf

Rubera, G., & Kirca, A. H. (2012). Firm innovativeness and its performance outcomes: A meta-analytic review and theoretical integration. *Journal of Marketing, 76*(3), 130-147.

Sainz Pena, R. (2011). Smart cities: a first step towards the internet of things: Fundacion Telefonica, Ariel, Barcelona.

Sampler, J. L. (1998). Redefining industry structure for the information age. *Strategic management journal, 55*, 343-355.

Satell, G. (2017). *Mapping innovation: a playbook for navigating a disruptive age*: McGraw-Hill Education on Brilliance Audio.

Schneckenberg, D. (2009). Web 2.0 and the empowerment of the knowledge worker. *Journal of knowledge management, 13*(6), 509-520.

Scholten, S., & Scholten, U. (2012). Platform-based innovation management: directing external innovational efforts in platform ecosystems. *Journal of the Knowledge Economy, 3*(2), 164-184.

Schroeder, R. G., Bates, K. A., & Junttila, M. A. (2002). A resource-based view of manufacturing strategy and the relationship to manufacturing performance. *Strategic management journal, 23*(2), 105-117.

Schumpeter, J. (1982). The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle (1912/1934). *Transaction Publishers.–1982.–January, 1*, 244.

Schumpeter, J., & Backhaus, U. (2003). The theory of economic development *Joseph Alois Schumpeter* (pp. 61-116): Springer.

Scott, S. G., & Bruce, R. A. (1994). Determinants of innovative behavior: A path model of individual innovation in the workplace. *Academy of Management Journal, 37*(3), 580-607.

Scuotto, V., Del Giudice, M., della Peruta, M. R., & Tarba, S. (2017). The performance implications of leveraging internal innovation through social media networks: An empirical verification of the smart fashion industry. *Technological Forecasting and Social Change, 120*, 184-194.

Securities, U., & Commission, E. (2013). FY 2011 Performance and Accountability Report.

Shahbandari, S. (2016). RTA launches five more smart apps. Retrieved 10/10/2017, 2017, from http://gulfnews.com/news/uae/rta-launches-five-more-smart-apps-1.1384991

Shalley, C. E., & Gilson, L. L. (2004). What leaders need to know: A review of social and contextual factors that can foster or hinder creativity. *The leadership quarterly, 15*(1), 33-53.

Shalley, C. E., Zhou, J., & Oldham, G. R. (2004). The effects of personal and contextual characteristics on creativity: Where should we go from here? *Journal of management, 30*(6), 933-958.

Sigala, M., & Chalkiti, K. (2015). Knowledge management, social media and employee creativity. *International Journal of Hospitality Management, 45*, 44-58.

Simard, C., & West, J. (2006). Knowledge networks and the geographic locus of innovation. *Open innovation: researching a new paradigm*, 220-240.

Sisaye, S., & Birnberg, J. G. (2012). Chapter 3 The Extent and Scope Dimensions of Process Innovations *An Organizational Learning Approach to Process Innovations: The Extent and Scope of Diffusion and Adoption in Management Accounting Systems* (pp. 41-50): Emerald Group Publishing Limited.

Siwek, C. (2014). BVDW-Studie: Social Media in Unternehmen. *Online verfügbar unter: http://www. bvdw. org/medien/bvdw-studie-social-media-inunternehmen*.

Skeels, M. M., & Grudin, J. (2009). *When social networks cross boundaries: a case study of workplace use of facebook and linkedin.* Paper presented at the Proceedings of the ACM 2009 international conference on Supporting group work.

Slater, S. F., & Narver, J. C. (2009). Market Orientation and the Learning Organization (vol 59, pg 63, 1995). *Journal of Marketing, 73*(4), 141-141.

Sørensen, E., & Torfing, J. (2011). Enhancing collaborative innovation in the public sector. *Administration & Society, 43*(8), 842-868.

Stelzner, M. (2014). 2014 Social Media Marketing Industry Report. *Social media examiner*, 1-52.

Sternberg, R. J., & Lubart, T. I. (1999). The concept of creativity: Prospects and paradigms. *Handbook of creativity, 1*, 3-15.

Sundbo, J. (2009). Innovation in the experience economy: a taxonomy of innovation organisations. *The Service Industries Journal, 29*(4), 431-455.

Teddlie, C., & Tashakkori, A. (2009). *Foundations of mixed methods research: Integrating quantitative and qualitative approaches in the social and behavioral sciences*: Sage.

Teece, D. J. (2007). Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. *Strategic management journal, 28*(13), 1319-1350.

Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic management journal, 18*(7), 509-533.

Tidd, J., Bessant, J. R., & Pavitt, K. (2009). *Managing innovation: integrating technological, market and organizational change* (Vol. 4): Wiley Chichester.

Tödtling, F., Lehner, P., & Trippl, M. (2006). Innovation in knowledge intensive industries: The nature and geography of knowledge links. *European Planning Studies, 14*(8), 1035-1058.

Tredinnick, L. (2006). Web 2.0 and Business: A pointer to the intranets of the future? *Business information review, 23*(4), 228-234.

Truss, C., Shantz, A., Soane, E., Alfes, K., & Delbridge, R. (2013). Employee engagement, organisational performance and individual well-being: exploring the evidence, developing the theory: Taylor & Francis.

Tsai, L. C., Hwang, S. L., & Tang, K. H. (2011). Analysis of keyword-based tagging behaviors of experts and novices. *Online Information Review, 35*(2), 272-290.

Tushman, M., & Anderson, P. (2004). *Managing strategic innovation and change: A collection of readings*: Oxford University Press, USA.

Van de Ven, A. H., Polley, D., & Garud, R. (2008). *The innovation journey*: Oxford University Press, USA.

Van de Vrande, V., De Jong, J. P., Vanhaverbeke, W., & De Rochemont, M. (2009). Open innovation in SMEs: Trends, motives and management challenges. *Technovation, 29*(6), 423-437.

Van der Have, R., Toivonen, M., & Tuominen, T. (2007). Dimensions of Service Innovation. *Paper released by IPSI-Project, University of Helsinki, Innovation Management Institute*.

Vander Wal, T. (2005). Explaining and showing broad and narrow folksonomies. Retrieved 10/10/2017, from http://www.vanderwal.net/random/entrysel.php?blog=1635

Vat, K. H. (2011). Knowledge synthesis framework *Encyclopedia of Knowledge Management, Second Edition* (pp. 955-966): IGI Global.

Walker, N. R. (2014). *Social computing: A multiple regression analysis for assessing government employees' likelihood of contributing.* Capella University.

Weber, M. (1978). *Economy and society: An outline of interpretive sociology* (Vol. 1): Univ of California Press.

Weeks, B. E., Ardèvol-Abreu, A., & Gil de Zúñiga, H. (2017). Online influence? Social media use, opinion leadership, and political persuasion. *International Journal of Public Opinion Research, 29*(2), 214-239.

Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic management journal, 5*(2), 171-180.

West, M. A., & Farr, J. L. (1989). Innovation at work: Psychological perspectives. *Social behaviour, 4*(1), 15-30.

Witell, L., Snyder, H., Gustafsson, A., Fombelle, P., & Kristensson, P. (2016). Defining service innovation: A review and synthesis. *Journal of Business Research, 69*(8), 2863-2872.

Wolfe, R. A. (1994). Organizational innovation: Review, critique and suggested research directions. *Journal of management studies, 31*(3), 405-431.

Woodman, R. W., Sawyer, J. E., & Griffin, R. W. (1993). Toward a theory of organizational creativity. *Academy of management review, 18*(2), 293-321.

Wyld, D. C. (2008). Management 2.0: a primer on blogging for executives. *Management Research News, 31*(6), 448-483.

Zaffar, F. O., & Ghazawneh, A. (2012). *'Knowledge sharing and collaboration through social media–the case of IBM.* Paper presented at the Proceedings of the 7th Mediterranean Conference on Information Systems, MCIS.

Zahra, S. A., & George, G. (2002). Absorptive capacity: A review, reconceptualization, and extension. *Academy of management review, 27*(2), 185-203.

Zaltman, G., Duncan, R., & Holbek, J. (1973). *Innovations and organizations*: John Wiley & Sons. New York, 45-68.

Zhou, J., & Shalley, C. E. (2003). Research on employee creativity: A critical review and directions for future research *Research in personnel and human resources management* (pp. 165-217): Emerald Group Publishing Limited.

Zhou, T. (2011). Understanding online community user participation: a social influence perspective. *Internet research, 21*(1), 67-81.

Appendix A – Survey

Dear Survey Participant,

We would like you to participate in this study to determine the impact of using the social media on service and process innovation. This research is conducted as part of completing the Doctorate of Business Administration (DBA) Degree in the United Arab Emirates University (UAEU). This study is intended to better understand the factors impacting the service, process and organizational innovations in the mobility sector in UAE while using social media tools. A summary of the report will be available to all the interested participants. Please indicate your interest by providing us with your email address in the specified section.

Your participation is critical for the success of this study and to contribute to the field of business research in the UAE. Please be assured that your responses will be held strictly confidential. Only overall summary results in anonymous form will be reported, with no references made to individual responses, respondents, or organizations. Thank you in advance for your valuable contribution to this important study.

- Please answer all the questions, to the best of your knowledge.
- In your response, please answer the questions freely and confidently as your answers will be kept confidential.

MAHER SHIRAH
DOCTORATE OF BUSINESS ADMINISTRATION (DBA) STUDENT
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UNITED ARAB EMIRATES UNIVERSITY (UAEU)

هيئة الطرق والمواصلات
ROADS & TRANSPORT AUTHORITY

Impact of Social Media Services Survey

1. Years of using the internet *

- 1–3 years
- 3–6 years
- >6 years

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3. Which of the following social network tools do you use that might help to accomplish your tasks at RTA? (Choose all that apply) *

- Facebook
- Linked in
- Google plus
- Instagram
- Twitter
- YouTube
- Any other. Please mention_____

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4. Are you a member of a microblog, e.g. twitter? *

- Yes
- No

---

5. Do you use a collaborative authoring tool to accomplish tasks at RTA? (e.g. wikipedia.com) *

- Yes
- No

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6. Do you use a content sharing network to accomplish tasks at RTA (e.g. youtube.com, flickr.com)? *

- Yes
- No

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7. How many contacts/friends (overall, not just from RTA) do you have on the social networking sites? *

- <100
- 101-1,000
- 1,001 – 10,000
- >10,000

Professional use of social media

8. How often you practice the following social media activities with at least one of the social media tools that might help you to accomplish tasks at RTA?

	Agreement *						
	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly Agree	Agree	Strongly agree
Read information							
Search for collecting information							
Upload information online for storing it for personal use							
Upload information online for storing it for public use							
Update my personal profile and status							
Share information for discussing it							
Become a member of professional networks							
Identify experts for debating information							
Participate in online discussions for creating new knowledge							
Compare information for creating new knowledge							

Social media use for employee creativity

9. Does the use of social media at RTA make you creative?

	Agreement *						
	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly Agree	Agree	Strongly agree
I suggest new ways to achieve goals or objectives							
I come up with new and practical ideas to improve performance							
I search out new technologies, processes, techniques and/or services ideas							
I suggest new ways to increase quality							
I am a good source of creative ideas							
I am not afraid to take risks							
I promote and champion ideas to others							
I exhibit creativity on the job when given the opportunity							
I develop adequate plans and schedules for the implementation of new ideas							
I often have new and innovative ideas							
I come up with creative solutions to problems							
I often have a fresh approach to problems							
I suggest new ways of performing work tasks							

10. In brief, how did social media use enhance your creativity skills at RTA? *

Service innovation

11. Based on your use of Social Media, How often are your suggested ideas related to service innovation at RTA

	Rating *						
	Very rarely	Rarely	Slightly Rarely	Occasionally	Slightly Often	Often	Very Often
Suggest new ways of designing and producing services at RTA	○	○	○	○	○	○	○
Suggest ideas to improve ways of designing and producing services at RTA.	○	○	○	○	○	○	○
Suggest new ways of delivering services system at RTA.	○	○	○	○	○	○	○
Suggest ideas to improve ways of delivering services system at RTA.	○	○	○	○	○	○	○
Suggest new ways of service technological tools at RTA.	○	○	○	○	○	○	○
Suggest ideas to improve the service technological tools at RTA.	○	○	○	○	○	○	○

12. Based on your answers on the previous part, do the following service innovation factors applies on RTA

	Agreement *						
	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly Agree	Agree	Strongly agree
RTA has introduced many new services to the market	○	○	○	○	○	○	○
RTA has introduced many modifications to the existing services	○	○	○	○	○	○	○
RTA constantly seeks to find new services	○	○	○	○	○	○	○
RTA has introduced more new services than other mobility service providers in UAE	○	○	○	○	○	○	○
The new services we introduced have caused significant changes in the industry	○	○	○	○	○	○	○

13. In brief, how did social media use impact your innovativeness in term of service innovation at RTA?

Social media and process innovation

14. Based on your use of Social Media, How often are your suggested ideas related to process innovation at RTA

	Rating *						
	Very rarely	Rarely	Slightly Rarely	Occasionally	Slightly Often	Often	Very Often
Suggest new ways of designing and producing techniques at RTA.	○	○	○	○	○	○	○
Suggest new ways of designing and producing equipment at RTA.	○	○	○	○	○	○	○
Suggest new ways of designing and producing software at RTA.	○	○	○	○	○	○	○
Suggest ideas to improve the way of designing and producing techniques at RTA.	○	○	○	○	○	○	○
Suggest ideas to improve the way of designing and producing equipment at RTA.	○	○	○	○	○	○	○
Suggest ideas to improve the way of designing and producing software at RTA	○	○	○	○	○	○	○

15. Based on your answers on the previous part, do the following process innovation factors applies on RTA?

	Agreement *						
	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly Agree	Agree	Strongly agree
We at RTA constantly benchmark our operating systems to world-class standards	○	○	○	○	○	○	○
Work practices at RTA are constantly updated to increase productivity	○	○	○	○	○	○	○
We at RTA constantly use technology to enhance service quality	○	○	○	○	○	○	○
RTA invests heavily in developing new processes	○	○	○	○	○	○	○
We continuously train our people in emerging industry technologies	○	○	○	○	○	○	○

16. In brief, how did social media use impact your innovativeness in term of process innovation at RTA?

Social media and organizational innovation

17. How often are your suggested ideas related to organizational innovation at RTA?

	Agreement *						
	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly Agree	Agree	Strongly agree
RTA lsys emphasis on developing new services	○	○	○	○	○	○	○
RTA's rate of introduction of new services into the market is higher (or comparable) to other mobility service providers in UAE.	○	○	○	○	○	○	○
RTA's spending on new service development activities is higher than industry average	○	○	○	○	○	○	○
RTA's rate of adoption of new services for the first time on the market is higher (or comparable) to other mobility service providers in UAE.	○	○	○	○	○	○	○

18. In brief, how did social media use impact your innovativeness in term of organizational innovation at RTA? *

Demographics

19. Gender *

- Male
- Female

20. Nationality *

- UAE Local
- Expat Arab
- GCC Arab
- Expat Asian
- Expat African
- Expat Westerner

21. Age Group *

- Under 21
- 21 - 30
- 31 – 40
- 41 - 50
- 51 – 60
- 60 and above

22. Educational Level? *

- Professor / Doctorate
- Master Degree
- University Graduate
- College Graduate
- High School Graduate
- Other (Specify)

23. For how long have you been working in RTA? *

- Less than 3 Months
- 3 Months – less than 1 Year
- 1 Year – less than 2 Years
- 2 Years – less than 3 Years
- More than 3 Years

24. Which agency / sector do you work at? *

- Director General, Chairman of the Board of Executive Director's Office
- Internal Audit Department
- Strategy and Corporate Governance
- Corporate Administrative Support Services
- Corporate Technology Support Services
- Licensing Agency
- Public Transport Agency
- Rail Agency
- Traffic & Roads Agency

Appendix B – Types of innovation

Type	Definition
Incremental innovation	Incremental innovation seeks to improve the systems that already exist, making them better, faster cheaper.
Process innovation	Process innovation means the implementation of a new or significantly improved production or delivery method.
Red ocean innovation	Red Oceans refer to the known market space, i.e. all the industries in existence today. In red oceans, industry boundaries are defined and accepted and the competitive rules of the game are known. Companies try to outperform their rivals to grab a greater share of existing demand usually through marginal changes in offering level and price. As the market space gets crowded, prospects for profits and growth are reduced. Products become commodities and cutthroat competition turns the red ocean bloody.
Service innovation	Service Innovation can be defined as 'a new or considerably changed service concept, client interaction channel, service delivery system or technological concept that individually, but most likely in combination, leads to one or more (re)new(ed) service functions that are new to the firm.
Business Model Innovation (BMI)	Business Model Innovation (BMI) refers to the creation, or reinvention, of a business itself. Whereas innovation is more typically seen in the form of a new product or service offering, a business model innovation results in an entirely different type of company that competes not only on the value proposition of its offerings, but aligns its profit formula, resources and processes to enhance that value proposition, capture new market segments and alienate competitors.
Sustainable innovation	Eco-innovation is a term used to describe products and processes that contribute to sustainable development
Frugal innovation	Frugal Innovation is about doing more with less. Entrepreneurs and innovators in emerging markets have to devise low cost strategies to either tap or circumvent institutional complexities and resource limitations to innovate, develop and deliver products and services to low income users with little purchasing power.
Blue oceans innovation	Blue Oceans represent the unknown market space, i.e. all the industries not in existence today. Blue oceans are defined by untapped market space, demand creation and the opportunity for highly profitable growth. In blue oceans, competition is irrelevant because the rules of the game are not set. Blue oceans can be created by expanding existing industry boundaries or by reconstructing industry boundaries.
Radical innovation	Radical innovations (sometime referred to as breakthrough, discontinuous or disruptive innovations) provide something new to the world that we live in by uprooting industry conventions and by significantly changing customer expectations in a positive way. Ultimately, they often end up replacing existing methods / technologies.
Open source innovation or crowed sourcing	In production and development, open source is a philosophy or pragmatic methodology that promotes free redistribution and access to an end product's design and implementation details
Experience innovation	Companies that try to create holistic experiences by emotionally engaging their consumers.
Architectural innovation	destroys the usefulness of a firm's architectural knowledge but preserves the usefulness of its knowledge about the product's components. A component is defined as a physically distinct portion of the product that embodies a core design concept and performs a well-defined function.
Disruptive innovation	A disruptive innovation is an innovation that helps create a new market and value network and eventually goes on to disrupt an existing market and value network (over a few years or decades), displacing an earlier technology.

User led innovation	The user is king. It's a phrase that's repeated over and over again as a mantra: Companies must become user-centric. But there's a problem: It doesn't work. Here's the truth: Great brands lead users, not the other way around.
Supply chain innovation	Supply chain innovation is about applying best practices and technological innovations to your own supply chain to reduce such cycle and wait times and other waste (to use a Lean term) in your in-house processes.