THE IMPACT OF SOCIAL MEDIA KNOWLEDGE ACQUISITION ON INNOVATION AND FINANCIAL PERFORMANCE OF THE FIRM: A MIXED METHODS APPROACH

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Thesis Summary

Firms have been increasingly applying different social media initiatives for different organizational objectives, but which initiatives have an impact on which objectives is still not well understood. In this research, we empirically examine the impact of two social media initiatives - social media information collection and social media proactive market orientation- on innovation and financial performance at the firm level. We also examine the potential role of three mediators within these relationships: IT infrastructure, social capital, and organizational capital. To do so, this study follows a mixed methods approach, where both quantitative and qualitative data were collected and analysed. The purpose of the quantitative data is to test the hypotheses and the developed conceptual model, while the purpose of the qualitative data is to triangulate the quantitative results. Data were collected through two surveys, one quantitative and one qualitative, from firms in the United States. Structural Equation Modelling was used to analyse the quantitative data, while thematic analysis was used to analyse the qualitative data. Our findings provide empirical evidence on the positive effects of both social media initiatives on innovation and financial performance, and on the roles of IT infrastructure, social capital, and organizational capital within these relationships.

Keywords: Social Media, innovation, financial performance, IT infrastructure, social capital, organizational capital, mixed methods

Dedication

إلى من كان له الفضل الأول بعد الله سبحانه وتعالى في إنجاز هذا العمل ...

إلى الإمام علي بن موسى الرضا عليه السلام ...

أهدي هذا العمل

To whom had the first credit after God Almighty in the completion of this work…

To Imam Ali ibn Moussa Al Reda peace be upon him…

I dedicate this work

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Chapter 1: Introduction to the Research

1.1 Introduction

The internet had a big impact on organizations, specifically on the way they communicate with the public (Maresh-Fuehrer and Smith, 2015). "*In only a few years, the Internet has evolved to become the most popular way to communicate with customers, investors, analysts, employees, the media, and the many other stakeholders any company has, transforming the practice of corporate communicators and public relations professionals*", Gonzalez-Herrero and Smith (2008) explain. It is argued that the internet application that contributed the most to this change in communication is social media, where users can control, create and distribute information (Maresh-Fuehrer and Smith, 2015).

The start of social media was as a platform for interaction allowing users to generate and share content among each other (Cooke and Buckley, 2008) through different communication channels (Bernoff and Li, 2008). Using social media platforms was simple as these platforms were user-friendly, and at the same time, it was very useful, which encouraged more people to adopt using them (Durukan et al., 2012). The number of social media users kept growing exponentially: "*Within just one decade, popular social media sites such as LinkedIn, Facebook, or Twitter have been embraced by billions of users across the globe, achieving unprecedented reach and penetration*", explain Roberts et al. (2016). As a result of the vast number of users creating and sharing information on these platforms, social media became a valuable source of knowledge (Roberts et al., 2016).

Social networking sites, forums, blogs, wikis, microblogging sites are some examples of what social media technologies refer to (Osatuyi, 2012). These sites are defined by Osatuyi (2013) as "*computer-mediated communication technologies that are typically used to connect people, as well as to produce and share user-generated content*".

With respect to business-related matters on social media, users can express their needs, discuss their experiences, point out problems with products, or even participate in certain firm initiatives such as commenting on new product ideas or providing input during the design process (Kietzmann et al., 2011; Roberts and Piller, 2016). Firms are recently using social media technologies as a reliable source to target audiences, because of the big user base these platforms have and the speed at which any shared message can be spread (Osatuyi, 2013). To be successful in their usage of social media, firms need to benefit from the data available on these platforms and transform it into knowledge that would provide important insights by collecting and analysing it.

Firms are using social media for different objectives such as interacting with their customers (Wu and Pinsonneault, 2011), marketing new products (Seo and Park, 2017), supporting product development (Bachir et al., 2017), and generating ideas (Lam et al., 2016). It has become "*an important source of data and business intelligence, providing information about trends in the marketplace, intelligence about competitors' products, and feedback on those of the firm*", explain Roberts et al. (2016).

Social media is offering firms the opportunity to collect information about different aspects of users such as customers and competitors. For example, firms can collect information about their customers' preferences and needs, either by making use of the content already available on its platforms or by providing a space for users to develop ideas. For example, Starbucks Ideas (https://ideas.starbucks.com/) and Dell IdeaStorm (http://www.ideastorm.com/) are two platforms established by Starbucks and Dell respectively to allow customers to share their feedback and suggest new products and offerings (Bayus, 2013).

The relationship between individuals, societies, and firms is changed by social media (Oakley and Salam, 2014), as it is enabling customers and firms to connect and exchange different kinds of information. Cheung and To (2016) indicate that "*As the proliferation of social media applications continues, firms have a tremendous opportunity to determine consumers' wants and needs and to invite consumers to co-create new services with them*".

The firms' use of social media is growing with time. The purpose of this use is evolving as well, as firms' aim to benefit from the different opportunities their presence on social media provides. Some objectives behind firms' usage of social media include marketing (Wan and Ren, 2017), customer service and relationship management (Wang and Kim 2017), product development (Bachir et al., 2017), and public relations (Bashir and Aldaihani, 2017).

Firms are also trying to benefit from social media usage for innovation purposes (Nguyen et al., 2015; Perez-Gonzalez et al., 2017). Innovation is key for organizations to survive the competition in today's markets (Crossan and Apaydin, 2010), as it has a big influence on its competitiveness (Mintzberg, 1994). Innovation is a major source of competitive advantage (Prajogo and Ahmed, 2006). As a result, organizations who fail to innovate usually lose their competitiveness (Ferauge, 2012).

Organizations aim to innovate in their products or service offerings in order to increase their competitiveness in the market (He and Wang, 2016). In the past, organisations used to depend on their own employees for new products or service creation (Van de Vrande et al., 2009). However, many of them are moving to an open innovation model in order to accelerate innovation, which requires knowledge acquisition from both internal and external sources (Chesbrough, 2006). Both

internal and external sources can play a role in the innovation process (Svetina and Prodan, 2008). One of the most important external sources of knowledge is the customers, as their input can affect the success or failure of new products or services (He and Wang, 2016).

In today's competitive market, it is observed that organizations do not innovate alone, instead, the innovation process includes different stakeholders than the organization itself, such as customers (Sofka and Grimpe, 2010). Given that the customer is becoming one of the most valuable sources of information in the innovation process (Prahalad and Krishnan, 2008), and the fact that it is very cost efficient to interact with the customer through web technologies (Martini et al., 2013), firms started to use social media technologies to involve users and customers in their innovation process (Bughin et al., 2011). Firms are experiencing the added value that social media can offer, and discovering its potential to provide much more than being just a communication or marketing platform (Nair, 2011). "*These companies are experimenting with more advanced uses of social media, i.e. involving consumers through invitations to participate in various activities, such as product development (including idea generation, design and engineering, testing and launching), customer service feedback and so on*", explain Martini et al. (2013).

Social media usage is also impacting the firms' performance (Schniederjans et al., 2013; Del-Carmen et al., 2018). As firms are using social media for multiple purposes in their daily operations such as marketing, communication, and customer service, it is having an impact on different aspects such as performance. Tajvidi and Karami (2017) explain that "*social media has been seen as an effective billboard for a firm's commercial goals and better business performance*". As a result of using social media, firms are establishing strong networks that include customers, businesses and suppliers (Siamagka et al., 2015). These established networks are resulting in superior performance (Naude et al., 2014).

Social media networks provide easy access to customer-related data and allow the firm to interact directly with its customers (Del-Carmen et al., 2018). The advantage that social media provides in this aspect is that this exchange of information happens in a fast, low cost, and efficient manner (Schniederjans et al., 2013). As a result, the impact of social media on performance is quicker and more direct (Del-Carmen et al., 2018).

1.2 Research Problem Statement

Firms are using social media for different purposes and objectives such as operations, marketing, and innovation management (Kiron et al, 2012). Lam et al. (2016) list the following six objectives behind firms' adoption of social media: "*1) employee collaboration and internal communication, 2) inter-firm cooperation and supply chain management, 3) new product development and idea generation, 4)*

public relations and corporate social responsibility, 5) customer service and customer relationship management, and 6) sales and marketing".

The number of objectives behind a firm's social media adoption varies from one firm to another. Some firms might use it for marketing, some for customer service, some for both or more. Regardless of the different objectives behind their usage, this usage has an impact on the firm itself in different aspects. Two areas where social media usage is impacting the firm are innovation and performance, as mentioned in the introduction.

The majority of current studies that addressed the impact of social media on innovation or on performance looked at the firm's general use of social media. It is important to study the impact of specific social media initiatives on innovation and on performance, as that would allow us to understand which initiatives impacts which outcomes. Accordingly, firms would be able to focus their efforts on certain initiatives depending on what they wish to achieve.

Social media offers many opportunities that firms can benefit from to innovate and to achieve superior performance. Loads of data – referred to as Big Data - is being created on a daily basis through different users. Scholars suggest that collecting and analysing this data can unlock massive value for the firms. In this research, the following two social media initiatives representing knowledge acquisition from social media are proposed: social media information collection and social media proactive market orientation. These two initiatives will be defined and discussed in details in the next chapters. The focus of this research will be on studying the impact of these two initiatives on innovation and performance.

Using social media to acquire knowledge through initiatives such as information collection and proactive market orientation can have important implications on innovation and on the performance of a firm. Previous research (Barney, 1991; DeCarolis and Deeds, 1999) has established that knowledge is a key element in the innovation process. Social media provides the firm with access to massive amounts of data and consequently knowledge, given the data is handled in the right way through a process of data collection and analysis. However, given the nature and structure of data present on social media platforms, it is not clear if it would have any impact on the innovativeness of the firm since it's unknown if firms are benefiting from this data in the first place, or using it in their innovation processes. The same applies to the impact on performance. What kind of impact does using social media in this perspective have on the firm's performance? For example, it could result in an increase in revenue due to better sales results, which could emerge from having identified customer needs from social media. Or it could result in higher costs as a result of IT investment to make it possible to use and benefit from those social media platforms.

As a result, this research attempts to study the link between using social media for information collection and proactive market orientation strategy, and innovation and performance. The focus is on financial performance. To the best of the researcher's knowledge, no previous research has studied the impact of social media information collection and social media proactive market orientation initiatives on innovation, and on the financial performance of the firm.

To study the link between social media and innovation, and between social media and financial performance, this research followed a mixed methods approach. Data were collected in two separate surveys from companies in different industries in the United States. One survey collected the quantitative data, and another collected the qualitative data. The purpose of the qualitative data was to triangulate the results achieved from the quantitative data in order to further strengthen the findings of the research.

1.3 Research Aim and Objectives

This research aims to better understand the impact of certain social media initiatives on both innovation and financial performance. Specifically, two social media initiatives are considered: social media information collection and social media proactive market orientation. As a result, the aim of this thesis is to:

"Investigate the impact of social media information collection and proactive market orientation on innovation, and on the financial performance of the firm and, in doing so, develop and propose a model that may assist in understanding how social media affect innovation and performance at the firm's level."

To achieve this aim, the following activities were set:

1. To perform a literature review on social media, innovation, and performance with a focus on the firms' usage of social media for innovation and for achieving superior performance.
2. To develop and propose a conceptual model demonstrating the impact of social media on innovation and on financial performance, and highlighting potential mediators in these relationships.
3. To collect and analyse primary quantitative data through a survey, in order to test the proposed model.
4. To collect and analyse primary qualitative data through a questionnaire to triangulate the results, and understand how and why social media impact innovation and financial performance.

5. To discuss the findings from the data analysis and validate the proposed research hypotheses.
6. To present the theoretical and practical applications of the findings and suggest a path for further research in this domain.

1.4 Structure of the Thesis

The purpose of this section is to provide an overview of the thesis. In chapter 1 (current chapter), an introduction to this thesis is provided to establish the basis of this research. Then in chapter 2, a literature review is presented highlighting the key points considered, the knowledge gap, and the research questions. In chapter 3, the research framework is discussed and the conceptual model is developed. After that in chapter 4, the mixed methods approach that the research follows is explained. Next, in chapters 5 and 6, the quantitative and qualitative data findings and analysis are presented respectively. These findings are then discussed in chapter 7. Finally, the research is concluded in chapter 8 by stating the research contributions, limitations, and future research direction. The next section provides a more detailed overview of the chapters of this thesis.

- **Chapter 1: Introduction to the Research**

This chapter represents an introduction to the research. First, the internet impact and social media are introduced. Then, the importance of innovation and performance for firms is explained. The introductions of social media, innovation, and performance lead to the establishment of the link between them which represents the basis of this thesis. After that, the research problem is presented identifying social media information collection and social media proactive market orientation as two potential social media initiatives that might affect innovation and financial performance of the firm. The research aim and activities are then stated. Finally, an overview of the full thesis is provided.

- **Chapter 2: Literature Review**

In chapter 2, a literature review covering the key points is presented. The main three elements addressed are social media, innovation, and performance. These three elements are tackled separately first, where the definition of each is provided. Then an overview of each pair of elements (social media and innovation, social media and performance, innovation and performance) is discussed by highlighting previous studies that have attended to these topics, and explaining how this research differs from previous ones. As a result of the literature review, the knowledge gap is identified, and the research questions are formulated, concluding this chapter.

- **Chapter 3: Research Framework and Conceptual Model**

The research framework is then discussed in this chapter. After a short introduction to the chapter, the theoretical foundation/background of this research is discussed. An overview of these theories is provided. In the next section, the following potential mediators that are considered in this research are discussed: IT infrastructure, social capital, and organizational capital. Then the reason behind considering them as mediators instead of moderators is explained. Chapter 3 is then concluded by presenting the conceptual model that was developed, and that will be tested in this research.

- **Chapter 4: Research Methodology: A Mixed Methods Approach**

The purpose of this chapter is to explain the research methodology. This study follows a mixed method approach. First, the research philosophy and paradigms are explained. Then, the hypotheses to be tested are developed. After that, the research strategy and sampling process are discussed. Since a mixed methods approach is followed in this study, the data collection procedure for each method (quantitative and qualitative) including the questionnaire design, constructs, sample characteristics, etc. is presented separately. Finally, the ethical considerations of this research are stated.

- **Chapter 5: Quantitative Data Findings and Analysis**

After discussing the data collection in the previous chapter, the quantitative findings and analysis are stated in this chapter. First, structural equation modelling is introduced, as it will be used to test the model in this research. Then the measurement model is presented including details about the sample, missing data, confirmatory analysis, and the fit indices. After that, the empirical results are stated and different validity measures are established. Finally, the hypotheses developed in chapter 4 are tested, and the chapter is concluded.

- **Chapter 6: Qualitative Data Findings and Analysis**

In this chapter, the findings and analysis of the qualitative data are stated, after the data collection method was discussed in chapter 4. After introducing the chapter, the descriptive data analysis is presented. Then, the initial codes are generated from the data itself and presented. Finally, the outcome of the analysis represented by the themes identified is presented.

- **Chapter 7: Discussions**

As both the quantitative and qualitative data were analysed and findings were stated in chapters 5 and 6 respectively, the purpose of this chapter is to discuss these findings. The discussions are based on the hypothesis testing of results from chapter 5 and findings of chapter 6. In these discussions,

the quantitative testing result of a hypothesis is first presented, and then the qualitative data findings are presented to support these results and discussed together. The discussions are presented in two main sections: one section addressing the impact of social media on innovation and financial performance without the presences of the mediators, and another with the presence of the mediators.

- **Chapter 8: Conclusions, Contributions, Limitations and Future Research**

Chapter 8 is the last chapter of this thesis. Within this chapter, a recap of the research is presented, in order to explain how the aim and activities of this research were met. Then, the theoretical and practical contributions this thesis make are stated. Every research has certain limitations and this applied to this research. These limitations are explained in this chapter. Finally, based on the findings of this thesis, a future research direction is suggested, which concludes this chapter and the thesis as well.

1.5 Summary

This chapter provided an introduction to the thesis, where an overview of the research problem was presented. Different examples of social media objectives were listed, explaining that current studies tend to consider general social media initiatives rather than specific ones when addressing social media impact on innovation and performance. The two specific social media initiatives that this study will focus on are social media information collection and social media proactive market orientation. These initiatives will be discussed in the next chapters, where their importance and potential impact on the firm will be explained and tested.

The aim of this research – as stated in this chapter – is to study the impact of social media on innovation and on the financial performance of the firm. Different key objectives were set to achieve this aim. In the next chapters, the plan to meet these objectives and the aim of the study is explained, highlighting how the data was collected and analysed.

Chapter 2: Literature Review

2.1 Introduction

In chapter 1, an overview of the project was presented highlighting the research problem, as well as the research aim and activities. In this chapter, a literature review will be presented and will result in the identification of the research gap, and the formation of the research questions.

To perform the literature review, the main elements considered in this research were divided into three main topics: social media, innovation, and performance. The first phase (section 2.3) of the literature review presents a specific review for each one of these topics separately in order to be able to focus on the core of each topic. The second phase (section 2.4) is about tackling these topics each two together, in order to identify the current studies that have addressed these topics together. Hence, a literature review for three pairs was performed: social media and innovation, social media and performance, and innovation and performance.

The remainder of this chapter is organized as follows. First, an overview of the literature review search strategy that was followed is explained. Then, phase one is presented where the first topic discussed is social media including its definition, strategies, and an overview of Big Data since social media represents one of its main triggers given that social media data is "big" data (Vesset, 2013). The second topic discussed is innovation. The meaning of innovation is clarified by citing different definitions, then innovation models from the first model until the most recent are presented, with a focus on open innovation. The third topic addressed is performance, where different performance measurement systems are discussed. Next, phase two starts where a literature review of studies discussing two topics (social media, innovation, or performance) together is presented in the following order: social media and innovation, social media and performance, and innovation and performance. Based on the literature review performed, the knowledge gap was identified and is presented next. To fill this gap, the research questions were formulated and are stated after that. Finally, this chapter is concluded with a summary highlighting the key points of chapter 2.

2.2 Search Strategy

To perform the literature review, a search strategy was followed. To identify the search strategy to follow, three main items were defined: keywords, search field, and databases. Different keywords were used including social media, innovation, innovativeness, innovate, performance, big data, firm, company, organization. For the search fields, the main keywords such as social media, innovation, and performance were searched in the title, abstract, and keywords. While other keywords were searched anywhere always with the inclusion of one of the main keywords, in order to limit the scope of the search, as this research is addressing social media, innovation, and performance from a

business perspective at a firm's level. The search was done through different databases including Scopus, Web of Science, Proquest, and Ethos. The search results were limited to journal publications and conference publications. The references within the articles that were identified through the search were also checked as a source leading to relevant articles. Some of these citations were actually from books as well, and thus also books were included as sources and references in some parts of this thesis.

2.3 Literature Review Phase One

In phase one of the literature review, the three main elements of the research –social media, innovation, and performance – will be discussed separately.

2.3.1 Social Media

In this section, definitions of Web 2.0 and social media will be presented first. Then, social media and Big Data will be discussed. After that, social media initiatives will be defined and examples of how companies are using social media will be shared. Finally, how social media can represent a source of knowledge is explained.

2.3.1.1 Social Media Definitions

2.3.1.1.1 Web 2.0

Kaplan and Haenlein (2010) indicate that initially, the term Web 2.0 referred to a term used in 2004 to explain the evolution of the World Wide Web when users, as well as developers, started using the Web in a new form. However, the use of Web 2.0 as a term dates back to 2005, when O'Reilly(2005) was the first to propose it (Tsimonis and Dimitriadis, 2014). He explained that Web 2.0 should not be seen as a network, but as a platform where users are in control of their data. O'Reilly (2005) defined Web 2.0 as "*a set of principles and practices that tie together a veritable solar system of sites that demonstrate some or all of those principles, at a varying distance from that core*", while Kaplan and Haenlein (2010) defined it as a platform where applications and content are created and modified together by different users instead of being created separately. Constantinides and Fountain (2008) state that Web 2.0 is "*a collection of open-source, interactive and user-controlled online applications expanding the experiences, knowledge and market power of the users as participants in business and social processes*". They add that "*Web 2.0 applications support the creation of informal users' networks, facilitating the flow of ideas and knowledge by allowing efficient generation, dissemination, sharing and editing/refining of the informational content*."

Initially, before Web 2.0, the Web was designed to have the information flowing in one direction, where the content was made available online for users to consume, which was at that time a revolution by itself. Users could only write on websites that they own and read others content. Then

when Web 2.0 arrived, the information flow was in two directions instead of one: users can now read and write on their websites as well as other websites, and not only read.

2.3.1.1.2 Social Media

Social media include varieties of online applications such as social networking sites (SNSs), microblogs, blogs, forums, video posting, photo sharing, service reviews, product reviews and different types of communities(Aichner & Jacob, 2015). People are using different social media platforms such as Twitter, Facebook, Instagram, YouTube, TripAdvisor, Wikipedia, and other online forums to talk about their encounters and connect to other users (Chen et al., 2011). However, when it comes to the definitions of social media, many definitions exist as there is no unified definition which all scholars agree upon (Weller, 2015).

Social media facilitates the content generation process and information sharing by individuals (Kim & Johnson, 2016). Correa et al. (2010) establish social media as the consumption of internet or digital media that doesn't have much to do with traditional information media usage, providing a mechanism for the users to interact, communicate, and connect with each other through online platforms and instant messaging (Dubihlela and Rundora, 2015). Kaplan & Haenlein (2010) define social media as "*a group of internet-based applications that build on ideological and technological foundations of Web 2.0 and allows the creation and exchange of user-generated content* ".

A more detailed definition of social media was provided by Howard and Parks (2012) as "*(a) the information infrastructure and tools used to produce and distribute content; (b) the content that takes the digital form of personal messages, news, ideas, and cultural products; and (c) the people, organisations, and industries that produce and consume digital content*". Majchrzak et al. (2013) used the term social media to "*refer to a group of Internet-based technologies that allow users to easily create, edit, evaluate and/or link to content or to other creators of content*". Social media is an online platform offering tools that allow users to develop and share content that represents their experiences, and connect with others for business or for pleasure (Strauss and Frost, 2009). The internet-based publishing methods are built on the content generated by users, which is very different from traditional and broadcast media (Terry, 2009).

Kane et al. (2014) mentioned four essential features to define social media networks, where users: "*(1) have a unique user profile that is constructed by the user, by members of their network, and by the platform; (2) access digital content through, and protect it from, various search mechanisms provided by the platform; (3) can articulate a list of other users with whom they share a relational connection; and (4) view and traverse their connections and those made by others on the platform*."

Social media is also considered as the media that "*facilitates online communication, networking, and/or collaboration*" (Russo et al., 2008). Emphasizing the social affordance of social media, Hogan and Quan-Haase (2010) indicated that social media affords a two-way interaction with an audience, while Martini et al. (2013) explained that social media are tools that depend on the active content created by the users as its unique feature.

Social media are usually referred to as applications that are either fully based on content created by users, or significantly dependent on the content created by users to increase the value of the service or the application (Kangas et al., 2007). Social media is known as a powerful marketing tool, described as a communication strategy that motivates users to transfer messages to their networks, creating massive exposure growth opportunities for products and services (Cruz and Fill, 2008).

There are some definitions that specifically talk about social media websites rather than just social media in general. Mangold and Faulds (2009) for example define social media websites as different online sources where content is generated and consumed by users, while Kim et al. (2010) explain that social media websites are the sites " *that make it possible for people to form online communities, and share user-created contents*". Scott and Orlikowski (2014) add that these websites are characterized by "*the active engagement and online contributions*" of a large population of users.

Taking various key points and characteristics of social media from the different definitions that were mentioned above, such as internet-based (Kaplan & Haenlein, 2010 ; Majchrzak et al., 2013); interaction, communication, connection (Correa et al., 2010) ; and content type as digital (Howard and Parks, 2012 ; Kane et al. , 2014), social media is defined in this research as internet-based applications and platforms where users can create and exchange digital content, as well as interact, communicate and connect with other users.

2.3.1.2 Social Media and Big Data

After defining social media, this section discusses and defines Big Data, given the relationship between social media content that is being created on a daily basis and Big Data. The size of this created content on social media platforms was one of the triggers of Big Data (Vesset, 2013). The focus of this research, as explained in chapter one, is about knowledge acquisition from social media. To acquire knowledge, firms need to make use of this data accumulated on social media platforms. In other words, social media knowledge acquisition starts with Big Data. Given this strong relationship between social media knowledge acquisition and Big Data, an overview of Big Data is presented in this section.

"*Big Data is the storage and analysis of large and/or complex data sets using a series of techniques including, but not limited to NoSQL, MapReduce and machine learning*" explain Ward & Barker (2013). It is the data that is unmatched in scale and scope in relation to a given phenomenon as Shroeder (2012) states. Big Data is often sources of data accumulating large amounts at high speed. At the World Economic Forum in Davos in Switzerland 2012, Big Data was a topic that grabbed a lot of attention. Lohr (2012) states that "Big Data, Big Impact" report, that was revealed during the forum declared data a new class of economic asset, like currency or gold. He adds that Big Data is a marketing term, but also a phrase summarizing how trends are advancing in technology, and opening doors to new approaches changing the way we understand the world and make decisions. The data is growing at a fast pace, with more streams of data and new ones as well. "*There are now countless digital sensors worldwide in industrial equipment, automobiles, electrical meters and shipping crates. They can measure and communicate location, movement, vibration, temperature, humidity, even chemical changes in the air*", Lohr explains.

Parise et al (2012) define Big Data as the ability that allows organizations to draw out value from large amounts of data, while Cornwell (2013) explains that it is an attempt to handle big and complicated amounts of data which organizations can't store, process and analyse through traditional tools. It also includes unstructured data that can't be analysed easily. This unstructured data includes data coming from social networks, such as Facebook, Twitter, and LinkedIn. This stream of data itself is an asset for companies if they were able to reveal the hidden value within this data once it is analysed in the right way.

Another definition to Big Data explains that it is real-time data reaching petabytes in size when stored, and consisting of unstructured data that could be any kind of data, including text, video, audio, photos or any kind of data which can't be managed through traditional analysis tools (Kovar 2012). Kovar (2012) adds that it is the base of which cloud, online gaming, and social media networks are being built on. All aspects of data about a user on a social network, for example, are being analysed to better understand his preferences. This, for example, would allow companies to target a user with advertisement and marketing material that fits his needs.

To elaborate on the importance of unstructured data around us, Datskovsky (2013) explains that it makes up to 90% of all information around us, and that data is growing "*three times faster than structured data*". It is the currency of today, representing the future of business. Big Data is already having a huge impact on society, and that will increase in the future. It is a new way of doing business: a data-based decision making and new products and services full of data as McGee (2013) describes.

The main reason behind the start of Big Data is the huge amount of data that started being produced by different sources. As the size of this data grew more and more, the need for a different approach to analysing this data became crucial. Vesset (2013) explains that companies like Google, Yahoo, Amazon, Facebook, and Twitter triggered Big Data by producing big amounts of clickstream data which is useful only if gathered and analysed. He adds: "*The volume and flow of information were such that traditional web analytics methods were not capable of handling it*". Add to that the huge amount of data that organizations had for more than 30 years which kept growing with new volumes of multimedia data. Gary Curtis (2012), explains that the challenge was in combining all this data and making sense out of it, and that very few organizations are making use of the full potential of the data they have. "*Big data is changing business and creating new risks and opportunities. Savvy organizations are looking for ways to put it to work effectively*", admits Viswanathan (2012). One of the success stories of using Big Data at organizations is at Rolls Royce. They are using Big Data technologies in three main areas: operations, manufacture, and after-sales support as Paul Stein, the company's chief scientific officer explained: "*We generate tens of terabytes of data on each simulation of one of our jet engines. We then have to use some pretty sophisticated computer techniques to look into that massive data set and visualize whether that particular product we've designed is good or bad*"(Forbes 2015).

Big Data plays an important role in acquiring knowledge from social media through large amounts of data available on social media platforms. Knowledge acquisition starts with the data collection, where organizations information technology structure can be important to make this happen.

2.3.1.3 Social Media Initiatives

In the previous sections, social media and Big Data were defined, highlighting the link between them. In this section, the focus will be on social media initiatives. Social media is being associated with different sectors, such as: students/education (AlFaris et al., 2018; Al-Shdayfat, 2018; Haffner et al., 2018), medicine (Saenger et al., 2018; Impellizzeri, 2018; Cabera-Maqueda and Minhas, 2018), politics (Krzyzanowski, 2018; Salleh, 2017; Supovitz, 2017), disasters information diffusion (Matheson, 2018; Morita et al., 2018; Dong et at., 2018), and sports (Vale and Fernandes, 2018; Prado-Gasco et al., 2017; Sefiha and Reichman, 2017) to name few examples. However, for the purpose of this research, the scope is limited to the use of social media for business purposes i.e. at firms'/companies' level.

Influenced by new technologies such as social media platforms, firms nowadays operate in the age of real-time information (Dubihlela and Rundora, 2015). For social media use in business activities, Mount and Martinez (2014) suggest a four-step framework: scan, engage, learn and internalize.

Social media as a communication channel assists business organizations to achieve their different objectives such as customer service, marketing, branding, advertisement and public relations (Tajvidi and Karami, 2017). Social media is considered as an effective online platform for organizations to interact and connect with big numbers of potential customers enabling them to share information about their business products or services directly (Schaupp and Elanger, 2013), since it attracts users searching for information about products or services they want to buy and thus increases the purchasing intention of customers (Hajli, 2013). A firm's strategy when using social media depends on the objectives it is willing to achieve from that use. Lam et al. (2016) refer to the firm's adoption of social media for different organizational purposes as the firm's strategic use of social media. They classify the firm's social media use into six categories: "*1) employee collaboration and internal communication, 2) inter-firm cooperation and supply chain management, 3) new product development and idea generation, 4) public relations and corporate social responsibility, 5) customer service and customer relationship management, and 6) sales and marketing*". In this research, social media initiatives are defined as the set of actions the firm takes to achieve organizational objectives through social media usage. In the next section, examples of studies that addressed the impact of different social media initiatives on the firm's objectives are shared.

One of the main uses of social media by companies is for marketing purposes. Social media platforms represent a channel where companies can target and reach a large audience at a low cost. Marketing on social media can result in different positive effects on the company including an increase in sales, a stronger brand image, and better customer service. Seo and Park (2017) studied the effects of social media marketing activities on airline companies brand equity and customer response. They indicate that the airline companies' social media marketing activities have a significant effect on brand awareness and brand image. Wan and Ren (2017) wanted to understand the effect of companies' social media marketing content on product sales, so they analysed data from Taobao website, which is according to them, the largest e-commerce platform in China. They explain that companies' marketing content on social media has a positive and significant effect on sales. Chang et al. (2018) attempted to test if companies marketing efforts on social media have any value or benefits for the company. Working with a leading travel agency in Taiwan, they concluded that the social media marketing efforts of the company have a positive impact on sales of tourism products.

Social media platforms allow companies to create a direct relationship with customers. This relationship is a two-way relationship, as companies can communicate directly with their customers, and at the same time, customers can communicate directly with the companies. Based on this direct relationship, social media provides companies with a strong tool to improve their customer service and build this relationship with their customers. Agnihotri et al. (2015) studied the effect of social

media on customer satisfaction in B2B (business to business) sales. Their study indicated that social media plays an important role in information communication to customers and that a salesperson's social media usage enhances responsiveness and customer satisfaction. Wang and Kim (2017) attempted to test the effect of social media marketing on customer relationship capabilities and on performance. Based on their findings, they suggest that "*social CRM (customer relationship management) capability is critical when companies merge social media into their marketing strategies to improve customer engagement and firm performance*" (Wang and Kim, 2017). Chua and Banerjee (2013) studied the effect of social media usage on customer knowledge management. Since their case study was about Starbucks, they collected relevant text data about Starbucks from different sources such as newspapers, magazines, and journal publications. Based on their analysis, they indicate that social media usage can be a "*potential game-changer in supporting CKM (customer knowledge management) efforts*" (Chua and Banerjee, 2013).

As the number of social media users is increasing, the amount of data present on social media platforms is growing bigger than ever. Companies are trying to benefit from this data as it can provide them with valuable insights. One of these insights is related to product development. Companies can use feedback from customers on social media to understand their needs and requirements and develop their products accordingly. Bachir et al. (2017) examined how the use of social media applications can support new products development processes in corporations. Their findings suggest that "*social media can be viewed as an informal source for gaining an understanding of customers' preferences, competitors' activities, market trends and product feedback*" (Bachir et al., 2017), emphasizing the formal use of social media in new product development. Hidayanti et al. (2017) studied the effects of engaging customers through social media on industrial product development. They explain that interaction with customers through social media allows the company to improve and develop products based on what customers want and request. Peltola and Makinen (2014) discussed how social media adoption and usage influences new product development. Their study shows that there are potentially lots of benefits of social media tools usage as part of new product development practices.

Social media had an influence on companies and public relation practitioners, who are trying to achieve their public relations objectives through social media usage. Bashir and Aldaihani (2017) examined social media and public relations in Kuwaiti organizations, in order to understand how these organizations use social media to achieve their public relations objectives. They found that organizations use mainly Twitter and Instagram for information dissemination and promotion, this use, however, was not consistent and reactive rather than proactive. Alikilic and Atabek (2011) studied the adoption of social media in Turkey among public relations professionals. Their findings

emphasize the importance of social media usage for public relations as the practitioners confirmed. Sutherland (2017) explored the usage of social media for public relations by practitioners in Vietnam. She found that social media had an influence on the Vietnam-based public relations practitioners.

As elaborated, firms are using social media for different objectives that they want to achieve. The key point is that social media is presenting organizations with plenty of opportunities to achieve their different objectives, was it a marketing objective, a customer service objective, or any other objective.

2.3.1.4 Social Media: A source of knowledge

After discussing social media initiatives in the previous section, this section discusses social media as a source of knowledge. As data keeps on accumulating on social media, it represents a valuable source of knowledge. Acquiring knowledge is defined as "*the process by which knowledge is obtained*" (Huber, 1991), and is very important for firms. Scholars argue that knowledge acquisition and how a firm positions itself are crucial activities and drivers of economic development (Li et al., 2010; Augusto and Coelho, 2009). Organizational knowledge is a very important source of competitive advantage as the resource-based view proposed (Barney, 1991). In addition, the knowledge-based view considers knowledge as the most significant resource of a firm (Grant, 1996). For example, researchers suggest that online technology companies were successful because they were aware of the opportunities the market presented and had the ability to understand their clients (Oliveira and Von Hippel, 2011). This is due to the unique knowledge they are able to acquire, which maintains a firm's competitive advantage (Grant, 1996). These companies such as Amazon, Google, and Facebook – as explained earlier in section 2.3.1.2 – triggered Big Data and were able to use their own data. Also having the market knowledge incorporated in the firm's strategy is an asset that supports the competitive advantage ability (Jantunen, 2005). The combination of intangible resources forming a firm's knowledge represents a source of competitive advantage (Hitt et al., 2003). Cohen and Levinthal (1990) suggest that firms who target maintaining their competitive advantage must create and acquire new knowledge. This knowledge represents an important advantage that leads to innovation (Cadwallader et al., 2010). To achieve a better performance and innovation performance, knowledge acquisition is crucial (Agrawal et al., 2004), because, without this knowledge, firms are "*less able to discover and exploit new opportunities*", as Wiklund and Shepherd (2003) explain. In a competitive market, innovation depends on knowledge acquisition and development (Teece, 2007), since it "*enhances the breadth and depth of valuable information*" (Marvel and Lumpkin, 2007).

Different methods exist to acquire different types of knowledge (Brennan and Garvey, 2009). Knowledge acquisition is about obtaining knowledge, specifically, market knowledge acquisition relates to "*expanding the scope of information search beyond existing customers or markets*" (Zhou and Li, 2012). For example, the evolution of multinational firms depends on creating different types of knowledge from various sources, which results in opportunities to expand into new markets (Kogut and Zander, 1993; Spender and Grant, 1996).

Creating knowledge is a non-stop process as Nonaka and Konno (1998) state because knowledge is created as a result of the interactions that take place among or between individuals (Popadiuk and Choo, 2006). The social media platforms nowadays present a good location for these interactions to happen and as a result, a platform where knowledge is created. Scholars argue that acquiring knowledge impacts firms' performance in different processes such as product development and operation management issues (Palacios and Garrigos, 2006). Ruiz-Arroyo et al. (2012) explain that the firm's ability to acquire external knowledge is represented by its capacity to locate and acquire the externally generated knowledge. The majority of this external knowledge is usually related to customers and competitors (Zahra and George, 2002).

The knowledge that is acquired from social media is referred to as information that "*has the potential to create value for an organization*" (Tomas and Hult, 2003). Nguyen et al. (2015) define knowledge acquisition from social media as "*the ability to accumulate adequate and critical knowledge arising from social media*". Social media knowledge acquisition can be considered as "*experience accumulation which influences firms' capability to identify opportunities, errors, and threats*" (Zhang and Li, 2010). Knowledge acquisition from social media has many benefits for a firm, such as preventing negative impact that can result from lack of market and technology knowledge on a firm's performance. Knowledge acquisition from social media is a process of building up experiences, where a firm search, obtain, learn, and transfer knowledge (Gupta et al., 2010).

It is proposed in this research that knowledge acquisition from social media is an important entrance to reveal benefits that might be achieved from social media. If the information is present on the social media platforms and firms are not making use of it by acquiring it and turning this information into knowledge, then social media might not play a role in achieving their objectives, especially the ones a firm wants to achieve through social media usage. Tiago and Verissimo (2014) stated that one of the main benefits of using social media by firms is enhancing the process of collecting information and increasing knowledge levels. Rathore et al. (2016) indicated that the content published by customers on social media platforms provides firms with insights for product development. He explained that analysing this content provides the firm with insights that play a crucial role in the

product development process. For example, if a firm is using social media to achieve marketing objectives, they need first to acquire knowledge about the audience they are targeting on social media and build their marketing strategy based on that. Otherwise, just using social media for marketing without any background or targeting probably won't achieve the expected results. Mangold and Faulds (2009) highlighted this fact by explaining how important it is for firms to integrate social media in their promotional campaigns to gain knowledge about their customers' preferences, as it could lead to achieving different marketing goals.

Given the importance of knowledge acquisition from social media for firms to achieve any objectives they set in relation to their social media strategy, it will be the focus of this research rather than discussing social media in general.

2.3.1.5 Social Media Knowledge Acquisition Initiatives

On social media platforms, users are creating and sharing content on a daily basis. The size of the content being created is enormous and referred to as Big Data. This data is present on social media platforms in different forms and is mainly divided into two types: structured and unstructured data. To make use of the data available on social media, firms need to collect this data in order to transfer it into valuable knowledge. This research differentiates between two social media initiatives that are used to acquire knowledge from social media: social media information collection and social media proactive market orientation. These initiatives were previously used by Nguyen et al. (2015), who tested their impact on brand innovation (more details about this study in section 2.4.1.2).

Social media information collection is defined in this research as the ability to "*accumulate adequate and critical"* information arising from social media platforms (Nguyen et al., 2015). This critical information includes information collected about customers, suppliers, and competitors. Once this information is collected, organizations can transfer this information into knowledge through their analysis processes, and use this knowledge for the benefit of the organization in different perspectives such as innovation and performance.

Market orientation as a concept is described as a process where an organization generates market intelligence and responds to the information acquired (Kohli and Jaworski, 1990). There are two types of market orientation that were developed by Narver et al. (2000): responsive and proactive market orientation. Responsive market orientation focuses on understanding and satisfying customers expressed needs, while proactive market orientation focuses on discovering, understand, and satisfying customers' latent needs proactively (Nguyen et al., 2015). Proactive market orientation is more associated with innovation rather than responsive market orientation (Atuahene-Gima et al., 2005). Researchers suggest that it leads to more novel ideas, products and services (Narver et al.,

2004). Proactive market orientation stimulates the development and implementation of novel ideas (Levinthal and March, 1993). Since proactive market orientation is more linked to innovation, this research will focus on it rather than on responsive market orientation. It is proposed in this research that proactive market orientation activities can be facilitated through social media, where organizations can search for latent customer needs on social media platforms. Thus, social media proactive market orientation is defined as the actions the organization takes in order to identify customer latent needs through social media.

Both social media information collection and social media proactive market orientation use social media as a platform to collect intelligence. However, this research differentiates between them based on their different theoretical background. Nguyen et al. (2015) explain that proactive market orientation is based on the market-based view, while social media information collection is based on the knowledge-based view. They add that market orientation is not only about market-oriented strategy, but an organization culture, while information collection is strictly the act of acquiring information from the market through social media.

2.3.2 Innovation

After discussing social media - the first key element of this research- in the previous section, this section discusses the second key element: innovation.

Surviving competition in today's market represents one of the biggest challenges for all firms. The competition is high, and the success of firms is directly linked to their innovativeness (Hult, 2003). The section below presents different definitions of innovation, introduces innovation models, and explores open innovation.

2.3.2.1 Innovation Definition

Different definitions of innovation existed throughout history. Edison et al. (2013) define innovation as a "*production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres; renewal and enlargement of products, services, and markets; development of new methods of production; and the establishment of new management systems. It is both a process and an outcome*". Trott (2005) defines it as the management of activities starting from new idea generation to marketplace exploitation. He explains that innovation consists of theoretical conception, technical invention and commercial exploitation. Robertson (1967) defines innovation as any thought, behaviour or thing that is new because it is qualitatively different from current forms. Sternberg (2003) explains that channelling creativity to produce an idea or a product which people can use defines innovation. Regardless of the differences in explaining what is innovation through history, all point to the same thought stating that innovation is something “new”.

2.3.2.2 Innovation Models History

There have been five successive generations of innovation models (Rothwell, 1992): the technology push model, the need pull model, the coupling model, the integrated model, and the system and network model. The first two models are linear models while the last three are multidimensional models. Below, an overview of each model will be presented. Rothwell's models are regularly cited since his paper was published in 1992 (Godin 2013), his paper was cited more than 500 times up until today (according to web of science). Thus the section below will focus on his definition of innovation models, with figure 2.1 representing the key features and an illustration of the five models.

The first innovation model was the technology push model. This model is described as a linear model. It is a simple sequential process where the focus is on R&D, and the market is a receptacle for what they come out with (Carter and Williams, 1957). Brem et al (2009) define technology push as a process happening when the stimulus for new products and processes comes from (internal or external) research; where the goal is to make commercial use of new know-how, and the impulse is caused by the application push of a technical capability. Godin (2006) explains that it was one of the first frameworks developed trying to understand what relation exists between science and technology on one hand, and the economy on the other hand. He adds that "*the model postulated that innovation starts with basic research, is followed by applied research and development, and ends with production and diffusion*". The organization's R&D department leads in this model, it is responsible for initiating new ideas, and then the manufacturing department transforms these ideas into prototypes. Once verified, these prototypes are passed to the marketing department to be promoted (Niosi 1999). So the main contributor to this innovation model is the firm through R&D.

The need pull model came after the technology push model. It was also classified under the linear model of innovation. Like the technology push model, it is a simple sequential process, however, the focus is on the marketing department rather than on R&D (Myers and Marquis, 1969). Rothwell (1992) explains that in this model, the market is the source of ideas directing R&D, whose role is limited to a creative role in this model. The marketing team discovers business needs through surveys and market research, and communicate those findings to R&D according to Trott (2005). He adds that a market pulled process is based on finding areas where customers' needs are not met, and then finding solutions to those needs. Brem et al. (2009) define market push as a process happening when the innovations' source is a currently inadequate satisfaction of customer needs, which results in new demands for problem-solving ('invent-to-order' a product for a certain need), where the impulse comes from individuals or groups who articulate their subjective demands. The main contributor to this model was market economic demand. Mowery and Rosenberg (1979) criticized the demand-pull model and their paper was later used by many researchers as a resource to criticize

the demand-pull model. They claimed that it was not possible to differentiate between market demand and unlimited social needs. Godin et al. (2013) explain that Mowery and Rosenberg's paper was characterized as a devastating critique and that the researchers after it stopped reading earlier studies and cited their (Mowery and Rosenberg) paper as the definitive position.

After the linear models came the coupling model (Rothwell 1992). It was a sequential model, however, it included feedback loops (Rothwell and Zegveld, 1985). Rothwell explains that this model had push or pull or push/pull combinations, where the involvement of R&D and marketing was in balance. He adds that "*the emphasis was on integration at the R&D/marketing interface*". As this model was a mix between technology push and need pull models, this model has the same contributors: the firm and the economic demand.

Then there was a need for more communication between firms, stakeholders and customers. This need resulted in the development of the coupling model to an integrated model (Clark and Fujimoto, 1989). Rothwell (1992) explains that this model represented a shift from the sequential process, where development used to shift from function to function, to a parallel process involving simultaneously all firm functions. He adds that emphasis was on integration between R&D and manufacturing, and on closer collaboration with suppliers and customers.

The fifth model of innovation represents a fully integrated parallel development model (Rothwell, 1992). Rothwell (1992) notes that it is an idealized development of the integrated model with added features. This model benefits from the use of expert systems and simulation modelling in R&D, with a strong linkage between all stakeholders, customers, and collaborating companies. The emphasis was on corporate flexibility and speed of development with a focus on quality and other non-price factors (Rothwell 1992).

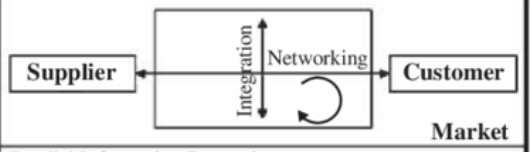
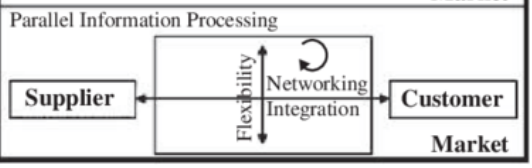
Generation	Key Features	Illustration
Technology-Push Model	Linear model that pushed new technology on the market	
Need-Pull Model	Linear model that pulls ideas from the market for the creation of innovation	
Coupling Model	Combined linear model of the former push and pull models, but with feedback loops between the two elements	
Integrated Model	Model of parallel lines between internal integration and external networking	
Fifth Generation Model	Model that stresses the importance of continuous innovation through systems integration, customised responses and extensive networks	

Figure 2. 1: Key features and illustration of Rothwell's five models (Stierand and Lynch, 2008)

After the integrated model, a new approach to innovation models was developed. The new model is referred to as open innovation and will be discussed in the next section.

2.3.2.3 Open Innovation

After discussing the five innovation models from the technology push model until the integrated model, this section discusses the open innovation model that was developed after the integrated model as a new approach to innovation.

In the past, firms used to depend on their research and development departments for innovation and creation of new products (Van de Vrande et al., 2009). This process to develop everything internally was labelled as the closed innovation model, where interaction with the external environment was limited (Chesbrough, 2003). However, this approach started to change as firms were acquiring external technologies and knowledge to complement their internal knowledge (Beamish and Lupton, 2009), which led to the idea of open innovation. Chesbrough was among the first to capture this new concept, explaining that other than the internal ideas that firms use to advance their technology, they should also use external ideas and paths to the market (Chesbrough, 2003).

In a closed innovation approach, firms internally generate their innovation ideas, while in an open innovation approach, firms also use external sources making the innovation process more open (Huizingh, 2010). The open innovation approach considers the firm's innovation process as an open system compared to the traditional vertically integrated model (West et al., 2014). It has been proposed as a new paradigm for innovation management (Gassmann, 2006).

Chesbrough (2003) initially explained that open innovation "*means that valuable ideas can come from inside or outside the company and can go to market from inside or outside the company as well. This approach places external ideas and external paths to market on the same level of importance as that reserved for internal ideas and paths*." His definition evolved, and three years later he (and his colleagues) defined open innovation as "*the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and to expand the markets for external use of innovation, respectively*" (Chesbrough et al., 2006). The inflows refer to the innovation activities related to acquiring knowledge from external sources, while the outflows refer to the innovation activities that leverage external technological capabilities (Lichtenthaler, 2008). In other words, this definition differentiates between two types of open innovation: inbound open innovation and outbound open innovation. Inbound open innovation involves opening the innovation process to the acquisition of knowledge from external sources, while outbound open innovation refers to the external exploitation of internal knowledge (Lichtenthaler, 2011).

Social media represents an external source of knowledge. Acquiring knowledge from an external source is the core of open innovation. Hence firms should adopt an open innovation model in order to make use of social media as an external source of knowledge in the innovation process. Examples of studies that addressed innovation and social media will be discussed in section 2.4.

2.3.3 Performance

Previously, the two key elements of this research, social media and innovation, were discussed. In this section, the third and last key element of this research, performance, will be presented.

To understand how an organization is progressing, it is important to evaluate and measure performance. Different performance measurement systems were developed and used through the past decades to measure and evaluate organizations' performance, including financial statement evaluation, dashboard, lean, kaizen, balanced scorecard, six sigma, and performance prism (Smulowitz, 2015). Three of these measurement and evaluation systems that are frequently used in research will be presented next: balanced scorecard, performance prism, and financial statement evaluation.

Kaplan and Norton (1992) were the first to introduce the balanced scorecard method. The method has been successfully used in different industries and sectors including business organizations, non-profit organizations, and governmental units (Zopiatis, 2010), to assist organizations to integrate performance, evaluation, and incentives (Wu and Hung, 2007). Kaplan and Norton (1992) proposed four perspectives that serve as the performance evaluation foundations: the financial perspective, the customer perspective, the internal perspective, and the learning and growth perspective. By effectively commanding different entries of evaluation, the balanced scorecard measures the performance of these perspectives of the organization, which assists organization leaders to assess the impacts of the strategies they are following and adjust those accordingly (Wu and Hung, 2007). It is argued that the balanced scorecard method represents a major performance measurement system since it measures performance from both financial and non-financial perspectives (Kartalis et al., 2013). MacStravic (1999) explained that organizations who use the balanced scorecard benefit from new insights, better operations, and improved customer relations and loyalty. Martin (1997) agrees on these benefits and adds that the balanced scorecard method provides the organization with the relevant measurement indices required to focus on different aspects of the business such as innovation, quality, and profitability. However, many other researchers criticized the balanced scorecard highlighting its limitations such as applying big numbers of variables creating complex optimization problems (Rickards, 2007) and lacking a common scale of measurement or benchmark to compare performance (Banker et al., 2000).

Similar to the balanced scorecard, the performance prism, which was proposed by Adams and Neely (2000), considers the needs of stakeholders. The main difference is that while the balanced scorecard looks at two stakeholders (shareholders and customers), the performance prism addresses suppliers, employees, regulators, intermediaries and communities as stakeholders (Adams and Neely, 2000). All stakeholders represent the focal point for the performance measurement in this case. The framework presented by Adams and Neely (2000) considers five inter-related facets (figure 2.2): stakeholders' satisfaction, stakeholders' contribution, strategies, processes, and capabilities. Neely et al. (2002) explain that strategies should be what influence performance measures.

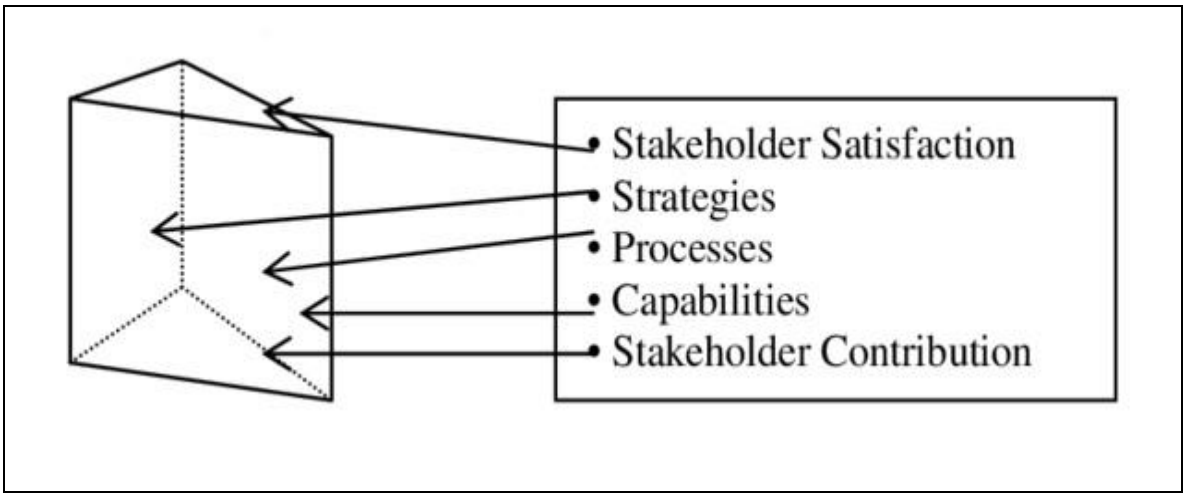


Figure 2. 2: The five facets of the performance prism (Adams and Neely, 2000)

Based on that, the performance prism framework first questions the organization's current strategy before starting to select performance measures, thus ensuring that these measures have a strong foundation (Najmi et al., 2012). However, the performance prism has some weak points. It works best for organizations who prioritize creating stakeholders' value and doesn't have a review procedure. Najmi et al. (2012) explain: "*the lack of a review procedure (the importance of which has been greatly emphasized by Neely) to maintain the effectiveness and relevance of the system can be considered as one of the Prism's shortcomings*".

To evaluate the financial performance of an organization, researchers usually looked at the financial statement with a focus on certain indices such as return on investment, revenue, and profit. A firm's performance is usually reflected in its operations, which are usually measured through the turnover and profit of the firm (Postruznik and Moretti, 2012). It includes "*ensuring the profitability of an organization, accounting for the sales prices of created products and services, measuring the success of resources used and measuring relationships between different costs and the turnover or profit*" as Postruznik and Moretti (2012) explain. Measuring a firm's financial performance has different purposes such as tracking certain indices and measures that would satisfy different stakeholders, manage the business operations effectively, and identify any signs of potential problems (Gruban, 2002).

Each measurement performance method has its strong and weak points. Depending on which element of performance the researcher is interested to measure, the measurement method is usually selected.

2.4 Literature Review Phase Two

In phase one of the literature review, the three main elements of this research social media, innovation, and performance were tackled separately. In phase two, a literature review of the studies

that addressed two of these elements together will be presented in the following order: social media and innovation, social media and performance, and innovation and performance.

2.4.1 Social Media and Innovation

Literature is rich with studies that tried to link social media and innovation. An overview of these studies in the literature is presented next in section 2.4.1.1. Then in section 2.4.1.2, studies that are more relevant to this research will be presented.

2.4.1.1 A General Overview

Social media and innovation have different relevant dimensions. For example, social media can be used for marketing, product development, public relations, customer service, etc. At the same time, innovation has multiple dimensions as well, scholars discuss service innovation, open innovation, new product development, etc. (Malsbender et al., 2014; Li and Li, 2014; Hong et al., 2015).

Social media can have an impact on service innovation. Malsbender et al. (2014) introduced a framework for service innovation enabled by social media explaining how organizations can leverage social media to support service innovation capabilities using certain affordances that are presented by social media. The authors applied their framework to open innovation in the public sector. Their paper matches service innovation capabilities and social media affordances.

Another type of innovation that is linked to social media is open innovation. Li and Li (2014) presented a hybrid intelligent framework and model that could link social media, artificial intelligence and decision support systems with open innovations. Bugshan (2015) investigated how organizations can use online communities for co-innovation, and how these online communities can impact the development of innovation policies of the firm. In another study, Bugshan (2015) examined the contribution of user-based communities and content generation by consumers through social media for open innovation of the firms. In their study, Charalabidis et al. (2014) explained how "*social media can be used to foster social innovation by stimulating user - social actors - to contribute their input through social media*". They did that by creating specific platforms on social media and then stimulating the user to participate using different stimulation methods.

Firms are also benefiting from social media with respect to new product development since social media presents them with a source to collect new ideas directly from users. Hong et al. (2015) developed a model to extract data from Google blogs and analyse it in order to find innovative ideas for new product development. Haavisto (2014) tested the possibility to use online discussion forums to generate ideas for product innovation by analysing textual data collected from online forums. Hajli et al. (2013) focused on how trust is built through social commerce on social media platforms where

users share their needs and feedback, and other users use this shared information to build trust with products/services. The authors argued that social commerce constructs can support the innovation process of firms who can use social media to provide tools for consumers to share their knowledge and needs. Yenicioglu and Suerdem (2015) proposed outlines of a conceptual framework for facilitating and maintaining the new product development process (NPD) for innovation. Their framework is built on a social media platform where stakeholders can come together virtually to participate in the NPD process.

2.4.1.2 A Focused Lens

After presenting an overview of some studies that linked social media to innovation, this section goes into more depth with four studies that were identified to have a close approach to this research where they tested similar dimensions either on social media side or on the innovation side. These studies were selected because they had more than one element related to social media or innovation in the study within the independent variable, outcome variable, mediator, or moderator. These studies will be discussed next, while a summary of each study is presented in table 2.1.

Perez-Gonzalez et al. (2017) examined the effect of social media technologies' use on industrial small and medium enterprises (SMEs) innovation. They focused on social media usage in three perspectives to: acquire information about customers, acquire information about competitors, and share knowledge. The context of their study was industrial SMEs from Cantabria in the North of Spain. They collected the data through a questionnaire which was completed by 111 participants and utilized a 5-point Likert scale to measure the items introduced. Their findings "*provide empirical evidence on the positive effects of social media technologies use for acquiring external information and for sharing knowledge on innovation performance*" (Perez-Gonzalez et al., 2017). Their study, however, was limited to small to medium enterprises. The way that these companies use social media might differ from large companies. The study as well targeted industrial companies, thus the findings can't be generalized to other sectors. It didn't either test any mediators or moderators that might play a role in the relation between social media and innovation, which would help understand how or when this impact occurs.

In a similar vein, Nguyen et al. (2015) considered the impact of acquiring knowledge from social media at the firm. However, they focused on the impact of social media on brand innovation rather than innovation. The context of their study was the online technology industry in China, and their sample frame was small to medium-sized firms. The authors collected primary data through an online questionnaire that was completed by 357 participants. The questionnaire utilized a seven-point Likert scale to measure the items in the survey. Based on their data analysis (using hierarchical

regression modelling), Nguyen et al. (2015) suggest that "*brand innovation is affected by both knowledge acquisition from social media and market orientation*". They add that brand innovation is also affected by social media capability which plays a moderator role between market orientation, knowledge acquisition, and brand innovation. Like Perez-Gonzalez et al. (2017) study, their study was limited to one industry which is the online technology industry, so it can't be generalized. The study was specific to brand innovation, which Nguyen et al. (2015) define as "*innovation arising from social media branding*", in relevance to the firm's branding strategy. The difference between social media strategic capability and knowledge acquisition from social media is not clear. Some might argue that acquiring knowledge from social media is a social media strategic capability by itself.

Benitez et al. (2016) also used social media capability as a moderator, however, between IT infrastructure and knowledge ambidexterity, and between knowledge ambidexterity and innovation rather than between a social media initiative and innovation. They examined "*the impact of information technology (IT)-enabled knowledge ambidexterity on innovation performance and the potential role of social media capability*". To test their model, the authors collected secondary data for 100 small firms in the United States from 8 different databases. Based on their analysis, Benitez et al. (2016) suggest that IT infrastructure allows the firm to explore new knowledge and has an effect on its innovation performance. Their findings also indicate that social media capability plays a moderator role between IT infrastructure and knowledge ambidexterity. The study was limited to small firms and measured two variables (IT infrastructure and knowledge ambidexterity) using content analysis which may have some bias. Benitez et al. (2016) suggest that social media capability moderates the relation between IT infrastructure and innovation through knowledge ambidexterity. However, some might argue that it is the other way around, and the IT infrastructure is what allows the relationship between social media and innovation to happen.

Unlike Benitez et al. (2016), Lam et al. (2016) studied the direct impact of social media on innovation, rather than using it as a moderator. Specifically, they explored the impact of social initiatives a firm pursue, on its innovativeness and operational efficiency. They define social media initiatives as the firm's adoption of "*social media for various organizational purposes such as marketing, operations, and innovation management*" (Lam et al., 2016). To test their propositions, they used secondary data collected from different databases. To measure innovativeness, the authors relied on innovation ratings published in Fortune (database) and standardized those ratings. Lam et al. (2016) collected data about social media initiatives by searching Factiva database for announcements of social media initiatives relevant to the firms they managed to collect data for through Compustat (measuring innovativeness). Based on their analysis, they conclude that "*social media initiatives have positive impacts on operational efficiency and innovativeness*". The study focused on general social media

initiatives rather than specific ones. It measured social media through announcements which might raise some questions about this specific measure. Also, innovation was measured through a published rating, and it is not clear how this rating was calculated.

Overall, these studies provided valuable insights, however, they had certain limitations related to their constructs, industry, location, or method used.

Authors	Industry	Country	Data Type	Independent Variable	Mediator	Moderator	Outcome Variable	Study Limitations
Nguyen et al. (2015)	Online Technology	China	Primary	-knowledge acquisition from social media -proactive market orientation -reactive market orientation	-none	- social media strategic capability	-brand innovation	-specific online context (industry) -focused on brand innovation
Lam et al. (2016)	General	No specific country	Secondary	-social media initiatives	-none	-none	-innovativeness -operational efficiency	-measuring social media initiatives based on announcements in Factiva -measuring innovativeness through innovation rating published by Fortune
Benitez et al. (2016)	General	United States	Secondary	-IT infrastructure	-knowledge ambidexterity	-social media capability	-Innovation performance	-considered only small firms -variables measurement methods that might have some bias
Perez-Gonzalez et al. (2017)	Industrial SMEs	Spain	Primary	-SM technology use to acquire customer info -SM technology use to acquire company info -SM technology use for knowledge sharing	-none	-none	-Innovation	-study limited to SMEs -study limited to industrial companies

Table 2. 1: A summary of social media and innovation focused lens studies

2.4.2 Social Media and Performance

While the previous section discussed studies that addressed social media and innovation, this section discusses the studies that addressed social media and performance.

The impact of social media on performance has been addressed in literature from different perspectives. Similar to how social media and innovation were addressed, scholars tried to link different dimensions of social media to different dimensions of performance. An overview of these studies in the literature is presented next in section 2.4.2.1. Then in section 2.4.2.2, studies that are addressing a dimension relevant to the ongoing research will be presented.

2.4.2.1 A General Overview

Scholars link different dimensions to performance such as business performance, sales performance, shares performance, equity, and financial performance. Social media as well can be looked at from different perspectives such as marketing, product development, public relations, and customer service. Paniagua and Sapena (2014) attempted to link social media to performance by studying the effect of the number of followers and likes on social media on a firm's share value and found a positive relationship when a critical mass of followers is achieved. Wang and Kim (2017) suggested that social media plays a moderating role between social customer relationship management and the firm's performance. Kim et al. (2015) explored the relationship between the firm value and its social media activity focusing on restaurant companies in the United States. Their findings suggest a positive linear relationship between the companies' social media activity and their value (Tobin's q). To understand how social media can impact organizational performance in Malaysia, Parveen et al. (2015) followed a qualitative approach and interviewed six senior managers of organizations that are using social media and found out that social media has " *a greater impact on the performance of organizations in terms of enhancement in customer relations and customer service activities, improvement in information accessibility and cost reduction in terms of marketing and customer service*"(Parveen et al., 2015). Charoensukmongkol and Sasatanun (2017) indicated that entrepreneurs who frequently used social media for customer relationship management "*tended to report higher satisfaction with their business performance*", based on their study which small business owners in Thailand participated in. Kim et al. (2015) studied how managing social media effectively can affect hotels' performance. They suggest that hotels who had better overall ratings and a higher response rate to negative comments had higher performance. To examine if any link exists between social media and financial performance of restaurants, Kim et al. (2016) focused on online reviews and found out that these reviews have a significant impact on restaurants' performance.

2.4.2.2 A Focused Lens

Four studies were identified in this section as well to have a close approach to this research where they tested similar dimensions either on the social media side or on the performance side. These studies were selected because they had more than one element related to social media or performance in the study within the independent variable, outcome variable, or mediator. These studies will be discussed next, while a summary of each study is presented in table 2.2.

Schniederjans et al. (2013) examined how social media can enhance the financial performance of a firm from an impression management perspective. They test the following social media usage strategies on the firm's financial performance: ingratiation, intimidation, organizational promotion, exemplification, and supplication. To measure their items, Schniederjans et al. (2013) used secondary data. For financial performance, they relied on data from the Centre of Research in Security Prices and used stock response modelling which uses stock returns as a measure of financial performance (specifically quarterly earnings per share was used). For social media data, the authors collected data from blogs, forums and corporate websites and classified the data using support vector machine. Their sample included 150 randomly selected public companies that traded in the pharmaceutical industry. Based on their data analysis, Schniederjans et al. (2013) suggest that "*social media's usage in impression management strategies has only a partial, positive connection to financial performance*". The study though had some limitations. The methodological approach that was followed to classify data into the specific social media categories might not be accurate since it was an automated text classification. Also, it is not clear the impression management strategies that were used, were selected based on what. Some might argue that the one measure (quarterly earnings per share) that was used is not enough to evaluate a firm's performance.

Tajvidi and Karami (2017) agree with Schniederjans et al. (2013) regarding the impact of social media on performance. They examined the effect of social media use in SMEs on firm performance. They focused on the hotel industry in the United Kingdom. To measure social media, they had two constructs separate by their mode: online and offline. The online construct referred to the respondents' use of social media sites such as Twitter and Facebook, while the offline construct referred to things like face-to-face meetings and participation in events. The performance construct was measured by questions asking respondents to rate their firm's growth and profitability over the past three years. The data was collected through a questionnaire that utilized a 5-point Likert scale and was completed by 384 participants. Based on their analysis, Tajvidi and Karami (2017) suggest that the use of social media has a positive effect on SMEs performance and that marketing capability, represented by branding and innovation capabilities, has a mediating role within this relation. Their study, however, is limited in terms of industry, companies' size, and social media construct

measurement. To measure social media, they named a few social media platforms and asked the participants if their company uses these platforms or not, rather than specifying how the company uses these platforms.

Similar to Tajvidi and Karami (2017), Del-Carmen et al. (2018) studied the impact of social media on firm performance. However, they focused on the impact of managerial involvement with social media on firm performance in the exporting industry in Spain. They identified three groups within their sample based on their managerial involvement with social media: potential, initiated, and expert. They collected their data through a web-based survey to a multi-industry sample of Spanish exporters, where 152 questionnaires utilizing a 5-point Likert scale were fully completed by the participants. The social media constructs Del-Carmen et al. (2018) used focused on the participant's perspective towards social media measuring his/her beliefs about social media, attitude, intention, and the level to which their firm uses social media, while firm performance construct was measured with questions comparing financial measures to their competitors. Their findings indicated that firms who belonged to the "expert" in social media usage cluster had a better performance than firms that belonged to the other groups, thus they suggested that higher use of social media can result in higher firm performance. The study is limited in terms of industry and location, as it only focuses on one industry in Spain. Also, the constructs used to measure social media focused on the will or intention to use rather than the objectives of using social media. Their study didn't consider any mediators/moderators to try to explain the relationship between social media and performance.

Unlike Del-Carmen et al. (2018), who proposed no mediators in the relationship between social media and performance, Kamboj et al. (2017) suggested that social capital plays a mediation role. Their study tested the impact of social media on firm performance, proposing a mediating role of social capital. The participants in the study were from "*a social media community consisting of members of a large IT company*" as the authors explain. The data was collected through an online survey where 132 questionnaires were fully completed. To measure social media, the authors used three dimensions: social use, cognitive use, and hedonic use. While firm performance was measured through questions asking participants to rate their own firm performance in the past years. Based on their findings, Kamboj et al. (2017) suggest that "*social media use has a positive influence on firm performance*". However, they didn't test the direct relationship between social media usage and performance, instead, they measured the relation from social media to social capital, and from social capital to performance, and thus the direct impact of social media on performance still untested. Another limitation of the study is that it considered a single industry, and actually a single community/company, and as a result, findings are hard to generalize. Since the participants in the study were all from the same company, it means that Kamboj et al. (2017) measured one value of

performance, and thus it is unclear how they could study the impact of social media on performance given that they had only one value of performance.

In general, these studies had important findings, however, they had different limitations related to industry, location, or constructs.

Authors	Industry	Country	Data Type	Independent Variable	Mediator	Moderator	Outcome Variable	Study Limitations
Schniederjans et al. (2013)	Pharmaceutical	Random publicly traded companies	secondary	-social media usage in impression management strategy, ingratiation, intimidation, organizational promotion, exemplification, and supplication	-none	-none	-financial performance	-methodological approach: automated text classification -selection of impression management strategies -one measure to evaluate performance
Del-Carmen et al. (2018)	Exporting	Spain	primary	-beliefs about social media use outcome -attitude towards social media -intention to use -social media use	-none	-none	-financial performance	-single industry -location
Tajvidi and Karami (2017)	Hotel industry	United Kingdom	primary	-social media online use -social media offline use	-branding capability -innovation capability	-none	-performance	-social media construct measurement -single industry -company size (SMEs)
Kamboj et al. (2017)	Information technology	Not specified	primary	-social media social use -social media hedonic use -social media cognitive use	-social capital	-none	-performance	-single industry -single community/company

Table 2. 2: A summary of social media and performance focused lens studies

2.4.3 Innovation and Performance

In this third and last section of phase two of the literature review, studies that addressed innovation and performance are presented.

When it comes to studies exploring the link between innovation and performance, there is no shortage at all. Numerous studies have addressed this topic and tested the impact of innovation on performance in different contexts, industries, and locations. The link between innovation and performance has been established, hence it is not part of the research questions in this study. However, it will still be tested in this research to see if the results are consistent with current literature. Below, some examples of studies that addressed the impact of innovation on performance are presented.

Eggert et al. (2014) explored the impact of product and service innovations on financial performance for industrial companies in Germany. To do so, they relied on panel data that covers a three year period from 558 German industrial companies to investigate the financial results of product innovations. Eggert et al. (2014) suggested that there is a positive impact of product innovation on financial performance.

Ho et al. (2017) examined the relationship between innovation and financial performance in the agricultural industry in the emerging economy of Vietnam. They found that there is a positive link between innovation and the financial performance of the firm. Ho et al. (2014) explain their results: "*value chain actors employ their knowledge and understanding about the customer, which are then disseminated among the chain parties to innovate the beef cattle business. By doing that those innovations enhance the financial performance of beef cattle value chain*."

Postruznik and Moretti (2012) studied the influence of innovation on financial performance in Slovenia. To do so, they conducted 11 semi-structured interviews in the insurance and construction industries in Slovenia. Their analysis shows that companies in the construction sector who are more aware of the importance of innovation are financially more successful than companies that aren't.

Bockova and Zizlavsky (2016) investigated the impact of innovation on financial performance in large companies in the Czech Republic manufacturing industry. To do so, they used secondary data from the Amadeus database. The authors specifically tested the effect of innovation investments a company makes on its financial performance. Bockova and Zizlavsky (2016) conclude that "*the long-term financial performance of investigated companies is closely linked to their investment into innovation*".

Liao and Rice (2009) examined the impact of innovation on the firm financial performance in Australia, proposing a mediation role of market management and transformation strategies. Their research sample included 449 Australian small to medium enterprises in the manufacturing industry. Based on their findings, the authors suggest that innovation drives organizational performance when it is mediated by market management and transformation strategies.

Cerne et al. (2015) focused on technological innovation in addressing the relationship between innovation and firm's performance. They examined how "*technological innovations spur the need for new managerial solutions, which in turn result in improved firm performance*". The data that the authors used represented 604 firms from three different countries: Slovenia, Spain, and South Korea. Based on their findings, they concluded that the firm's benefit from technological innovations is enabled by innovation management, resulting in superior financial performance.

Perin et al. (2016) studied how innovation can assist firms to achieve higher performance. To test their assumptions, they collected data from the Brazilian industrial sector, where 324 surveys were completed by the participants. Based on their analysis, the authors indicate that in emerging economies, innovation plays an important role for firms' performance, as these innovations become a source of competitive advantage for these companies and as a result can improve the overall performance.

Dunk (2011) explored the role that budgets in organizations play in the relationship between product innovation and the firm's financial performance. Dunk (2011) argues that "*the extent to which product innovation has a positive impact on the financial performance of firms is dependent on the manner in which budgets are used in the organization*". To test his assumptions, Dunk collected data within the Australian manufacturing industry through a survey that was completed by 77 managers. The author's finding indicates that if budgets were used for planning purposes, then product innovation has a positive impact on performance resulting in enhanced performance.

Przychodzen and Przychodzen (2014) focused on eco-innovation when studying the impact of innovation on the financial performance of firms. The purpose of their study was to understand the implications of innovation on financial performance within the area of environmental innovation. The authors used secondary data of Polish and Hungarian publicly listed companies. Based on their findings, Przychodzen and Przychodzen (2014) indicate that "*eco-innovators were generally characterized by higher returns on assets and equity and lower earnings retention*", suggesting a better financial performance as an impact of eco-innovation.

Bigliardi (2013) examined the effect of innovation on financial performance for small and medium enterprises in the food machinery industry. The author collected the data through a questionnaire that was completed by 98 participants. The study findings suggest that there is an increase in financial performance as a result of an increase in the innovation level. Bigliardi (2013) specifies that innovations that are developed to meet customer needs and to differentiate from competitors result in enhanced financial performance.

Cortez and Cudia (2010) investigated the impact of environmental innovations on the financial performance of the Japanese automotive and electronics companies, by measuring environmental innovations through environmental costs reported by these companies. Their analysis indicates that there is a linear relationship between environmental innovations and financial performance of the Japanese firms who were included in the study.

Hariyati and Tjahjadi (2015) examined the relationship between sustainable innovation strategy and financial performance. He suggested that environmental performance plays a mediation role in that relation. The data for the study was collected in Indonesia through a questionnaire which was completed by managers of business units manufacturing companies. Based on the research findings, Hariyati and Tjahjadi (2015) suggest that sustainable innovation strategy affect financial performance and that environmental performance plays a partial mediation role.

As can be seen from the above-presented research, scholars have studied the relation between innovation and financial performance in different setups. As a result, they have established a link between innovation and financial performance. Yet, this research will still examine this link in order to see if the results are consistent with current studies.

2.5 The Knowledge Gap

After discussing studies that addressed social media and innovation, social media and performance, and innovation and performance, a knowledge gap was identified and is presented in this section.

Lam et al. (2016) encouraged researchers to explore more possible outcomes of firms' social media efforts. They state that "*more research on the impact of firms' social media initiatives is needed*". The literature review presented has led to the identification of some gaps in the literature with respect to social media and innovation, and social media and performance. These gaps are presented below, highlighting how this research aims to fill these gaps.

Many researchers have studied the impact of social media on innovation. To do so, researchers collected different social media measures and tested its impact on different types of innovation. However, in most of the cases, scholars tended to measure general social media usage or strategy or

initiatives that a firm applies, and they rarely addressed the impact of a specific social media initiative on innovation. Nguyen et al. (2015) attempted to study the impact of specific social media initiatives on innovation, however, their study focused only on brand innovation. They explain: "*this study focused on innovation radicalness to depict brand innovation. Future research should examine the effect of these variables and corresponding relationships using other innovation types*". As a result of this, there is a gap in the literature in identifying the impact of specific social media initiatives on innovation. This research intends to fill this gap by focusing on specific social media initiatives related to acquiring knowledge from social media and study the impact of these social media initiatives on innovation.

When it comes to the studies that addressed social media impact on financial performance, a similar gap to the one in studies addressing social media and innovation exists. When studying the impact of social media initiatives on financial performance, scholars considered general social media initiatives. Few studies considered the impact of a specific set of actions that a firm takes with respect to social media usage on its performance. It is still unclear for instance if acquiring specific knowledge from social media can have an impact on financial performance. To fill this gap, this research intends to study the impact of social media knowledge acquisition on the financial performance of firms.

Another point that is relevant to the impact of social media on both, innovation and performance is the possibility of the existence of certain mediators within these relations. Very few studies have attempted to test if any mediators play a role in these relations. In this research, potential mediators are proposed and tested.

Knowledge is a very important source of competitive advantage (Barney, 1991), and the most significant resource of a firm (Grant, 1996). It is a very important advantage which leads to innovation (Cadwallader et al., 2010). Knowledge acquisition is critical to achieving better performance and better innovation performance (Agrawal et al., 2004). Social media offers firms a valuable opportunity to acquire knowledge that can lead to innovation and superior performance. To the best of the researcher's knowledge, no previous studies have examined the impact of knowledge acquired from social media on innovation and financial performance. Therefore, this study attempts to fill this gap by studying the impact of knowledge acquired through social media on innovation, and on the financial performance of the firm.

2.6 Research Questions

To achieve the aim of this research, one main question and four sub-questions were formulated as follows:

The main question:

- "How can knowledge acquired from social media impact innovation and financial performance of the firm?"

The sub-questions:

- What is the impact of knowledge acquired from social media on innovation?
- What is the impact of knowledge acquired from social media on financial performance?
- What mediators play a role in the relationship between social media and innovation and social media and financial performance?
- Why does knowledge acquired from social media impact innovation and financial performance?

2.7 Summary

This chapter provided a literature review on social media, innovation and performance. This literature review was influenced by the aim of this research. After introducing the chapter by providing an overview of what it will include, the search strategy that was followed to perform the literature review was explained, where the search keywords and databases were identified. The literature review was then presented in two phases. Phase one addressed the three main elements of this research individually, while phase two addressed these elements each two together.

In phase one, a section focusing on social media literature was presented. In this section, different social media definitions were stated. Since one of the first steps to benefit from social media would be to collect the massive data amounts being created there, an overview of the link between social media and big data was presented. After that, a sample of current social media initiatives that firms are putting into practice was examined. Then, social media as a source of knowledge was discussed highlighting first the importance of knowledge for a firm, and then the opportunity that social media represent as a source to acquire knowledge.

The next section was about innovation. First, innovation definitions were presented followed by an overview of innovation models through history up until the most recent innovation models that are currently being followed. Then, the concept of open innovation was defined and discussed.

After the innovation section, an overview of firms' performance was presented highlighting different performance measurement systems with a focus on balanced scorecard, performance prism, and financial performance.

Then in phase two, the first two sections discussed studies that addressed both social media and innovation and social media and performance respectively. Within each section, a general overview was presented first, followed with a detailed review of certain studies that were marked as important due to their relevance to the ongoing research.

Studying the impact of innovation on performance is not in the scope of this research, as the link between innovation and performance has been established. To demonstrate that, the next section provided evidence from literature confirming the relation between innovation and performance, where examples from different studies were presented.

The final two sections of this chapter discussed the knowledge gap identified as well as the research questions formulated. Based on the literature review performed, a gap was identified and presented: no previous research (to the best of the author's knowledge) has attempted to study the impact of acquiring knowledge from social media on innovation, and on financial performance. The formulated research questions that were presented highlighted how this research intends to fill the identified gap.

In the next chapter, the theoretical foundation of this research is stated, the mediators are introduced and discussed, the hypotheses are developed, and finally, the conceptual model is presented.

Chapter 3: Theoretical Foundation and Conceptual Model

3.1 Introduction

In Chapter Two, a literature review was performed focusing on the three main elements of this research: social media, innovation, and performance. Those three elements were defined, and an overview of each was presented. Then, studies addressing social media and innovation, social media and performance, and innovation and performance were presented leading to the identification of a knowledge gap, one of which this research is trying to fill. Based on the research gap, the research questions were formulated.

In this chapter, the theoretical foundation and the conceptual model that will be used to answer these questions will be presented. This research relies on the resource-based view (RBV) theory of the firm as its theoretical foundation. This theory will be first presented, with an overview of two theories that descend from it: knowledge-based view and dynamics capability view. Then, a literature review of how the resource-based view theory was used in previous research will be shared. After that, the hypotheses to be tested will be formulated. Based on the formulated hypotheses, the conceptual model is developed and presented. Finally, the chapter concludes with a summary.

3.2 Theoretical Foundation

The resource-based view of the firm represents the theoretical foundation of this research. The RBV has been widely applied in the information systems research in different perspectives, especially when examining the impact of resources on innovation or performance at the firm's level (Galunic and Rodan, 1998; Stieglitz and Heine, 2007; Hitt et al., 2001). Since this research examines the impact of social media usage on innovation and on performance and considers social media usage as a valuable resource of the firm, the RBV represents the theoretical framework this research relies on.

Before selecting the RBV as the theoretical foundation for this research, other theories were considered including: the social exchange theory which explains why individuals participate in a social exchange between each other's (Emerson, 1976); the social penetration theory which explains how human exchange forms relationships with a focus on the individual (Altman and Taylor 1973); and the social network theory which views community of individuals as connected actors (Wasserman and Faust, 1994). However, these theories were not selected given that the focus of the research is on the knowledge present on social media and how firms can use that knowledge rather than on the users of social media. Another theory considered was grounded theory method which is defined as "*as a qualitative research method that uses a systematic set of procedures to develop an inductively derived grounded theory about a phenomenon*" (Strauss and Corbin, 1994). However,

since this research is not exploratory in nature, grounded theory method was not selected. Another theory that was considered was the market-based view, which considers industry factors and external market orientation as the primary determinants of firm performance (Peteraf and Bergen, 2003). It was not selected as this research considers different resources and not only market resources. However, it is worth to mention that it applies to a small part of the research as it will be further explained (in section 3.3.1).

In the next section, an overview of the RBV theory and its applications are presented. In addition, an overview of the knowledge-based view and dynamic-capabilities view, both of which are based on the resource-based view, is presented too, as they are partially linked to this research and apply to some parts of it as it will be elaborated.

3.2.1 Resource-Based View

The Resource-Based View theory has been applied in the literature to link the innovation and performance of organizations to their resources. The theory was first introduced by Wernerfelt in 1984. The RBV offers a framework that provides explanations of the competitive advantage basis of the firm (Barney et al., 2011). According to the RBV, the firm's distinct/unique identity is provided by its tangible and intangible resources (Wernerfelt 1984; Rumelt 1984). It suggests that what determines the competitive advantage of a firm are the resources this firm possess. David-West et al. (2018) indicate that the main proposition of the RBV is that the "*differential firm performance arises due to firm resource heterogeneity and immobility*". The resources should be rare, non-substitutable, valuable, and not possible to imitate (Barney, 1991), otherwise, competitors can easily replicate these resources or use similar resources that would produce the same competitive advantage (Barney, 1995). Acquiring such resources strongly influences competitive advantage (Barney and Hesterly, 2015) resulting in a sustainable competitive advantage (Wernerfelt, 1984). Hence firms possessing such resources should protect and develop those (Crook et al., 2008), in order to "*generate economic rents, by taking advantage of market opportunities or neutralizing threats*", as Brulhart et al. (2017) explain.

The tangible and intangible assets that a firm possesses and utilize to achieve its objectives are referred to as resources (Barney and Arikan, 2001). Resources have been defined and classified with different approaches. Grant (1991) divided resources into three categories: tangible resources such as fixed assets and financial resources; intangible resources such as human resources and technology; and competency resources such as expertise and employee loyalty. Barney (1991) meanwhile, defined resources in three categories as well:" *1) physical capital resources such as technology; 2) human capital resources in the form of the tacit knowledge and skill of its workers,*

their relationship and insights; and 3) organizational capital resources including the formal reporting structures, planning, controlling and coordinating systems". Teece et al. (1997) had a more detailed classification and used eight categories to classify resources as: "*technology, knowledge, media, finance, reputation, structure, institution, and market and network resources*".

The RBV has been an influential framework for understanding how a firm can, through its resources and capabilities, achieve a competitive advantage, and by extension, financial performance (Corbett and Claridge, 2002). According to Barney (1991), firms that have rare and valuable resources attain a competitive advantage and achieve improved performance, since –according to the RBV – "*corporate performance is directly explained by the possession of strategic resources, characterized by value, scarcity, inimitability and non-substitutability*" (Barney, 1991). The RBV perspective argues that superior performance is a result of the specific valuable resources that the firm possesses (Lockett et al., 2009).

Social media represents a source of information to the firm. Different types of information can be acquired through its platforms including information about customers, suppliers, and competitors. Hence social media can be considered as a "resource". This research studies the impact of social media on innovation and on performance. Given that innovation is a major source to competitive advantage (Prajogo and Ahmed, 2006), this research proposes that social media, as a resource, can lead to innovation which leads to competitive advantage. It is also proposed that social media as a resource can lead to superior financial performance. The RBV suggests that resources lead to competitive advantage and a superior performance, hence it represents a solid theoretical framework for this research.

Based on that, this research also considers the theoretical frameworks that are based on the RBV: the knowledge-based view (KBV) and the dynamic capabilities view (DCV). An overview of these theoretical frameworks will be presented next.

3.2.1.1 Knowledge-Based View

After discussing the resource-based view, this section discusses the knowledge-based view (KBV). The knowledge-based view has its roots in the resource-based view of the firm which considers strategic assets as the main source of competitive advantage (Amit and Schoemaker, 1993). However, the KBV considers knowledge as the main strategic resource allowing the firm to create value from its exploitation of production when managed properly (DeCarolis and Deeds, 1999). Kogut and Zander (1992) explain that knowledge is embedded in the organizing principles of how employees interact with each other. Grant (1996) notes that the crucial source of competitive advantage is the integration and transfer of knowledge rather than the knowledge itself. The firms'

innovative capabilities depend very closely on the intellectual assets and knowledge they possess (Subramaniam and Youndt, 2005).

The KBV of the firm started to gain popularity in the '90s. There are different contributors to this view including Grant (1996, 2002), Kogut and Zander (1992), Nonaka (1994). The principles of KBV consider knowledge as a major productive resource of market value (Grant 1996). "*Different types of knowledge vary in their transferability*", explains Grant (2002). Explicit knowledge can be articulated and communicated between individuals and organizations, while tacit knowledge is manifest only in its application, thus transferring it from one individual to another is costly and slow (Nonaka 1994; Kogut and Zander 1992). One of the characteristics of knowledge is that its initial creation is more costly than its subsequent replication (Grant, 2002). Simon (1991) argues that knowledge is created by individuals, who need to specialize in order to be efficient in knowledge creation and storage. To produce a good or a service, the application of many types of knowledge is typically required (Kogut and Zander 1992).

The KBV highlights the importance of optimizing knowledge at the organizational level in order to be innovative (Duan and Xu, 2012). Nguyen et al. (2015) state that "*KBV advocates the implementation of best practices and continuous improvement, suggesting that the management of knowledge provides the most strategically important resource at a firm's disposal for enhancing team creativity and firm innovation performance*". Social media represents a platform where users are creating and sharing information regularly. Massive amounts of information are being circulated on a daily basis. The availability of this information on social media means that social media can be considered as a source of information. Firms can extract this information, analyse it, and transfer it to knowledge. For such firms, social media represents a source of knowledge. This research proposes that knowledge acquired from social media can impact the innovation and performance of the firm, thus the relevancy of the KBV.

3.2.1.2 Dynamic Capability View

The dynamic capabilities view (DCV) has its origins in the RBV as well. The RBV focuses on the firm's resources, however, it is static in nature and does not address how these resources are developed and integrated into a fast-changing environment (Teece et al., 1997). Dynamic capabilities are defined by Teece et al. (1997) as "*the firm's ability to integrate, build, and reconfigure internal and external competencies to address a rapidly changing environment*".

Dynamic capabilities involve capturing opportunities, assessing threats, directing resources based on action plans, and adjusting firms' systems and structures in order to "*create and address technological opportunities and competitive threats*" (Teece, 2012). As mentioned earlier, RBV

defines resources to be rare, valuable, inimitable, and non-substitutable. Dynamic capabilities meanwhile go beyond these resources and explain how a firm can adapt and innovate using these resources specified by the RBV. Such capabilities allow a firm to adjust its strategy and resources to keep a sustainable competitive advantage (Wade and Hulland, 2004).

According to Teece (2012), dynamic capabilities can be divided into three elements: the first element is "*sensing*", where the threats and opportunities are identified and assessed; the second element is "*seizing*", where the resources that address the identified threats and opportunities are mobilized; and the third element is "*transforming*", where the existing assets are reconfigured and modified.

The DCV highlights the combination of resources across different departments at an organization and considers this combination to be inimitable, suggesting that competitive advantage would not be sustainable without such dynamic capabilities (Kim et al., 2014).

The DCV proposes that markets are dynamic and organizations acquire and deploy resources in different ways due to the differences in their capabilities (Wang and Kim, 2017). However, organizations need to respond to market dynamics and develop product/service innovations in a fast manner to remain competitive (Teece et al., 1997). An Organization's resources are represented by its assets, processes, and tacit and explicit knowledge (Barney, 1991), while organizations' dynamic capabilities are represented by its ability to adapt, modify and integrate these resources to achieve and maintain a competitive advantage (Masuabi and Louwrence, 2016).

This research studies the impact of social media on innovation and on performance. The research also studies the potential role of IT infrastructure, social capital, and organizational capital (to be addressed in section 3.3.4 of this chapter) within these relationships. Social media represents an external resource, while IT infrastructure, social capital, and organizational capital represent internal resources. Based on the DCV, this research proposes that the combination between these items represents a combination between an external resource and internal resources, and thus has the potential to impact innovation and performance of the firm.

3.2.2 RBV, KBV, and DCV in Application

3.2.1.1 Resource-Based View

The RBV theory has been implemented in many different perspectives in literature. In this section, examples of RBV application in different studies are presented. The focus is on its implementation within three main domains relevant to this research: information technology, innovation, and performance.

The RBV theory has been widely used in information technology (IT) research. Mata et al. (1995) attempted to understand the sustainability of the competitive advantage that IT applications provide. They applied the RBV of the firm to analyse sustainability and develop a model to identify which of the four IT attributes that they suggest (capital requirements, proprietary technology, technical IT skills, and managerial IT skills) could be a source of sustained competitive advantage. As a result of their resource-based analysis, they suggested that the only resource that can provide sustainability is managerial IT skills. In an attempt to investigate the link between IT and firm performance, Powell and Dent-Micallef (1997) similarly relied on a resource-based theoretical framework. They found out that IT alone did not produce sustainable performance advantages (in the retail industry, the context of their study), however, firms who used IT to leverage on certain intangible human and business resources (for example IT integration and strategic planning) managed to gain an advantage over other firms. They suggest that these results might explain why some firms outperform others even when using the same IT capabilities. In another application of the RBV, Bharadwaj (2000) examined the association between information technology (IT) capability and firm performance, after initially developing the concept of IT as an organizational capability. He classified IT resources as IT infrastructure, human IT resources, and IT-enabled intangibles. Using an RBV lens, Bharadwaj (2000) considered IT capability a resource that can be considered as an organizational capability leading to superior performance. He argued that firms with high IT capability tend to perform better than a control sample of firms, in terms of different profit and cost-based performance measures. Zhu (2004) examined the business value of e-commerce capability and IT infrastructure at the firm level. He developed a research framework based on the RBV of the firm to test the effects of e-commerce and IT on firm performance. Zhu (2004) found a strong positive interaction effect between IT infrastructure and e-commerce capability and suggested that their complementarity has a positive impact on firm performance. The results were consistent with the RBV theory, highlighting the importance of IT infrastructure and e-commerce capability as resources impacting the firm performance. This view is supported by Ray et al. (2005), who studied the relationship between information technology and the performance of the customer service process examining the extent to which IT impacts customer service. They build on the RBV of the firm suggesting that IT capabilities are resources that can allow a firm to outperform another firm within the same process. Based on their analysis, Ray et al. (2005) suggest that shared knowledge between customer service and IT units is an important IT capability that affects the process performance. Together, these studies indicate that RBV represents a reliable framework for information technology research.

In the innovation field, RBV theory has been used frequently as well. Stieglitz and Heine (2007) applied a resource-based framework to study the effect of complementary assets on innovation. To define complementary assets, they explain that "*assets or activities are mutually complementary if the marginal return of activity increases in the level of the other activity. In other words, if doing (more of) an activity x, the marginal benefits of doing (more of) a complementary activity y increases*". Stieglitz and Heine (2007) conclude that the management of complementary assets has an impact on firm innovativeness. Paladino (2007) investigated the drivers of innovation and new product success. Based on the results of her study, she suggested that the RBV have a significant relationship with new product success. Paladino (2007) explained that managers who are seeking new product success and innovativeness should develop their resources within the firm so that it provides value to the firm. In another study to understand the influence of information systems competencies on process innovation, Tarafdar and Gordon (2007) adopted a RBV approach. They address six information system competencies: knowledge management, collaboration, project management, ambidexterity, IT governance, and business-information systems linkages. They suggest that these six competencies have an impact on the conception, development, and implementation of process innovations. In a different approach, Terziovski (2010) focused on small and medium enterprises (SMEs) in the manufacturing sector to study the innovation drivers and their performance implications. He adopted a resource-based framework that considered innovation strategy and formal structure as two valuable firm resources. Terziovski (2010) suggested that these two resources are key drivers on innovation in manufacturing SMEs and that there is a positive and significant relationship between innovation strategy and SME performance. Overall, these studies highlight the role of the RBV as a theoretical foundation when researching resources that can impact the innovativeness of an organization.

The RBV theory was also often used when researching what can impact the performance of the firm on different levels or areas. Hitt et al. (2001) studied the effects of human capital on strategy and performance in professional service firms from the perspective of the RBV theory, considering human capital as a resource that is valuable and unique to the firm. Based on their study, they suggest that human capital has a curvilinear effect and that the leveraging of human capital has a positive effect on performance. Hitt et al. (2001) add that human capital plays a moderator role in the relationship between strategy and firm performance. Hult and Ketchen (2001) had a different approach to the RBV and attempted to test the relationship between positional advantage and performance. They suggested that market orientation can enhance success if not considered in isolation. They test the contribution to positional advantage creation for firms of the following four capabilities: market orientation, entrepreneurship, innovativeness, and organizational learning. Hult

and Ketchen (2001) proposed that these four capabilities have a positive effect on the performance of the multinational corporations considered in their study. Meanwhile, Schroeder et al. (2002) examined the manufacturing strategy of the firm and its relationship to the manufacturing performance from the perspective of the RBV of the firm. They considered resources and capabilities that are inimitable such as employees' internal learning and proprietary processes and equipment developed by the firm. Schroeder et al. (2002) suggested that some resources that are available for competitors in the market such as generic employees' skills and standard equipment are not effective in achieving high performance. However, the resources that are not easy to duplicate or acquire by competitors result in higher manufacturing performance. Another study by Newbert (2008) examined the relationship between the following four items: value, rareness, competitive advantage, and performance, by relying on the RBV of the firm. Based on his results and analysis, he suggested that resources that are valuable and rare are related to competitive advantage and that competitive advantage is related to performance. Newbert (2008) concluded that competitive advantage plays a mediation role in the relationship between the rareness of resources and performance of the firm. In a similar theoretical approach, Nath et al. (2008) applied the RBV theory to study the impact of marketing capability, operations capability, and diversification strategy on the financial performance of the firm. They suggest that marketing capability has a significant impact on financial performance. Nath et al. (2008) concluded that a better marketing capability would result in the firm acquiring a competitive advantage, which would help the firm achieve superior financial performance. Overall, these studies illustrate how the RBV has been used in literature when studying the effect of certain resources on performance.

The studies presented above illustrated how the RBV has been used as a theoretical foundation when studying resources effect on innovation and performance. In light of this research, social media is considered a resource, where its effect on innovation and performance will be studied. Thus RBV represents the theoretical foundation that this research will rely on.

3.2.1.2 Knowledge-Based View

The knowledge-based view has been used widely in research. Mejri et al. (2018) applied a knowledge-based view framework to explore knowledge configurations (combinations of knowledge types and sources) in the business-to-business internationalization of knowledge-intensive SMEs. They conducted 33 semi-structured interviews with managers or owners of companies in Tunisia to collect their data. They found out that these companies share an empirical regularity in not developing internationalization knowledge which represented a knowledge shortcoming. Flothmann et al. (2018) used a knowledge-based view approach to study supply chain management (SCM) competencies. They split those competencies into individual and organizational components, and

measured their impact on SCM performance. Quantitative data was collected through 273 surveys where their hypothesized relationships were tested using structural equation modelling. Flothmann et al. (2018) found out that both individual SCM competencies and organizational SCM knowledge positively influence SCM performance. Horisch et al. (2015) used the knowledge-based view as their theoretical underpinning to study how company size affects the degree of knowledge and application of sustainability management tools. They collected data from both SMEs and large companies in Germany. They found out that company size does not influence the share of tools applied once they are known, and identified knowledge as a key difference between SMEs and large companies, playing a mediation role to promote sustainability management. Blome et al. (2014) used a knowledge-based view framework to study the impact of knowledge transfer and complexity on supply chain flexibility. To test their hypotheses, they collected data from procurement and supply chain professionals in Germany, where they found positive and significant influence of internal and external knowledge transfer on supply chain flexibility.

3.2.1.3 Dynamic-Capability View

Different studies have used dynamic-capability view. Lee and Chen (2019) used the dynamic-capability view by focusing on absorptive capacity and its contextual influence to study the firm's ability to achieve and sustain software process improvement success. For this purpose, they developed a model that included cohesion, innovation and autonomy climates so that they can explore how absorptive capacity is influenced by organizational climate. Lee and Chen (2019) found that cohesion, innovation, and autonomy climates positively influence absorptive capacity which leads to software process improvement success. Hasegan et al. (2018) wanted to address the issue of purpose production planning and resource allocation, so they developed a dynamic performance measurement system relying on dynamic-capability view, to effectively re-deploy manufacturing resources. They also explored the development of dynamic capabilities through exploitation of the organizational tacit knowledge. Hasegan et al. (2018) found out that a dynamic performance measurement system creates agility in decision making as well as enhancing the process under uncertainty. Wu and Hu (2012) proposed a model for exploring knowledge management enabled performance for hospital professionals based on the dynamic-capability view. Their model included three major components: hospital performance, hospital process capabilities, and the interaction between hospital knowledge assets and capabilities. Wy and Hu (2012) explain that their "empirical results indicate that the model of KM-enabled performance is well fitted with these components, and hospital professionals are closely associated with KM-enabled performance in providing high-quality care". Cao et al (2019) used the dynamic-capability view to "posit" sustained competitive advantage can be attained by a firm from its sensing, seizing and reconfiguring capabilities. They also

examined “the impact of the antecedents of marketing analytics use on marketing related processes”, where their results provided “insights into how marketing analytics can be used to achieve sustained competitive advantage”.

3.3 Hypothesis Development

In this section, the hypotheses to be tested will be developed. To do so, first, the two social media (SM) variables that will be used are restated. Then, the hypotheses of the proposed direct relation between social media and innovation, and between social media and financial performance are presented. After that, moderator and mediators are discussed to highlight the differences between them. Then the following three variables that potentially play a mediation role in the relationship between social media and innovation, and between social media and performance are introduced: IT infrastructure, social capital, and organizational capital. The hypotheses relevant to each mediator are developed within the relevant section. Finally, the conceptual model is presented and the chapter is concluded.

3.3.1 Social Media

As explained earlier in chapter 2 (section 2.3.1.5), two social media initiative related to knowledge acquisition are considered in this research: social media information collection and social media proactive market orientation. In this research, the impact of these two social media initiatives on innovation and on financial performance will be studied.

3.3.2 The impact of Social Media on Innovation

Social media represents a source of knowledge due to the different types of information that is present on its platforms. Acquiring knowledge is very important to the firm since knowledge can be a source of competitive advantage (Barney, 1991). Knowledge is considered as the main strategic resource that allows a firm to create value (DeCarolis and Deeds, 1999). Firms continuously try to identify new sources of knowledge to enhance their innovativeness. Social media allows firms to connect to their customers, which results in knowledge acquisition. Dong and Wu (2015) explain that firms are interacting more frequently with their customers through social media, allowing them to develop dynamic capabilities and innovate with customers. They noted that the emergence of social media technologies has resulted in a fast growing of open innovation. Customers consider social media as a platform where they can express their opinions and needs relevant to any product they use. Martini et al. (2013) examined how social media networks can be a part of the internal innovation process in the fashion industry. They explained that customers express their opinions and needs on social media networks, something that firms can benefit from by adopting a customer-led

innovation view within the organizational culture. Firms are implementing social media practices in their daily routine for innovation purposes. Mount and Martinez (2014) suggested that social media can be utilized and implemented for open innovation. They proposed that firms can realize the innovative benefits of social media by implementing certain organizational and technological adaptations. Given the importance of knowledge acquired on social media, and its potential to impact innovation, this study proposes the following two hypotheses:

Hypothesis 1*: Social media information collection has a significant positive impact on innovation.*

Hypothesis 2*: Social media proactive market orientation has a significant positive impact on innovation*.

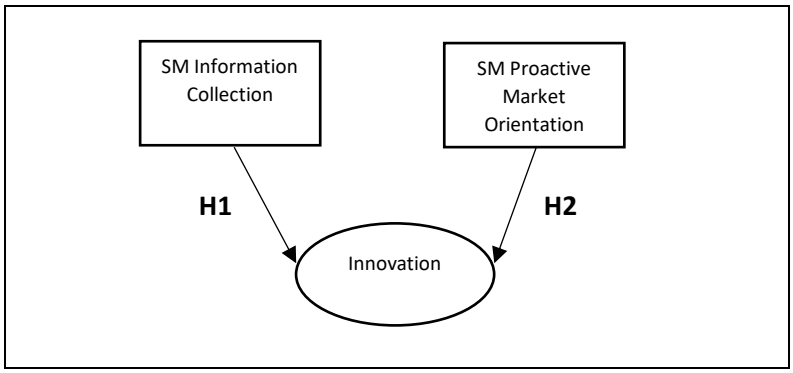


Figure 3. 1: Hypothesis on SM and innovation

3.3.3 The impact of Social Media on Performance

Firms are using social media for different purposes. Their presence on social media platforms is becoming a necessity given all the benefits that come through that presence. For example, firms can use social media to market their products and services which can benefit them in marketing costs reduction and increased sales and number of customers. To do so, they need to collect information about their customers' preferences and needs so that they can target relevant customers with relevant products and services built to meet their needs. Overall, firms are using social media to achieve a better performance in all aspects, especially the financial aspect. Social media enable firms to communicate with their customers, thus understanding their needs. Kim et al. (2015) explained how managing social media reviews online impacts hotel performance. They looked at how responding to negative comments can affect the performance. Their study demonstrates that the response to negative comments on social media is a driver of hotel performance and that responding to customers will result in higher financial performance. In another study, Kim et al (2016) studied social media reviews impact on performance as well, but in a different context, focusing this time on restaurants. They explained how the number of reviews a restaurant has on social media influence

restaurant financial performance. A high number of reviews on social media and the discussions between the restaurant and customers result in high popularity of the restaurant, which has a direct effect on the restaurant financial performance. Collecting this information is crucial for the firm to analyse the problems and propose relevant solutions. Being present on social media can result in an increase in sales which has a direct impact on its financial performance. Ahmad et al. (2018) addressed the impact of social media adoption on performance outcomes in small and medium enterprises. They explain that the use of social media will improve the performance of the firms in various aspects, as it helps them create brand awareness, connect with customers, and increase sales. Firms also indicated that social media usage allows them to develop intangible relationships with customers, share information, and establish a market presence to remain competitive and achieve better performance (Ahmad et al., 2018). Using social media can also attract new customers and increase the firm's customer base resulting in more sales and affecting financial performance. Ainin et al. (2015) examined the impact of Facebook usage on the financial performance of small and medium enterprises. They explain that Facebook usage has a strong positive impact on the financial performance of the firm. Firms using Facebook benefit from an increase in sales transactions, sales volume, and in the number of customers (Ainin et al., 2015). Given the importance of the firm's presence on social media, and its potential impact on the firm's financial performance, this research proposes the following two hypotheses:

Hypothesis 3: Social media information collection has a significant positive impact on financial performance.

Hypothesis 4: Social media proactive market orientation has a significant positive impact on financial performance.

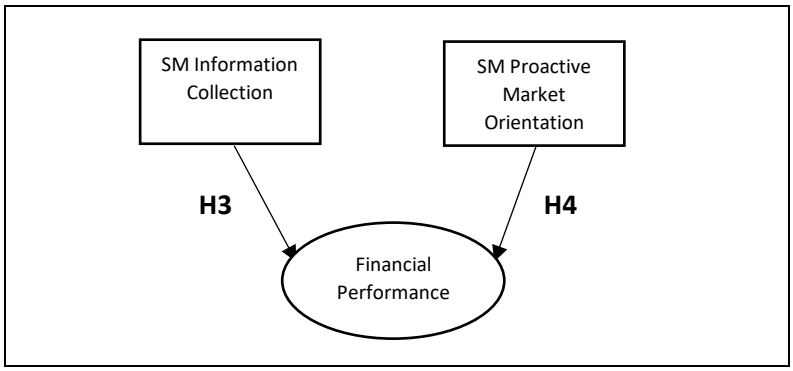


Figure 3. 2: Hypothesis on SM and financial performance

3.3.4 Mediators

As explained earlier, Barney (1991) defined three categories for resources:" *1) physical capital resources such as technology; 2) human capital resources in the form of the tacit knowledge and skill of its workers, their relationship and insights; and 3) organizational capital resources including the formal reporting structures, planning, controlling and coordinating systems*". Barney's categorization of resources influenced the selection of the mediators to be tested in this research, especially that the resource-based view represents the theoretical lens of this research. As a result, one resource from each of the three categories identified by Barney (1991) was selected to be tested as a potential mediator: IT infrastructure from the physical capital resources category; social capital from the human capital resources category; and organizational capital from the organizational capital resources category. These mediators were selected because there was a link established between them and innovation and performance in literature, as it will be explained in the relevant section of each mediator (section 3.3.42 for IT infrastructure; section 3.3.4.3 for social capital; and section 3.3.4.4 for organizational capital). In the next sections, the research first differentiates between moderators and mediators to justify why these resources were proposed as mediators and not as moderators, and then defines and discusses each of these mediators.

3.3.4.1 Differentiating Moderators and Mediators

Scholars often attempt to clearly differentiate between moderators and mediators. One reference paper in this subject is Baron and Kenny (1986) paper (cited more than 35,000 times), in which they proposed conceptual, strategic, and statistical definitions to differentiate between moderators and mediators.

Baron and Kenny (1986) define a moderator as "*a qualitative (e.g., sex, race, class) or quantitative variable that affects the direction and/or strength of a relation between an independent or predictor variable and a dependent or criterion variable. A basic moderator effect can be represented as an interaction between a focal independent variable and a factor (the moderator) that specifies the appropriate conditions for its operation*". They state that the conditions where a given effect happens, and the conditions that affect the direction of the strength of an effect, are specified by the moderator. In other words, a variable C is a moderator of the relationship between a predictor variable A and an outcome B if C explains under which conditions A is related to B (Kraemer et al., 2008). A moderator variable is "*one that affects the relationship between two variables, so that the nature of the impact of the predictor on the criterion varies according to the level or value of the moderator*", according to Holmbeck (1997).

Describing a mediator, Baron and Kenny (1986) explain that it is "*the generative mechanism through which the focal independent variable is able to influence the dependent variable of interest.* " A mediator explains how an effect within the relationship occurs (Holmbeck, 1997). In other words, a variable C is a mediator of the relationship between a predictor variable A and an outcome variable B if C assists in explaining why or how A is related to B (Kraemer et al., 2008).

To differentiate between moderators and mediators, Baron and Kenny (1986) indicate that moderators "specify when certain effects will hold", while mediators "*speak to how or why such effects occur*". Frazier et al. (2004) agree with Baron and Kenny, and explain that moderators "*address when or for whom a predictor is more strongly related to an outcome*", while mediators address "*how or why one variable predicts or causes an outcome variable*".

In this research, the relationship between social media and innovation, and social media and performance is studied. The following resources are proposed to potentially play a role within the relations studied in this thesis: IT infrastructure, social capital, and organizational capital. This research proposes that these three variables play a role of mediators rather than moderators in the relationship between social media and innovation, and social media and performance. This argument is based on two key points: the difference of when a moderator or a mediator is introduced in a relation, and the expected role of the variable within the relation.

One of the differences between a moderator and a mediator according to Baron and Kenny (1986) is related to when each is introduced to the relation. They consider that a moderator is usually introduced "when there is an unexpectedly weak or inconsistent relation between a predictor and a criterion variable", while a mediator is introduced when there is "*a strong relationship between the predictor and the criterion variable*". Given that a relation between social media and innovation (Nguyen et al., 2015; Lam et al., 2016; Perez-Gonzalez et al., 2017), and social media and performance (Schniederjans et al., 2013; Del-Carmen et al., 2018; Tajvidi and Karami, 2017) is established in literature, the variables to be introduced are expected to play a mediator role rather than a moderator role.

The second point is related to the role the introduced variables are expected to play. As mentioned above, a moderator explains "when" the effect in the relationship happens while a mediator explains "how" or "why" the effect happens (Baron and Kenny, 1986). The considered resources are expected to answer "how" or "why" the relationship between social media and innovation, and between social media and performance occurs, rather than explain when it occurs. For firms to benefit from the data available on social media platforms, they need to transform this data into knowledge. This research proposes that these three resources – IT infrastructure, social capital, and organizational capital –

assist the firm to transform data collected in knowledge. Hence the role of these resources is to explain how and why (mediation) the relationship between social media and innovation, and between social media and financial performance occurs rather than explaining when (moderation) it occurs. As result, these resources are proposed as potential mediators rather than moderators.

3.3.4.2 IT Infrastructure

IT infrastructure refers to the set of shared technology resources in the organization that provides the foundation for using business applications (Jukic et al., 2009; Duncan, 1995). IT infrastructure represents a firm resource and the main competence that is hard to duplicate by competitors as it requires a set of human and technical assets (Broadbent et al., 1999). The foundation of business systems is built on IT capabilities of which IT infrastructure represents its base (Mckay and Brockway, 1989). The core elements of an IT infrastructure include computers, servers, software, operating systems, electronic communication technologies and databases (Ross et al., 1996; Benitez-Amado and Ray, 2012).

IT infrastructure represents a key resource for the firm, and an important source to maintain a competitive advantage (Keen 1991). It creates value for the firm and allows information to be shared internally across business units and externally across business partners (Bhatt et al., 2010). "*The infrastructure underpins a firm's competitive position by enabling initiatives such as cycle time improvement, cross-functional processes, and cross-selling opportunities*", indicates Bharadwaj (2000). It is very important for the firm as it provides them with integration and connectivity (Clemons et al., 1989). It is important for an IT infrastructure to be flexible so that it can allow an organization to rapidly react to any new business changes, processes, or initiatives (Peppard and Ward, 2004). This flexibility would also allow for easier integration of new technologies with current ones, resulting in the organization having the newest technology capabilities rapidly in place (Ravichandran and Lertwongsatien, 2005).

IT infrastructure can help organizations both share and acquire new information to and from the market, thus facilitating the process of acquiring and creating new knowledge (Benitez et al., 2016). It also enables organizations to store information and easily access it when needed, thus enabling knowledge exploration (Pavlou and El Sawy, 2006). Keen (1991) notes that the IT platform influences the freedom level a firm has in its business planning, as a weak non-integrated infrastructure would restrict possible business plan choices. Broadbent et al. (1999) agree to what Keen (1991) suggested, and state that "*IT infrastructure can be a significant barrier or enabler in the practical options available to planning and changing business processes. The support of enabling technologies and platforms is an important contributor to successful business process change*".

Chief information officers consider the development of an advanced IT infrastructure as their top priority to assist their organizations to innovate and achieve superior performance (Bhatt et al., 2010). IT infrastructure allows an organization to reach information and transform it into knowledge (Benitez et al., 2016). This role is crucial in the current era since massive amounts of data are available from different sources such as social media. However, to access this data and transfer it into knowledge, organizations need to possess an advanced IT infrastructure. This need, given the importance of acquiring this knowledge present on online platforms such as social media, might result in firms investing in their IT infrastructure to build a reliable and advanced one.

In this research, it is proposed that IT infrastructure plays an important role in the relationship between social media and innovation, and between social media and performance. Social media platforms produce Big Data which is in most of the cases, an unstructured data. For the firm to be able to uncover knowledge and insights from this data, they need to acquire it, store it, and analyse it. To do so, the role of an advanced IT infrastructure is crucial since, for example, certain hardware and software is needed. IT infrastructure is a key element in the process of transforming data present on social media platforms into knowledge and insights. This process – happening through IT infrastructure – explains how and why the potential relation between social media and innovation, and social media and performance, happens.

Hence, this research proposes that IT infrastructure potentially plays a mediation role between social media and innovation, and between social media and performance. Based on the discussions, this research proposes the following four hypotheses:

Hypothesis 1a*: IT infrastructure mediates the relation between social media information collection and innovation.*

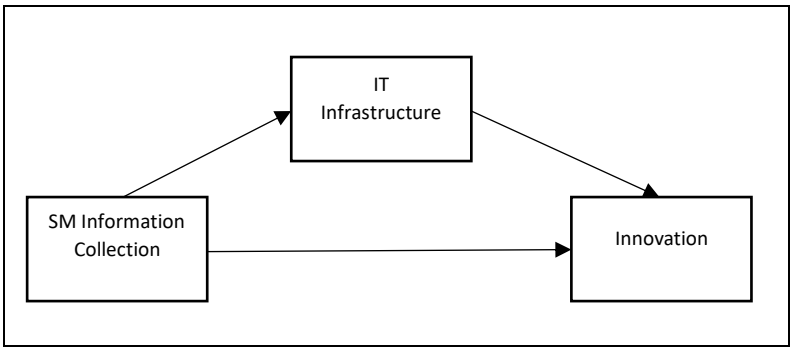


Figure 3. 3: Hypothesis on SM information collection, IT infrastructure, and innovation

Hypothesis 2a*: IT infrastructure mediates the relation between social media proactive market orientation and innovation.*

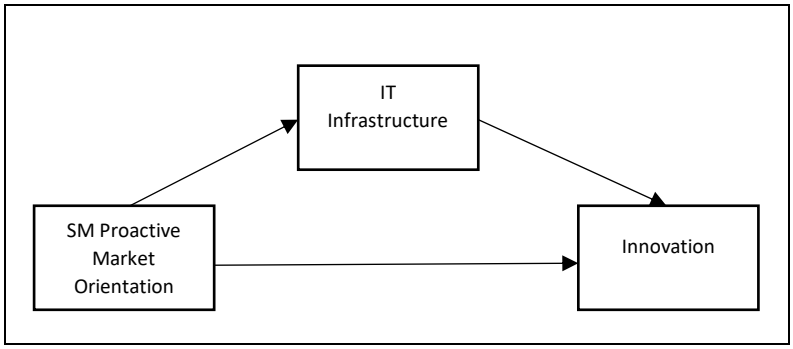


Figure 3. 4: Hypothesis on SM proactive market orientation, IT infrastructure, and innovation

Hypothesis 3a*: IT infrastructure mediates the relation between social media information collection and financial performance.*

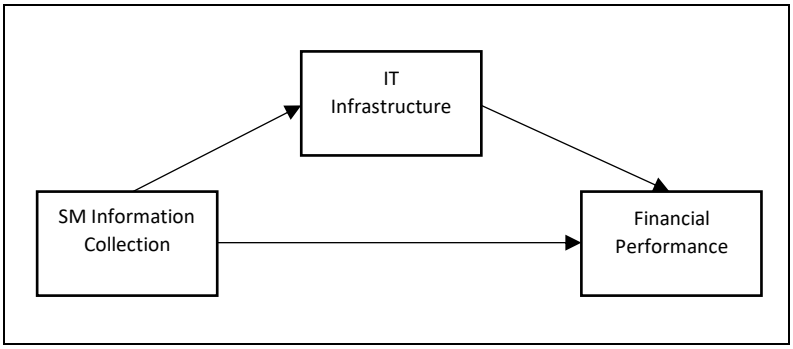


Figure 3. 5: Hypothesis on SM information collection, IT infrastructure, and financial performance

Hypothesis 4a*: IT infrastructure mediates the relation between social media proactive market orientation and financial performance.*

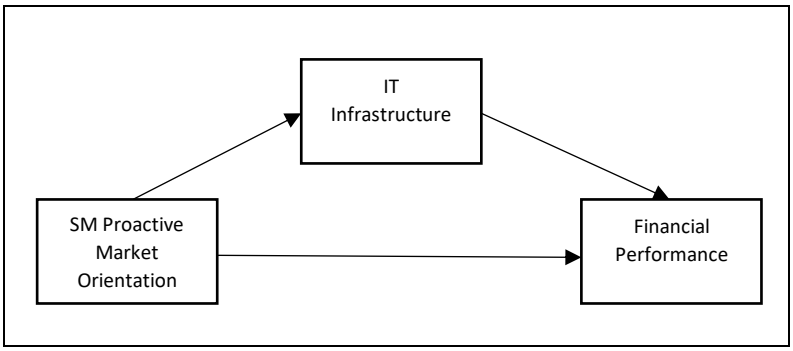


Figure 3. 6: Hypothesis on SM proactive market orientation, IT infrastructure, and financial performance

3.3.4.3 Social Capital

Social capital adopts a sociological perspective of human behaviour and considers that societal factors shape individuals. It is defined by Nahapiet & Ghoshal (1998) as "*the knowledge embedded within, available through, and utilized by interactions among individuals and their networks of interrelationships*". Putnam (2000) conceptualized social capital as the characteristics of social relationships such as trust, norms, and network structures that facilitate the interactions among individuals for the benefit of society. The social capital literature's main proposition is that the relationship networks will develop or result in resources that would benefit both the individual and the organization (Dakhli and de Clercq, 2004). Benefits at the individual level are due to informal and formal ties with other individuals (Burt, 1992), while at the organizational level, benefits are due to the "*relationships formed by its members for the purpose of engaging in collective action*" (Nahapiet and Ghoshal, 1998).

Social capital has two major dimensions: structural embeddedness and relational embeddedness (Nahapiet and Ghoshal, 1998). "*The first aspect refers to the impersonal configuration of linkages between people or units, as well as the existence of network ties and a network configuration in terms of density, connectivity and hierarchy*", while the second "*describes the type of relationships people have developed with each other through a history of interactions*", explain Carmona-Lavado et al. (2010). They suggest that these two aspects of social capital have a different effect on performance since the structural aspect focuses on the structure of the relationship while the relational aspect focuses on the quality of it. With regards to the relational dimension, Lee et al. (2005) argue that high levels of trust and friendship result in an increase of engagement among individuals, who will be more willing to ask for help, depend on others, have unplanned meetings and conversations, and share knowledge, information and resources.

Social capital can help explain innovation performance, specifically the relational dimension of it (Moran, 2005). An individual will be able to reach out to different people - due to the relationship built with them- who are potentially an important source of information. "*The structural dimension determines the extent and range of resources that are within an actor's reach, and the relational dimension determines how much of this potential will be realized*", states Carmona-Lavado et al. (2010). The knowledge exchange that happens at the actor's level impacts firms' innovativeness, which can be associated with the capacity to exchange and combine knowledge resources (Kogut and Zander, 1992). Moran and Ghoshal (1996) suggest that new methods of combining and exchanging resources create new sources of value. For resources combination and creation of knowledge, the exchange of information becomes crucial as the different pieces of information to be combined

might reside in different parties (Cabrera and Cabrera, 2002), and that's where social capital plays an important role in this process.

Social capital has an impact on both innovation and performance of the firm, as it can facilitate resource and knowledge exchange for innovation (Tsai and Ghoshal, 1998), and provide organizations with resources that enhance their performance (Van Wijk et al., 2008). The literature on social capital has established that it entails beneficial outcomes. The relationship between social capital and innovation theoretically exists (Wu et al., 2008), as well as the link between social capital and organizational performance (Maurer et al., 2011).

Given that different departments at the firm use social media for different purposes (such as marketing department, customer service department, IT department), and each department may acquire different types of data and information, collaboration and interaction between all these departments become a necessity in order to transform this data into knowledge leading to innovation and to a superior performance. Based on that, this research proposes that this transformation is facilitated through social capital (explaining how and why the relationship between social media and innovation and social media and performance occur). Hence, social capital is proposed to potentially play a mediator role within the relationship between social media and innovation, and social media and performance. Based on this discussion, this research proposes the following hypotheses:

Hypothesis 1b*: Social Capital mediates the relation between social media information collection and innovation.*

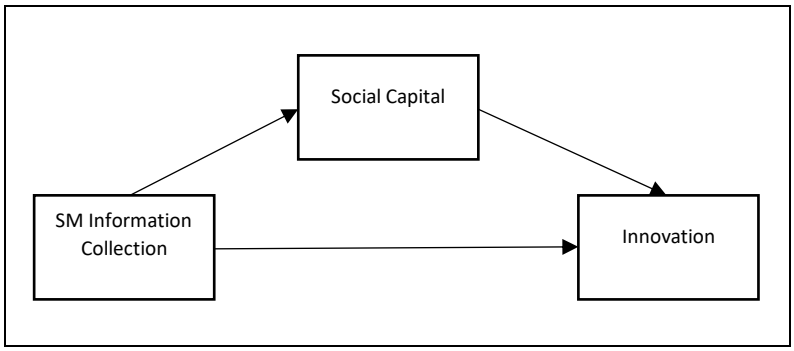


Figure 3. 7: Hypothesis on SM information collection, social capital, and innovation

***Hypothesis 2b**: Social Capital mediates the relation between social media proactive market orientation and innovation.*

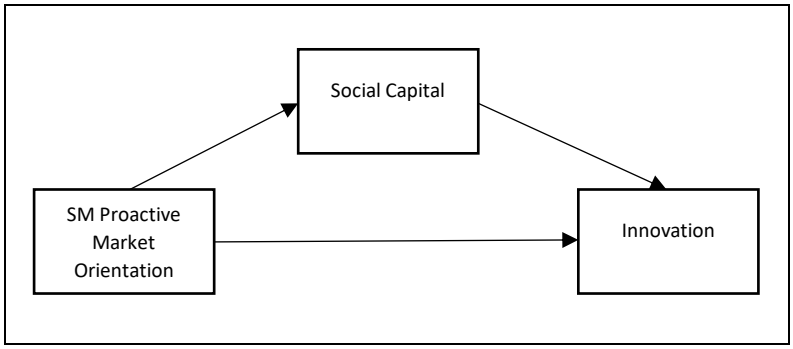


Figure 3. 8: Hypothesis on SM proactive market orientation, social capital, and innovation

***Hypothesis 3b**: Social capital mediates the relation between social media information collection and financial performance*

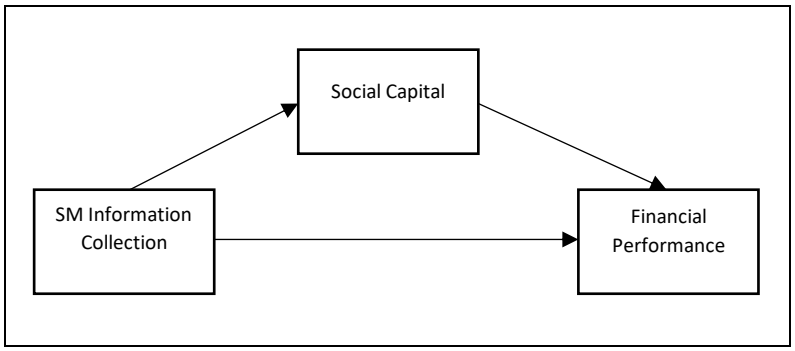


Figure 3. 9: Hypothesis on SM information collection, social capital, and financial performance

***Hypothesis 4b**: Social capital mediates the relation between social media proactive market orientation and financial performance.*

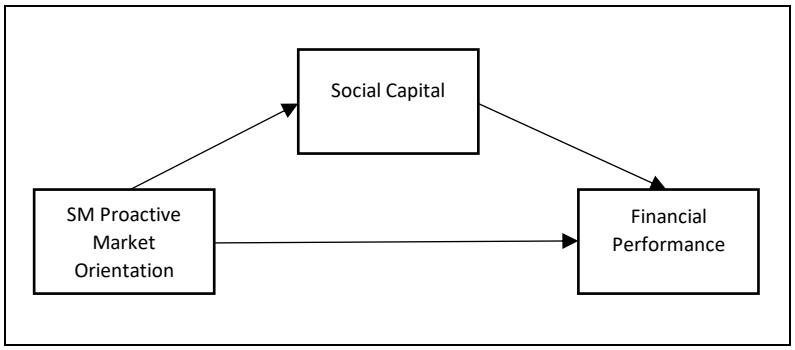


Figure 3. 10: Hypothesis on SM proactive market orientation, social capital, and financial performance

3.3.4.4 Organizational Capital

Unlike the concept of social capital, which has been well researched and framed in the literature (Adler and Kwon, 2002), the concept of organizational capital is under-researched (Carmona-Lavado et al., 2010). Different definitions of organizational capital exist in literature, where most of them focus on the value and knowledge created through processes and structures at an organization. Wright et al. (2001) defined organizational capital as the knowledge established within the organization databases, processes, patents, documents and manuals that are used to store and retain knowledge. Youndt et al. (2004) agree to this definition, stating that organizational capital is the value of an organization's developed or acquired institutionalized knowledge and codified experiences residing in patents, manuals, databases, systems, structures, and processes. Lev et al. (2016) define organizational capital from a capabilities perspective, stating that it is the capabilities enhancing the productivity of tangible and intangible assets such as intellectual property, human capital, and physical assets. Focusing on how and when organizational capital is created, Miles and Clieaf (2016) define organizational capital as "*the extraordinary value created and realized when the transformation factors of value creation (i.e., leadership, strategy, and organizational design) create a synergistic sequencing of events that allows for optimal resource orchestration, enabling the firm to fulfil its strategic mission and realize both enterprise and stakeholder value*". In a similar approach, Bozbura and Beskese (2007) state that organizational capital represents the combination of all the assets that enables the creative ability of the firm including the vision, mission, strategies, systems, values and processes.

Integrating information and skills that are gained through different organizational activities is an important requirement for the creation of organizational capital (Carmona-Lavado et al., 2010). This integration, which represents a knowledge integration, becomes a major component of the processes that direct the firm's behaviour (Zahra et al., 2000), as it allows the firm to determine and benefit from what has been learned. Organizational capital is important for the firm to achieve a superior performance, because a firm with a weak organizational structure and systems will not be able to benefit from his employees capabilities for example, even if they possessed high capabilities, since, without a strong organizational capital, these capabilities won't transform into value (Bozbura and Beskese, 2007).

Organizational capital has an impact on both innovation and performance. It is a source of value that contributes to the organization's growth and innovation (Miles and Clieaf, 2016), and an asset that drives value and growth of firms (Lev et al., 2009). Organizational capital is a "*continuous creator of value for organizations and their stakeholders; indeed, firms deemed as possessing organizational capital earned 4.6% higher returns, associated with five years of future operating and stock return,*

and performed three to five times better than competitors in the same industry sector", explain Miles and Clieaf (2016). It is a crucial element in the organization's structure, leading to a decrease in total costs and an increase in productivity and profit (Bozbura and Beskese, 2007).

The link between organizational capital and innovation and performance is established in the literature (Miles and Cliaf, 2016; Lev et al., 2009). When it comes to social media relation to organizational capital, this research proposes that a link exists between both, since organizational capital can facilitate transforming the data available on social media to knowledge. This can be achieved through the processes and structures of an organization representing organizational capital. Hence, this research proposes that organizational capital has the potential to play a mediator role within the relationship between social media and innovation, and social media and performance. Based on that, this study proposes the following hypotheses:

Hypothesis 1c*: Organizational Capital mediates the relation between social media information collection and innovation.*

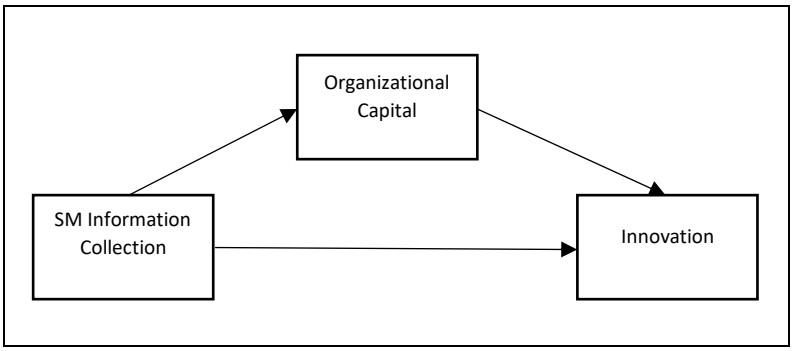


Figure 3. 11: Hypothesis on SM information collection, organizational capital, and innovation

Hypothesis 2c*: Organizational Capital mediates the relation between social media proactive market orientation and innovation.*

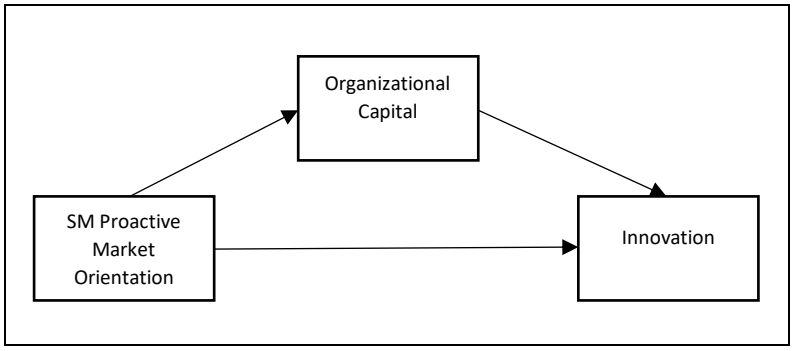


Figure 3. 12: Hypothesis on SM proactive market orientation, organizational capital, and innovation

***Hypothesis 3c**: Organizational capital mediates the relation between social media information collection and financial performance.*

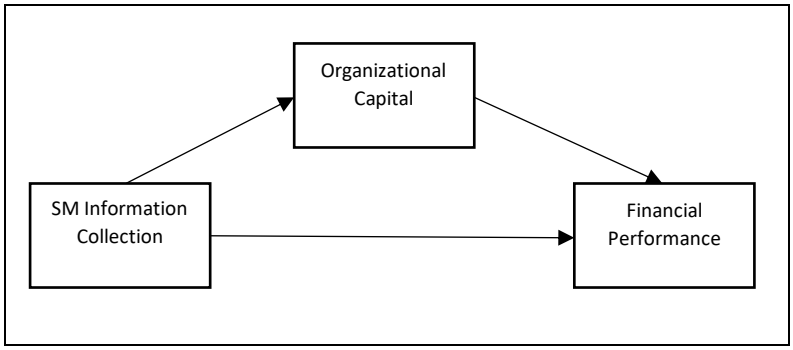


Figure 3. 13: Hypothesis on SM information collection, organizational capital, and financial performance

***Hypothesis 4c**: Organizational capital mediates the relation between social media proactive market orientation and financial performance.*

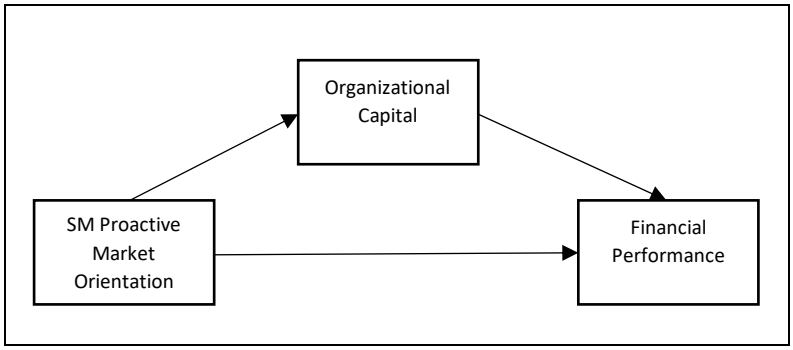


Figure 3. 14: Hypothesis on SM proactive market orientation, organizational capital, and financial performance

3.4 Conceptual Model

Based on the discussions and hypotheses above, the following conceptual model is developed:

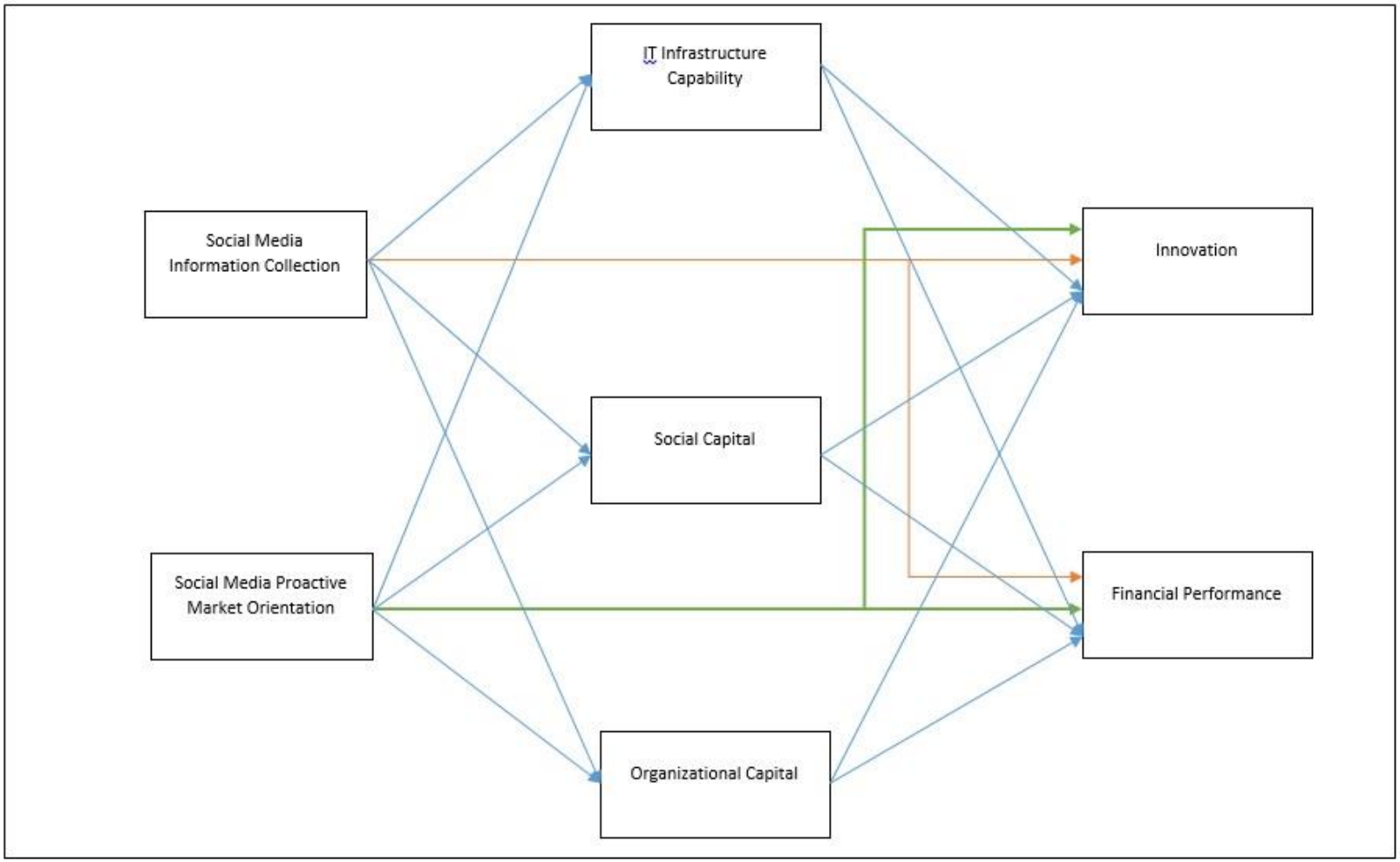


Figure 3. 15: Conceptual Model

3.5 Summary

In this chapter, the theoretical foundation which the research relies on was presented. The resource-based view of the firm represents the main theoretical foundation, along with two theories that descend from it: the knowledge-based view and dynamic capabilities view. Different applications of the resource-based view relevant to the area this research covers were examined. After that, the hypotheses that this research will test were formulated: the hypotheses between social media and its direct impact on innovation, the hypotheses between social media and its direct impact on financial performance, and the hypotheses including the mediators (IT infrastructure, social capital, and organizational capital) between social media and innovation, and between social media and financial performance. Based on these hypotheses, the conceptual model was developed and presented concluding this chapter.

Chapter 4: Research Methodology A Mixed Methods Approach

4.1 Introduction

In chapter 3, the research framework was presented and the conceptual model was developed. In this chapter, the research methodology that will be used to test and verify the conceptual model, and lead to answering the research questions will be presented.

After introducing the chapter, two research philosophies are discussed: positivism and social constructionism, identifying which one is the selected one in this research. Then the research strategy section begins. In this section, an overview of both quantitative and qualitative methods is presented, as well as an overview of triangulation to justify why a mixed methods approach was chosen for this research. The section also discusses cross-sectional and longitudinal studies as well as the sampling process.

The section that follows presents a literature review of how the main three elements of this research (social media, innovation, performance) were measured in research.

Then, two sections discussing both the quantitative and qualitative data collection and analysis method are presented. Both methods use a web survey to collect the data. Online or Web survey usage in academic research as a methodology for data collection is growing (Buchanan and Hvizdak, 2009). In a survey of 759 university human research ethics boards in the United States, 94% of respondents said that online or web surveys are the type most often reviewed (Buchanan and Hvizdak, 2009). Other than the survey design details, those sections also explain the procedure for data collection, the pilot study, the main study, and the data analysis method for both the quantitative and qualitative sections.

The last two sections discuss the ethical considerations of this research and conclude with a summary of the chapter.

4.2 Research Philosophies

Authors usually use different terms to describe the philosophical approach. Easterby-Smith et al. (2012) use the term “epistemology”, others call them paradigms (Lincoln et al., 2011), or worldviews (Creswell, 2014). In this paper, the term used to describe the philosophical approach will be epistemology. Easterby-Smith et al (2012) state that epistemology “*is about different ways of inquiring into the nature of the physical and social worlds*”. They explain that the debate between social scientists focuses on two contrasting views: positivism and social constructionism. Both views will be defined and compared in section 4.2.1, and then the selected epistemology will be stated in section 4.2.2.

4.2.1 Positivism and Social Constructionism

According to Flick (2014), positivism goes back to the French philosopher Auguste Comte, who "*emphasized that sciences should avoid speculative and metaphysical approaches: rather they concentrate on studying the observable facts*". Bryman (2012) defines positivism as a position that "*advocates the application of the methods of the natural sciences to the study of social reality and beyond*". He explains that generating hypotheses and testing them is the purpose of theory, which will result in explanations (deductive approach). Flick (2014) notes that the consequence of the positivist position is committing social research to "*ideals of measurement and objectivity, rather than reconstruction and interpretation*".

Social constructionism was developed as an idea by different authors (Easterby-Smith et al, 2012). Social constructionism "*focuses on the ways that people make sense of the world especially through sharing their experiences with others via the medium of language*", according to Easterby-Smith et al (2012). To define constructionism, Bryman (2012) explains that it asserts that social actors produce social phenomena. Creswell (2014) states that social constructivists believe that people try to understand the world they live and work in and to develop meanings and explanations of their experiences. The table below contrasts implications of positivism and social constructionism (Easterby-Smith et al., 2012):

	Positivism	Social Constructionism
The observer	Must be independent	Is part of what is being observed
Explanations	Must demonstrate causality	Aim to increase general understanding of the situation
Research progresses through	Hypotheses and deductions	Gathering rich data from which ideas are induced
Concepts	Need to be defined so that they can be measured	Should incorporate stakeholder perspectives
Units of analysis	Should be reduced to simplest terms	May include the complexity of the whole situation
Generalization through	Statistical probability	Theoretical abstraction
Sampling requires	Large numbers selected randomly	Small numbers of cases chosen for specific reasons

Table 4. 1: Contrasting implications of positivism and social constructionism

Social constructionism implies the following two assumptions (Blumberg et al., 2014):

- The social world is observed by seeing what meaning people give to it and interpreting these meanings from their viewpoints.
- Social phenomena can only be understood by looking at the totality.

This philosophy focuses more on understanding social phenomena by "exploring why people have different experiences and by understanding how these differences result in the different constructions and meanings people give to the social world" (Blumberg et al., 2014).

While Positivism, according to Blumberg et al. (2014), implies the following two assumptions:

- The social world is observed by collecting objective facts.
- The social world consists of simple elements to which it can be reduced.

They explain that observing objective facts is the way to investigate the social reality in order to develop knowledge, and that developing a theory requires hypothesising fundamental laws and concluding the supportive observations to assess and validate the hypotheses (Blumberg et al., 2014).

The research main aim was to investigate the impact of social media knowledge acquisition on innovation and on financial performance, in order to understand what relation exists between the variables that are considered in this research. To do so, a conceptual model along with measurable hypotheses was developed. In order to fulfil its aim, this research adopts predominantly a positivism philosophy, since the main interest is to test the conceptual model in order to understand how the knowledge acquired from social media affects innovation and financial performance. However, the research also aims to understand why social media knowledge acquisition impacts innovation and financial performance, hence some characteristics of social constructionism applies.

4.3 Research Design

This section discusses the research design, which is a key element in any research, and was influenced by the research philosophy stated in the previous section. Yin (1994) explains that research designs are "*the logical sequence that connects the empirical data to a study's initial research questions and, ultimately, to its conclusions*". A research design is usually influenced by the questions the research is trying to answer. Once that is clear, the researcher would be able to decide which research method he will use: quantitative, qualitative, or a mixed method. This research follows a mixed-methods approach. To explain why this approach was chosen, a comparison between quantitative and qualitative methods and an overview of triangulation are presented in the next section. After that, cross-sectional and longitudinal survey designs, as well as the sampling process, are addressed. Figure 4.1 represents an overview of the research design from the start to end.

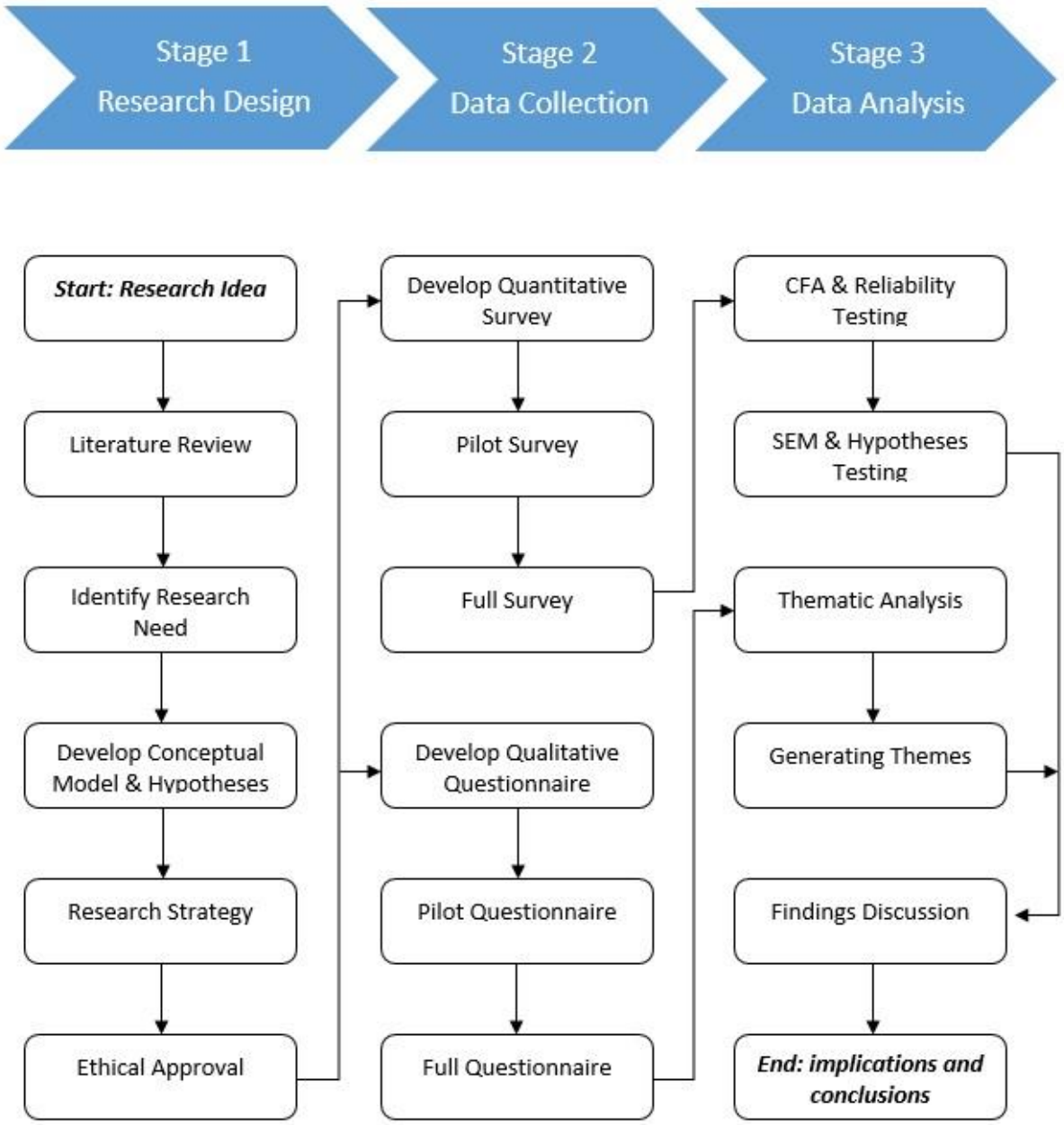


Figure 4. 1: Research design overview

4.3.1 Quantitative vs Qualitative

In order to choose the appropriate research method to be used, a comparison between quantitative and qualitative methods is presented below. The purpose is to look into the characteristics of each method to determine which ones apply to and better serve the aims of the project and lead to answer the research questions.

Often when people try to differentiate between quantitative research and qualitative research they link the use of numbers to the first and the use of words to the second respectively (Creswell, 2014). The epistemological orientation of the research influences the decision of the research method. Bryman (2012) explains that quantitative and qualitative research differ with respect to their

epistemological foundations. In comparing quantitative and qualitative methods, Bryman (2012) states that the fundamental differences between both methods are in the epistemological and ontological orientation: quantitative methods are usually used with positivism and objectivism, while qualitative methods are usually used with interpretivism and constructionism. Creswell (2014) agrees with Bryman and explains that qualitative approaches use constructivist philosophical assumptions, while quantitative approaches use postpositivist ones.

Another main difference between quantitative and qualitative approaches related to the role of theory in relation to research is that quantitative research applies a deductive approach with the purpose of testing a theory, while qualitative research applies an inductive approach with the purpose of generating a theory (Bryman 2012; Creswell 2014).

The research questions often influence the research method used. "*Certain types of social research problems call for specific approaches*", explains Creswell (2014). The nature of quantitative research is to perform statistical analysis aiming to conclude with a statistical interpretation, while the nature of qualitative research is to perform text analysis aiming to conclude with themes and interpretation (Creswell 2014; Bryman 2012).

The aim of this research is to investigate the impact of acquiring knowledge from social media on innovation and on the financial performance of the firm. To achieve this aim, the main research question of the research needs to be answered: how can knowledge acquired from social media impact innovation and financial performance of the firm? However, to answer the "how", sub-questions related to the "what" and "why" needs to be answered first. Answering the "what" is about testing statistically if a relation exists between the considered variables and thus using a deductive approach while answering the "why" is about understanding a process or an outcome and thus using an inductive approach. In other words, answering the "what" happens through quantitative methods, while answering the "why" happens through qualitative methods.

Given that this research Is trying to answer both "what" (is the impact of knowledge acquired from social media on innovation and on performance) and "why" (does knowledge acquired from social media impact innovation and financial performance) to understand "how" (knowledge acquired from social media impacts innovation and financial performance), the best approach is to use both quantitative and qualitative methods, to answer the "what" and "why" respectively. Hence, the approach that this research adopts is a mixed methods approach.

4.3.2 Triangulation

Using quantitative and qualitative methodologies to study the same research problem is often referred to as triangulation. Denzin (1978) defines triangulation as "*the combination of methodologies in the study of the same phenomenon*". The word "triangulation" comes from navigation and military strategy that uses different reference points to identify an exact location (Smith, 1975). Different viewpoints result in better accuracy. "*Similarly, organizational researchers can improve the accuracy of their judgments by collecting different kinds of data bearing on the same phenomenon*," explains Jick (1979).

The triangulation concept in research can be dated back to Campbell and Fiske (1959) who proposed the concept of "multiple operationism". "*They argued that more than one method should be used in the validation process to ensure that the variance reflected that of the trait and not of the method*" (Bouchard, 1976). Modell (2009) states that the triangulation method is about combining different methods to "*provide complementary insights into the same empirical phenomenon with the aim of enhancing the validity of representations*".

Triangulation offers different opportunities that researchers can benefit from. "*It allows researchers to be more confident about their results*", indicates Jick (1979). He adds that triangulation "*may be used not only to examine the same phenomenon from multiple perspectives but also to enrich our understanding by allowing for new or deeper dimensions to emerge*".

Using triangulation in this research will help confirm the results achieved. The qualitative data will be beneficial to confirm the findings of the quantitative data. It will help explain why the results achieved through the quantitative data were as such.

4.3.3 Cross-Sectional vs Longitudinal

This section discusses the research design with respect to surveys. Different research designs exist, in this section, the two main types of survey design will be presented and compared: cross-sectional and longitudinal designs.

Bryman (2012) explains that cross-sectional design is about collecting data (much more than one case) at a single point in time. He explains that researchers who follow a cross-sectional design are usually interested in variation, which is established by collecting data from more than one case study. The variation can be in terms of people, location, company, industry, etc. Bryman (2012) indicates that researchers would usually have much more than two cases in order to encounter variation in all the variables they are measuring. De Vaus (2006) highlights one of the important features of cross-sectional research, which he calls "*no time dimension*". He explains that in such designs, the data is

collected at one point in time. As a result, cross-sectional research can only measure the differences between groups rather than the change (De Vaus, 2006).

Unlike cross-sectional design, longitudinal design research collects data at more than one point in time. Bryman (2012) explains that "*with a longitudinal design a sample is surveyed and is surveyed again on at least one further occasion*". The reasons behind using a longitudinal design could be descriptive or explanatory. De Vaus (2006) indicates that longitudinal designs enable the researcher to examine change or stability. Since the data is collected at more than a single point of time, longitudinal design can result in identifying change and its direction at an individual, organizational, or societal level (De Vaus, 2006). One of the main drawbacks of longitudinal designs is usually related to the time and cost it requires to undertake this kind of research, as well as the small sample size (Bryman, 2012; De Vaus, 2006).

In this research, a cross-sectional design was implemented, rather than a longitudinal design. The cross-sectional design better serves the major objective of the study, which is to measure the constructs of interest and test their relationships with one another. Another reason not to choose a longitudinal design was related to the time and cost constraints this research has. After choosing the research design, the sampling process is explained in the next section.

4.3.4 Sampling Process

Research generalizations that are empirically supported usually rely on partial information, because it is almost impossible, and too expensive, to collect data from all the possible units of analysis of a study (Frankfort-Nachmias and Nachmias, 1996). Sampling is an important step in any research. Sapsford and Jupp (1996) define a sample as "*a set of elements selected in some way from a population*". They explain that the aim of sampling is to get consistent and free of bias estimate of a population status related to what is being researched, as well as to save time and effort. In a sampling process, there are important steps to follow in order to select a sample. These steps include: defining a population, the sampling unit and frame, and the sampling method.

4.3.4.1 Defining Targeted Population

A population is the full set of units of analysis that are relevant to the research (Frankfort-Nachmias and Nachmias, 1996). In this research, the targeted population is all organizations in the United States across all industries. The United States was selected since it is in the region that has the highest social media penetration rate. According to statista website, North America has the highest global social media penetration rate with 70 % (https://www.statista.com/statistics/269615/social-network-penetration-by-region/).

4.3.4.2 The Sampling Units and Frame

A sampling unit is a single member of the sampling population (Frankfort-Nachmias and Nachmias, 1996). In this research, the sampling unit is the organization, where each respondent represents one organization.

A sampling frame meanwhile, is "*whatever is being used to identify the elements in each sampling unit*" (Sapsford and Jupp, 1996). However, it is very hard in this study to obtain a full list of all available sample units, which would consist of all organizations of the United States. This limitation was overcome by choosing a sampling method that doesn't require having a sample frame. The sampling method is discussed in the next section.

4.3.4.3 The Sampling Method

There are different methods that can be used in order to select a sample. These methods include simple random, quota, cluster, convenience, stratified, and systematic sampling (Willoughby, 2015). This research adopts a convenience sampling method, where a convenient sample is obtained by selecting the sample units that are conveniently available (Frankfort-Nachmias and Nachmias, 1996). This method was chosen because it is inexpensive, can be processed quickly, and does not require a sampling frame containing information about each sample unit (Willoughby, 2015). When deciding the sample size, the researcher should make sure it is sufficient to address the research question and allow generalization (Collis and Hussey, 2013).

Like any other sampling method, convenience sampling has advantages and disadvantages. It is a method that is cost-effective, speedy, readily available, and easy which attracts researchers to use it (Henry, 1990), but at the same time vulnerable to bias (Dudovskiy, 2018). Its main advantages include simplicity of sampling where researchers can collect data swiftly (Wright, 2002), ease of research allowing for data collection in a short period of time (Given, 2008), and cost-effectiveness (Teddlie and Yu, 2007) which is important especially when there are financial limitations for researchers. The main disadvantage of convenience sampling is its vulnerability to bias (Dudovskiy, 2018). However, different measures were taken in this study in order to minimize bias such as adding targeting questions, adding trap question, and randomizing the order of the questions.

The convenience sampling method is widely used in research in general (Tang et al., 2018; Yee et al., 2018; Tajvidi et al., 2018). Its use is also popular in research related to social media, for example, Boonjing and Pimchangthong (2017) used it to identify factors influencing customers' reactions to social media advertising; Zhang et al. (2017) used it to understand how the public uses social media to obtain health information in China; Sanne and Wiese (2018) used it to link the theory of planned behaviour and user engagement on social media; and Truong (2018) used it to test the impact of

social media on Korean products purchase decision in Vietnam. Given its wide usage in research related to social media, and its advantages and the possibility to limit its disadvantages, convenience method was chosen as the sampling method for this research.

4.4 Measurements in Literature

After presenting the research design and before discussing the elements that this research attempts to measure, an overview of how researchers have measured the three main elements of this research in literature - social media, innovation, and performance – is presented in this section.

4.4.1 Social Media

Studies that attempted to measure social media as a construct in literature are limited when compared to innovation and performance. Social media firms' usage was measured in literature with two approaches either through primary data or through secondary data. To measure social media usage with secondary data, researchers usually relied on news and announcements highlighting social media initiatives by firms (Lam et al, 2016), or firms' social media pages such as Facebook or Twitter (Benitez et al., 2016). While researchers who attempted to measure social media usage through primary data most frequently relied on surveys that utilized a 5-point or 7-point Likert scale. The differences between these attempts were that each measured a different aspect or initiative of social media.

Nguyen et al. (2015) measured knowledge acquired from social media using five items which were based on knowledge acquisition literature to understand if firms are collecting information from social media. Wu (2016) measured social media strategy through four items that represented the strategy the firm adapts when using social media. Del-Carmen et al. (2018) measured social media through different aspects such as beliefs about social media use outcomes, attitude, intention to use, and level of usage. Kamboj et al. (2017) for example measured other three aspects of social media: social use, hedonic use, and cognitive use. Another example is from the study by Tajvidi and Karami (2017), where they measured social media usage through the frequency of firms use to specific social media platforms that they asked about.

4.4.2 Innovation

When it comes to innovation constructs measurement, there is no shortage in the literature of studies that addressed this matter. Different labels were given to the constructs measuring innovation in literature including innovation performance (Perez-Gonzalez et al., 2017), innovativeness (Lam et al., 2016), organizational innovativeness (Deshpande et al., 1993), innovation capability (Liao et al., 2007), and organizational innovation (Li et al., 2018). Innovation was measured

in literature through different methods which can be divided into two main categories based on the data type: measurement through primary data and measurement through secondary data.

To measure innovation through primary data, the majority of scholars used surveys/questionnaires with a Likert scale measure or interviews. Deshpande et al. (1993) measured organization innovativeness in a survey through five questions focusing on how often the company introduces products and services in relevance to the market timing such as first-to-market or late entrants. They collected their data through 50 interviews with firms in Tokyo, Japan. Li et al. (2018) focused on the following key indicators to measure organizational innovation: innovation enablers, organizational innovation activities, innovation outputs, and personal innovativeness. They collected their data through 98 completed online questionnaires by different universities worldwide. Wuryaningrat (2013) collected the data through 176 completed surveys (by SMEs) in Indonesia, utilizing a Likert scale to measure innovation capability. He focused on six items for the measurement of innovation capability: new products, a new method of production, new services, opening new markets, new sources of supply, and new ways of organizing (Wuryaningrat, 2013). Liao et al. (2007) also measured innovation capability through a questionnaire that was completed by 355 firms in Taiwan. Liao et al. (2007) define innovation capability as "*the performance of the enterprise going through various types of innovation and achieving an overall improvement of its innovation capability*". They further divide innovation capability into three constructs: product innovation, process innovation, and management innovation. In their questionnaire, a Likert scale was utilized for the measurement.

Studies that measured innovation using secondary data relied on databases that include information relevant to innovation such as patents and innovation ratings. To measure innovativeness, Lam et al. (2016) relied on the Fortune database. Fortune publishes an innovation rating to measure firms' innovativeness (Lam et al., 2016). In their study, Lam et al. (2016) were interested in the relative innovativeness of a firm compared to other companies in the same industry. So they standardized the innovation rating they extracted from Fortune database, where their final set of data included a total of 281 firms. Benitez et al. (2016) also measured innovation performance using secondary data with a sample size of 100 firms. To do so, they relied on the U.S. Patent and Trademark Office database, using data available between 2007 and 2014. Benitez et al. (2016) created different ratios based on the quality patent, number of citations, and the number of patents per firm. These ratios resulted in generating five indicators which were then used to measure innovation performance.

4.4.3 Performance

Performance was measured in literature through primary or secondary data. To measure performance through primary data, a survey that utilized a Likert scale was used in the majority of

studies. Furthermore, most of the studies used questions that asked the participants to compare their firm's financial results with their competitors' financial results. Li and Atuahene-Gima (2001) adopted McDougall et al. (1994) performance measurement and asked participants to rate their firm's performance relative to their main competitor over a period of three years comparing "*return on investment, return on sales, profit growth, return on assets, overall efficiency of operations, sales growth, market share growth, cash flow from market operations, and firm's overall reputation*". Del-Carmen et al. (2018) measured performance with three questions in a survey asking participants to compare their firm's profit margins, return on investment, and return on assets to those of their competitors. Kamboj et al. (2017) adopted four scales from Langerak et al. (2004) in their attempt to measure performance. They asked participants to rate their firm's performance in the context of profitability, revenue, sales growth, market share and return on investment. To measure firm performance, Tajvidi and Karami (2017) adopted a measurement scale from Watson (2012), which measures a firm performance based on growth and profitability. Wu (2016) modified Hult and Ketchen (2001) and Noble et al. (2002) measurement models, to come up with a performance measurement model of four items that measure a firm's performance compared to its competitors over a period of five years. They used the following indicators: market share, sales growth, profitability, and return on investment.

Other studies measured performance through secondary data mainly relying on available financial data. It is noted that such studies were less frequent than studies that used primary data to measure financial performance. Wang and Kim (2017) collected financial data from the Compustat database to measure the firm's financial performance. They used the collected data to calculate Tobin's q, which was measured by "*summing the market value of equity and the book value of debt, divided by the book value of the total assets for the period in which the individual firm is involved*" (Wang and Kim, 2017). Schniederjans et al. (2013) used stock response modelling approach to measure firms' performance, relying mainly on quarterly earnings per share.

4.5 Data Collection and Analysis Methods

In the previous sections, it was explained that this research follows a mixed-methods approach. The following section is divided into two main parts: quantitative and qualitative data, where each section discusses the relevant data collection and analysis methods.

Initially, the plan was to collect the data by contacting each company individually to collect the data (both quantitative and qualitative). However, after contacting more than 50 companies, only one company showed interest to participate. We did an interview with that company, but they were reluctant to answer many of the questions in the qualitative survey explaining that it was confidential

and they can't share that information. As a result of this, we decided to collect the data through online surveys.

The development of both quantitative and qualitative surveys ran in parallel, and the data was planned to be collected through online purchased panels (more details in the relevant sections below). The qualitative questionnaire was finalized first and thus the data collection started on the 22nd of September 2017 and was concluded on the 4th of October 2017. The quantitative survey was supposed to start around the same time. However, there was a delay until the required funding was secured. Thus, the quantitative survey started on 23rd of February 2018 and was concluded on 6th of March 2018. The main reason for collecting the data in two separate surveys was the length of the survey. The qualitative survey had 26 questions while the quantitative survey had 30 questions, so having them both in one survey would have 56 questions, a very long survey that might result in respondents dropping off before completing the survey. Hence it was decided to two surveys - a qualitative one and a quantitative one – instead of having one long survey.

4.5.1 Quantitative Data

In this section, the quantitative data collection and analysis process is explained including the survey development, the data collection, and the data analysis process.

4.5.1.1 Developing the Survey

4.5.1.1.1 Survey Design

To collect the quantitative data, this research used an online survey. Online surveys are commonly used nowadays providing a challenge to the previously dominant data collection methods such as face-to-face or paper-and-pencil surveys, due to the advantages related to cost and speed that online surveys offer (Toepoel, 2016). Other advantages of online surveys include reaching large numbers of people fast even if there was a far distance, as well as allowing the researcher to work on other research-related tasks while data collection is in the process (Wright, 2005). According to Couper (2000), web surveys are divided into two main categories: non-probability web surveys, and probability-based web surveys. The non-probability web surveys have three types: polls as entertainment, unrestricted self-selected surveys, and volunteer opt-in panels (Couper, 2000). While the probability-based web surveys have five types: intercept surveys, list-based samples, web option in mixed-mode surveys, pre-recruited panels of internet users, and pre-recruited panels of the full population (Toepoel, 2016).

This research adopts a non-probability web survey approach, specifically the volunteer opt-in panel type. According to Toepoel (2016), the volunteer panel "*does not use a random sample, but rather appeals to people who volunteer in answering survey questions, thereby creating a volunteer panel*".

Certain information about the volunteers is collected when they register to create a database of potential participants in future surveys, where the information provided assists in the participants' selection from the pool (Toepoel, 2016).

The survey had two types of questions: questions with closed-ended ordered answers, and questions with closed-ended unordered answers (full list of survey questions can be viewed in appendix B). The closed-ended ordered questions are one of the most widely used measurement instrument in web surveys (Toepoel, 2016). It deploys different scalar concepts of measurement. This research used a five-point Likert scale that included the following option answers: strongly agree, somewhat agree, neither agree or disagree, somewhat disagree, and strongly disagree. A "not applicable" option was added as well. The closed-ended unordered answers included different options/categories depending on the question, which in this case were used to collect descriptive data. The survey also included a trap question, which asked the participant to select a specific answer (trap question: please select somewhat agree as an answer to this question) in order to ensure the participant's active engagement and minimize bias. Hauser and Schwarz (2015) recommended using trap questions not only as a post-hoc measure of a respondent's attention but also as interventions to increase the respondent's attention and awareness mid-survey. Finally, the questions were randomized so that no questions measuring similar constructs were located after each other, in order to minimize bias as well. Scholars such as Budd(1987) and Goodhue(1998) suggest that items for all constructs to be measured should be randomly placed in a way that no two items measuring the same construct are adjacent.

4.5.1.1.2 Constructs

In order to study the impact of acquiring knowledge from social media on innovation and on performance, and the role of IT infrastructure, social capital, and organization capital within these relationships, seven independent scales were either taken or adapted from previous studies and used in the survey. One important thing to consider was to ensure that an adequate amount of indicators are used to measure each latent variable. While there is no established ideal number of indicators, scholars recommend a minimum of three or four (Baumgartner and Homburg, 1996; Cohen et al, 1990).Since we had 7 constructs, and we wanted the survey questions not to exceed 30 questions so that the completion rate doesn't drop, 4 or 5 indicators were selected to measure each latent variable. The used constructs and their underlying items are described next.

- **Social Media Information Collection**

In order to examine the impact of social media on innovation and on performance, measuring social media is key. One of the two social media related constructs is social media information collection.

The purpose of this construct is to measure if the firm is collecting information from social media. It also focuses on the availability of a process to collect the information rather than it being collected randomly. To measure social media information collection, four items were used based on previous studies of knowledge acquisition (Zhou and Li, 2012; Larraneta et al., 2012) and taken from Nguyen et al. (2015): (1) our company has a process for continuously collecting information from customers using social media; (2) our company has a process for continuously collecting information about competitor activities using social media ; (3) our company has a process for continuously collecting information from suppliers using social media; (4) our company has a process for continuously collecting information from intermediaries using social media. One questions used by Nguyen et al. (2015) about collecting information from governments was not included, as we thought it might be a sensitive topic and create some concerns for the respondents.

- **Social Media Proactive Market Orientation**

The second social media construct that will be measured in this research is social media proactive market orientation. The purpose of measuring this construct is to understand how firms are using social media to apply their proactive market orientation strategy. Being proactive on social media means that a firm is putting in extra effort when dealing with social media for example because it requires to dig deeper into the data on social media to identify the customers' needs. To measure this construct, four items were used based on previous research (Narver et al., 2004), and taken from Nguyen et al. (2015): (1) we help customers anticipate developments in the markets using social media; (2) we continuously try to discover additional needs of our customers of which they are unaware using social media; (3) we innovate using social media even at the risk of rendering our products obsolete; (4) we search for opportunities using social media in areas where customers have difficulty expressing their needs.

- **Innovation**

Since this research is attempting to study the impact of social media on innovation, one of the outcome variables that this research will measure is innovation. The purpose of this construct is to measure how innovative a company is. We measured innovation through five items taken from Liao et al. (2007): (1) our company often develops new products and services that are accepted by the market; (2) our company can often launch new products or services faster than our competitors; (3) our company always develops novel skills for transforming old products into new ones; (4) our company always acquires new skills or equipment to improve the manufacturing operation or service process; (5) our company can develop more efficient manufacturing process or operation procedure.

It is worth to mention that Liao et al. (2007) measured separately product innovation and process innovation, where he used 5 elements to measure the first, and 6 elements to measure the second. In our survey however, we don't differentiate between product and process innovation, where both were merged under one innovation construct. Given that 3 or 4 items are needed as a minimum to measure a variable (Cohen et al., 1990), 5 items which focused on product and process innovation were selected from Liao et al. (2007) used items.

- **Performance**

This research also examines the impact of social media on performance, so the second outcome variable to measure is performance. There are different methods to measure performance depending on what kind of performance is to be measured. In this research, the focus is on financial performance. This construct is measured by comparing specific measures related to the financial performance of the firm with other competitor firms. Financial performance construct in this study was measured through four items adapted from Wu (2016), changing the period asked about from 5 years to the last year. This change was made to accommodate to the fact the some companies might not have been using social media for 5 years already and might have started using social media recently. And since we are investigating the impact of social media on performance, we asked participants about the last year rather than the last five years. The questions are: (1) our company's ROI (return on investment) is better than our competitors' over the last year; (2) our company's profitability is better than our competitors' over the last year; (3) our company's sales growth is better than our competitors' over the last year; (4) our company's market share is better than our competitors' over the last year.

- **IT Infrastructure**

One of the mediators proposed to play a role in the relationship between social media and innovation, and social media and performance is IT infrastructure. The purpose of this construct is to measure the IT infrastructure available at the firm by checking it is in place and its efficiency, usability, etc., so the overall measure can be a good representation of how advanced and reliable the available IT infrastructure is. To measure IT infrastructure, four items were used based on previous studies by Ray et al. (2005) and Lien (2017), where three items out of five were used from the first study and one item out of five was used from the second study respectively. The items were selected with a focus on representing the infrastructure availability, and how possible it is to share data within the infrastructure present. Some of the items were rephrased based on the feedback received from the field experts at Aston Business School after the pilot as it will be explained below in section 4.5.1.2.3, so that the wording would be clear and doesn't confuse the respondents.

The items are: (1) the technology infrastructure for current business operations in place today is efficient; (2) our company has identified and standardized data to be shared across systems and business units; (3) the current technology infrastructure needed to electronically link our business units is efficient; (4) corporate data is currently shareable across business units and organizational boundaries.

- **Social Capital**

Another mediator proposed to play a role in the relationship between social media and innovation and social media and financial performance is social capital. It is proposed in this research that different departments at an organization use social media for different purposes. At an organization with high social capital, employees would tend more to share knowledge and have unplanned discussions and meetings as explained in chapter 3. Such meetings can be an opportunity to share knowledge acquired from social media, which could have an impact on innovation and performance. To measure the social capital construct, four items we used based on previous studies (Burt, 1992; Gupta and Govindarajan, 2000) and taken from Subramaniam and Youndt (2005): (1) our employees are skilled at collaborating with each other to diagnose and solve problems; (2) our employees share information and learn from one another; (3) our employees interact and exchange ideas with people from different areas of the company; (4) our employees partner with customers, suppliers, alliance partners, etc., to develop solutions. Note that Subramaniam and Youndt (2005) used five items in their survey while we took only four of them. The main reason was to keep the size of our survey within 30 questions so that we don't have a long survey. Since we didn't use all the items, the variable will be re-validated as explained in the next sections.

- **Organizational Capital**

The third mediator proposed to affect the relationship between social media and innovation, and social media and financial performance is organizational capital. The purpose of this construct is to measure items such as processes, information structure, and knowledge storage. It is proposed that the availability of such item – representing organizational capital collectively – can facilitate knowledge acquisition from social media as well as knowledge sharing within the organization, and thus impact innovation and performance. The organizational capital construct was measured through the following four items that were based on previous studies (Davenport and Prusak, 1998; Walsh and Ungson, 1991) and adapted from Subramaniam and Youndt (2005): (1) our company uses patents and licenses as a way to store knowledge; (2) much of our company's knowledge is contained in manuals, databases, etc.; (3) our company's culture (stories, rituals) contains valuable ideas, ways

of doing business, etc.; (4) our company embeds much of its knowledge and information in structures, systems, and processes.

4.5.1.1.3 Targeting Questions and Criteria

Other than the questions that were used to measure the constructs, the survey had two targeting questions. Given that this research studies the impact of social media usage, it was important to make sure that the respondents are from companies that use social media. Hence the first targeting question asked the respondent if his/her company uses social media i.e. is present on a social media platform. It was also important to make sure that the respondent knows how his/her company is using social media and for what purposes, otherwise he/she won't be able to accurately answer the questions asking about social media usage, and trying to measure the social media constructs.

We also targeted full-time employees in the United States, with the following "field of expertise": product management, customer service, marketing, technology implementation, sales/business development, technology development hardware/software, operations, and executive leadership. Managerial level positions and above were targeted to ensure the participant has enough knowledge about the organization. The following "position in organization" was targeted as well: owner, president/CEO/Chairperson, middle management, senior management, project management, chief technical officer, C-level executive, director, HR manager, product manager, and sales manager.

4.5.1.2 Data Collection

After selecting the sample and finalizing the survey, the next step was to start with the data collection. The data was collected through Survey Monkey online panel. In using such panels, the researcher specifies ahead of data collection, how many completed surveys he is targeting.

4.5.1.2.1 Selecting a Sample Size

The research plan ahead of data collection was to use structural equation modelling (which will be presented in section 4.5.3.1), where the sample size is an important element. There is no standard agreement among scholars of what represents an adequate sample size (Baumgartner and Homburg, 1996). Scholars have recommended different sample sizes such as 50 plus the number of parameters to be estimated (Bagozzi, 1981); 100 (Bollen, 1989), and 200 or more (Boomsma, 1982). However, a rule of thumb provided by Bentler and Chou (1987) explains that under normal distribution theory the ratio of the sample size to the measured parameters should be at least 5:1. Based on that rule, this research needed to have at least 145 usable surveys (29 parameters x 5). However, in order to accommodate surveys that might not be usable, it was decided to collect 200 surveys as a target.

4.5.1.2.2 Procedure

After selecting the items that will measure the constructs, the targeting questions, and the sample size, the survey was ready to be uploaded online on the Survey Monkey website in order to start the data collection. The two targeting questions were fixed as the first two questions, while all other questions were randomized in order. The targeting questions had two possible answers: yes or no. For the first question about if the company uses social media or not, both answers resulted in the respondent proceeding to the next question. For the second targeting question about the respondent's knowledge about his company's use of social media, only respondents who answered yes proceeded to complete the survey, while respondents who answered no were disqualified. Certain restrictions were added to make sure respondents don't leave questions unanswered, which would guarantee all surveys to be fully completed. Note that the respondents had a "not applicable" option as an answer to select. After uploading the survey to the platform, the pilot study which is explained in the next section started.

4.5.1.2.3 Pilot Study

Before running the main research survey, it was planned to do pilot testing. The pilot testing was done through two stages. The first stage included sharing the survey with experts in the field at Aston Business School to assess its validity and clarity, while the second stage was about collecting a few completed surveys from the targeted population. Saunders et al. (2012) suggest that the purpose of the pilot study is to provide the researcher with feedback to be able to assess the clarity and validity of the items. The feedback received from the experts in the first stage was beneficial to assess the ability of the survey to validate the proposed model and answer the research questions. The survey was refined and updated on the platform based on the feedback received ahead of the second stage. Then, the survey was sent to the targeted population to collect 15 % of the total target (30 surveys), ahead of the main survey data collection. All 30 surveys were fully completed, and as a result of the second stage of the pilot study, no further changes were made to the survey.

4.5.1.2.4 The Main Survey

After completing the pilot study, and since no changes were to be made, the data collection resumed collecting the remaining 170 surveys of the total target of 200, given that the 30 surveys collected for the pilot were to be used.

Since we had a disqualification question, more than 200 respondents took the survey. The disqualification rate was approximately 4%, thus in total 208 participants took the survey (8 of which were disqualified). From the 200 completed surveys received, 14 respondents (around 7%) worked in companies that didn't use social media, so these surveys were removed. Also, 31 respondents

(around 15%) failed to select the correct answer for the trap question, meaning they weren't actively engaged while providing the answers, and thus their surveys were removed. The final total count of completed usable surveys was 155, which is acceptable given it is above the 5:1 ratio (29 x 5 = 145) proposed by Bentler and Chou (1987) and explained in section 4.5.2.1.

4.5.1.3 Data Analysis Plan

Now that the data is collected, the next step is the data analysis, which will be presented in chapter 5. However, an overview of the data analysis method is presented next.

The software used in this research for data analysis is SPSS. To validate the conceptual model, structural equation modelling (SEM) was used. An overview of SEM is presented in the next section.

4.5.1.3.1 Structural Equation Modelling

Structural equation modelling dates back to the beginning of the twentieth century when Spearman (1904) established the foundation for factor analysis and as a result of the measurement model in SEM (Blunch, 2013). After that, Wright (1918) developed path analysis which connected correlations among the variables to the parameters and was then combined with factor analysis in the early 1970s to form the current general SEM (Blunch, 2013).

SEM is a method of covariance structural analysis and a statistical procedure to test measurement, predictive, functional, and casual hypotheses (Bagozzi and Yi, 2012). The statistical models incorporated in SEM aim to address the relationships among multiple variables (Hair et al., 2006). SEM models have the following three characteristics, according to Hair et al. (2006):

1. It estimates multiple and interrelated dependence relationships
2. It can represent unobserved concepts in such relationships
3. It defines a model that explains these relationships

According to Bagozzi and Yi (2012), SEM offers many advantages as a tool providing "*a broad, integrative function conveying the synergy and complementarity among many different statistical methods*" and often suggesting novel hypotheses. SEM was chosen for data analysis in this research for different reasons. First, it is suitable for testing theoretical models with multiple interrelationships (Hair et al., 2006), as it allows the researcher to estimate these relations through separate equations and to capture the mediation effect by specifying dependence relationships (Chin, 1998). Second, it is driven by theory rather than by data where the model must be specified by the researcher and supported by theory (Diamantopoulos and Siguaw, 2000). Third, the researcher can estimate both latent variables and constructs through SEM (Bollen, 1989). Finally, it allows the researcher to capture measurement error effects (Hair et al., 2006). These characteristics of SEM apply to this

research, where a model that is theory-driven was developed and will be tested with mediation effects measured.

4.5.2 Qualitative Data

After discussing the quantitative part of the research, this section addresses the qualitative part. The first section discusses the development of the questionnaire including the design, questions, and the targeting questions. The second section explains the data collection process: the procedure, the pilot study, and the main questionnaire. The final section provides an overview of thematic analysis, which is the analysis method to be used to analyse the qualitative data in this research.

4.5.2.1 Developing the Questionnaire

4.5.2.1.1 Questionnaire Design

Similar to the quantitative survey, this research used an online survey to collect the qualitative data. A qualitative study doesn't need a representative sample as a quantitative survey does. In a qualitative study, researchers are interested in building an understanding of a certain group or individuals rather than trying to measure the average score in a population (Eysenbach and Wyatt, 2002). Specifically, Toepoel (2016) explains that "*qualitative web surveys answer 'how' or 'why' questions*". Since one of the research activities is to understand how and why firms use social media, a qualitative web survey was chosen as a method to collect qualitative data.

Similar to the quantitative survey, a non-probability web survey approach was adopted using the volunteer opt-in panel type (explained in section 4.5.1.1). The survey had two types of question: questions with close-ended unordered answers (multiple choice answers), and questions with open-ended answers. As explained earlier, the close-ended unordered answers included different answer choices depending on the question and were used to collect descriptive data. The open-ended questions are questions where no answers are provided. The participants are free to provide any answer they want without any choices restrictions and elaborate on these answers resulting in more detailed interviewing (Toepoel, 2016). However, such questions require more effort from the participants, which may result in them abandoning the survey (Crawford et al., 2001), or in more non-response items (Griffith et al., 1999). Toepoel (2016) explains that open-ended items are preferable when the researcher wants to understand "why". Since one of the objectives of the qualitative data in this research is to understand why firms use social media, open-ended questions were chosen to be the main part of the questionnaire.

4.5.2.1.2 Interview Questions

The questionnaire was made of a total of 26 questions distributed across two sections (full list of the questionnaire questions can be viewed in appendix C). The first section included questions with

answer choices provided to collect descriptive data, while the second section included the open-ended questions. The full list of questions can be viewed in the appendix. Below, the open-ended questions are presented:

- How do you describe your company's presence of social media?
- For what reasons do you use social media?
- Why it is important for your company to be present and responsive on social media?
- Do you focus on one social media platform more than another? If yes, which one and why?
- Do you collect and analyse social media data? If yes, how do you collect the data and how do you analyse it?
- Is the social media team involved in the innovation process at your organization? If yes, what kind of input to the innovation process does the social media team provide?
- Have you previously identified problems/customer needs through social media? If yes, how were these problems/needs identified?
- Did any of these identified problems/needs result in an innovation to solve a problem or create a new product/service? If yes, can you share an example of those needs and innovations?

Note that no questions about performance, IT infrastructure, social capital, or organizational capital were added. It was considered that these elements would come up from within the data and the respondents' answers to the above questions, where relevant themes would emerge.

4.5.2.1.3 Targeting Questions and Criteria

In order to make sure that the participant completing the survey has the relevant knowledge, we targeted companies that use social media and respondents whose position in the company is "manager or above", where three targeting questions were added at the beginning of the survey. Any participant who answered 'no' to any of these questions was automatically disqualified. The first question asked if the participant's company uses social media, as in having social media accounts/pages, since this study aims to understand how a company uses social media. The second question asked the participant if he/she is a manager or above in his/her current position since at this level the employee would have more knowledge about the company's processes and activities. The last targeting question asked the participant if he/she has the knowledge about how the company uses social media, as this knowledge is crucial to answering the remaining questions.

4.5.2.2 Data Collection

After finalizing the questionnaire, the next step was to start with the data collection. The data was collected through the Qualtrics online panel. In using such panels, the researcher specifies, ahead of data collection, how many completed surveys he is targeting.

4.5.2.2.1 Selecting a Sample Size

In selecting a sample size for qualitative studies, scholars suggest that it should depend on the concept of saturation (Glaser and Strauss, 1967). A research study would be considered saturated "*when gathering fresh data no longer sparks new theoretical insights, nor reveals new properties of your core theoretical categories*", as Charmaz (2006) explains. Different sample sizes were proposed by scholars, for example, Morse (1994) proposed 30-50 participants for an ethnographic study, while Cresswell (1998) suggested 20-30 for grounded theory. In this research, the selected sample size was 75 usable questionnaires. This sample size was chosen based on scholars' recommendations to reach saturation, as well as financial restrictions.

4.5.2.2.2 Procedure

After finalizing the survey questions, the targeting questions, and the sample size, the questionnaire was uploaded online on the Qualtrics website in order to start the data collection. The three targeting questions were the first questions, then the descriptive questions, and finally the open-ended questions. The participants had to answer all questions in order to be able to submit their answers. A minimum character limit of 150 characters was added to the open-ended answers, in order to avoid receiving short meaningless answers. Qualtrics guaranteed that any un-usable questionnaires would be replaced to get a total of 75 usable ones.

4.5.2.2.3 Pilot Study

Similar to the quantitative survey, pilot testing over two-stages was completed before running the main research questionnaire. In the first stage, it was shared with experts in the field at Aston Business School to check the validity and clarity of the questions, while the second stage involved collecting 20 completed questionnaires. The feedback received from the experts resulted in editing and re-arranging the position of some questions as well as rephrasing others. After that, 20 questionnaires were collected, out of which 8 were non-usable since they contained random words and copy/paste answers in the open-ended answers. To improve the quality of the questionnaires being completed, a minimum completion time of seven minutes was imposed, so all questionnaires which were completed in less than 7 minutes would be automatically removed.

4.5.2.2.4 The Main Questionnaire

No changes were made to the survey after the pilot study. However, the only changes made were in terms of technical restrictions, such the minimum completion time to attempt to receive more usable surveys. Given that 12 questionnaires were completed and usable during the pilot study, the data collection was resumed to collect the remaining 63 questionnaires to reach the 75 target. To get 75 fully usable surveys, a total of 284 participants attempted to complete the questionnaire where: 93 were disqualified as their company didn't use social media; 35 were disqualified as they were not managers or above; 44 were disqualified as they didn't have knowledge of their company's social media usage; 4 were disqualified as they finished the survey in less than the 7 minutes; and 33 questionnaires were non-usable due to random text in the open-ended answers (those were manually checked by the researcher).

4.5.2.3 Data Analysis Plan

After finalizing the data collection, the next phase was the data analysis which will be discussed in chapter 6. In the next section, however, two common approaches to qualitative data analysis – content analysis and thematic analysis- are discussed to explain why thematic analysis was chosen as the analysis method in this research. Then, an overview of thematic analysis is presented.

4.5.2.3.1 Content Analysis vs Thematic Analysis

There are two types of content analysis: quantitative content analysis, and qualitative content analysis. For the analysis of text data, qualitative content analysis is one of the classical procedures. The categories used in the content analysis are not extracted from the data. Flick (2014) explains: "*an essential feature is the use of categories that are often derived from theoretical models: that is, categories are brought to the empirical material and not necessarily developed from it*". He adds that in the qualitative content analysis approach, building a coding frame is central. This coding frame would be built based on the categories brought and not developed from the data.

Thematic analysis is one of the most common approaches to qualitative data analysis (Bryman 2012). Thematic analysis is defined as "*a method for identifying, analysing and reporting patterns (themes) within data*", according to Braun and Clarke (2006). They explain that a theme "*captures something important about the data in relation to the research question, and represents some level of patterned response or meaning within the data set*". Themes can be identified at different levels: at a semantic/explicit level, or at a latent/interpretative level (Boyatzis, 1998). Braun and Clarke (2006) state that themes are identified within the surface meanings with a semantic approach, while a latent approach examines the underlying ideas and conceptualizations behind the semantic meaning of the data.

Given the research questions, the thematic analysis would better serve the purpose. Although content analysis has many similar characteristics to thematic analysis, one major difference influenced the decision. As mentioned earlier, the categories/codes within content analysis are derived from theories rather than from within the data, while in the thematic analysis the codes are derived from the data. The objective of the qualitative data in this research is to answer "how" and "why" firms use social media, thus no categories need to be imposed from outside the data. Hence, thematic analysis was the method chosen for the qualitative data analysis.

4.5.2.3.2 Thematic Analysis

Braun and Clarke (2006) developed a process of 6 steps to do a thematic analysis that includes:

1. Familiarizing yourself with your data
2. Generating initial codes
3. Searching for themes
4. Reviewing themes
5. Defining and naming themes
6. Producing the report

Braun and Clarke (2006) explain what each step entails: in the first step, the researcher reads the collected data more than once to become familiar with the data while taking notes to write down any initial ideas. Then in the second step, the researcher starts coding features in the data that are thought to be interesting. This coding should be done in a systematic way throughout the whole data set, where data relevant to each code is collated. After generating the initial codes, the researcher starts searching for themes in the third step, by collating the codes into potential themes and collecting all the relevant data with respect to a theme. In the fourth step, the researcher reviews the potential themes that resulted from step three by checking if the themes, coded extracts, and entire dataset work altogether. In this step as well, a thematic map of the analysis is generated. In the fifth step, the themes identified are refined as the analysis keeps going, where clear definitions and names are provided for each theme. Finally, in the sixth step, which represents the last opportunity for analysis, examples from the data linking to the identified themes and relating to the research aim are selected and used to produce the report of the analysis.

4.6 Ethical Considerations

After discussing the data collection methods, the ethical considerations are explained in this section. The data collection methods in this research for both quantitative and qualitative data involve human participation, so ethical consideration is very important (Hesse-Biber and Leavy, 2010). Bryman (2012) quotes Diener and Crandall (1978) who identified four main areas related to ethical

considerations: "*whether there is harm to participants, whether there is a lack of informed consent, whether there is an invasion of privacy, whether deception is involved*". This research was guided by these ethical principles, where:

1. No harm of any type will be caused to the participants
2. The panel administrators (both Survey Monkey and Qualtrics) were introduced to the research aims and purposes which was shared with the participants they targeted, who had the right to accept or reject taking the survey
3. The identity of the participants was anonymous to the researcher and no questions collected any data that might identify a participant identity ensuring full privacy
4. The purpose of the research is clearly communicated and as such, the researcher will not engage in any kind of deception

All the ethical obligations were carefully observed through every stage of the research making sure that this study is clear of any ethical issues.

4.7 Summary

In this chapter, the research methodology was presented and explained in details, highlighting that this research follows a mixed-methods approach. The chapter started by stating the research philosophy. Then, the research strategy was explained including the research design, a comparison between qualitative and quantitative methods, triangulation, and the sampling process. After that, an overview of how social media, innovation, and performance were measured in literature was presented. The two sections that followed discussed the methodologies for data collection and analysis of the quantitative and qualitative parts of this research respectively. Finally, the ethical considerations were stated.

After explaining the methodology of this research for both quantitative and qualitative studies, the next two chapters, chapter 5 and chapter 6, will discuss the quantitative data analysis and findings and the qualitative data analysis and findings respectively.

Chapter 5: Quantitative Data Findings and Analysis

5.1 Introduction

In the previous chapter (chapter 4), the research methodology was stated including both the quantitative methodology and the qualitative methodology. This chapter (chapter 5) discusses the quantitative data analysis and findings, while the qualitative data analysis and findings will be discussed in the next chapter (chapter 6).

There are five main sections in this chapter. The first section (5.2) provides descriptive analysis about the firms and respondents who took the survey. The second section (5.3) develops the measurement model and presents different data tests as well as reliability and validity measures. The third section (5.4) presents the measurement model and the confirmatory factor analysis results. Then in the fourth section (5.5), the structural model is presented and the hypotheses are tested. Finally, in the fifth section (5.6), this chapter is concluded with a summary.

5.2 Descriptive Analysis

The descriptive analysis provides an overview of the profiles of the firms and respondents who took the survey. Other than the targeting questions, trap question, and questions measuring the variables, the survey had two questions about the industry and company size, while the gender and age of the respondent were provided by the platform as a regular procedure for all surveys done through the SurveyMonkey portal.

The final 155 sample firms operate in 22 different industries including: information technology (31 firms, 20 %), retail (30 firms, 19.35 %), financial services (20 firms, 12.90 %), manufacturing (19 firms, 12.26%), healthcare (16 firms, 10.32 %), education (12 firms, 7.74%), food & beverage (4 firms, 2.58 %), entertainment & leisure (3 firms, 1.94%), advertising & marketing (1 firm, 0.65%), and other industries (19 firms, 12.26%). Other characteristics of firms and respondents can be observed in table 5.1 below.

Firm size	**n**	**%**	**Respondent Age**	**n**	**%**	**Gender**	**n**	**%**
1 - 10	11	7	18 - 29	14	9	female	79	51
11 - 50	14	9	30 - 44	71	46	male	76	49
51 - 250	26	17	45 - 60	57	37			
251 - 500	21	13	> 60	13	8			
501 - 1000	32	21						
1000+	51	33						

Table 5. 1: Profiles of responding organizations and respondents

5.3 Developing the Measurement Model

In this section, different aspects related to the measurement model are addressed ahead of assessing it. The software to use for the analysis is presented first. Then, how missing data were treated is explained. After that, two important data tests ahead of the measurement model testing are done: the normality test, and Kaiser-Meyer-Olkin and Bartlett's test. Then exploratory factor analysis and confirmatory factor analysis are defined. Finally, the indices and measures that will be used to assess the model reliability and validity will be discussed.

5.3.1 Software to be used

For the data modelling and analysis, two software packages will be used: IBM SPSS Statistics (version 23) and IBM AMOS Graphics (version 23). IBM SPSS is software offering advanced statistical analysis, a library of machine learning algorithms, text analysis, and many more features (IBM, 2018). Meanwhile, IBM AMOS is a software that allows users to easily use structural equation modelling to test hypotheses on multiple variables. It enables researchers to support their research and theories by "*extending standard multivariate analysis methods, including regression, factor analysis, correlation, and analysis of variance*" (IBM 2018).

There are other software statistical packages available such as LISREL, CALIS, and EQS, and LINCS. However, the three most popular software packages are AMOS, LISREL, and EQS (Schumacker and Lomax, 2004). All the mentioned packages deal with structural equation modelling. For this study, the researcher's familiarity with using SPSS and AMOS, as well as the availability of these software packages at Aston University influenced the decision to use them.

5.3.2 Treatment of missing data

After selecting the software packages to be used, and collecting the data, the first step was to clean the data and treat missing values. As the survey was completed online where users had to answer all questions to be able to submit, there were no unanswered questions. However, there were some "not applicable" answers, which are to be treated as missing data. Overall, 60 questions had a "not applicable" answer representing around 1% of the total answers.

There are three main methods that are used to replace missing data: direct analysis of incomplete data, weighting, and imputation (Little and Rubin, 1989). The direct analysis of incomplete data method includes excluding cases that have missing data on the variables involved in a particular computation (Kline, 1998). In the weighing method, any cases that have missing data are excluded (Kline, 1998). The imputation method involves substituting missing data on a variable with the sample mean or median (Schafer and Graham, 2002).

The main disadvantages of the direct analysis of incomplete data method and the weighting method are having different calculations for different sample sizes (Malhotra and Birks, 2006) in the first method, and severely reducing the sample size even when there is a small number of missing data (Hulland et al., 1996) in the second. Meanwhile, the imputation method maximizes the effect of the sample size (Schafer and Graham, 2002), and that was the reason behind choosing this method to replace the missing data in this study, as we wanted to maximize the effect of the sample size rather than reduce it with the other methods. According to Lynch (2003), missing data in Likert-type data should be replaced by the median, as means are less meaningful in such cases.

5.3.3 Normality Testing

Testing normality is important in multivariate analysis. According to Hair et al. (2010), normality represents the data distribution shape for an individual metric variable and its correspondence to the normal distribution. The variation from the normal distribution should not be large, otherwise, the statistical test results are invalid (Hair et al., 2010). In this research, a skewness-kurtosis test is employed to test the normality of the data. If the skewness value was negative then the distribution is shifted to the right, while if it was positive then the distribution is shifted to the left. A positive or negative kurtosis indicates a peaked or flat distribution respectively (Pallant, 2010). According to Tabachnick and Fidell (2007), an accepted skewness-kurtosis range is ±2.58. The values in table 5.2 show that all values are within the accepted range except for one item (SCAP4) which has a high kurtosis indicating a peaked distribution for that element. Table 5.2 also presents the mean and standard deviation of the elements.

	Mean	Std. Deviation	Skewness	Std. Error of Skewness	Kurtosis	Std. Error of Kurtosis
ITI1	3.95	.917	-1.022	.195	1.128	.387
ITI2	4.08	.964	-1.170	.195	1.323	.387
ITI3	4.05	.952	-1.019	.195	.666	.387
ITI4	3.96	.925	-.920	.195	.866	.387
OC1	3.65	1.102	-.480	.195	-.578	.387
OC2	3.86	1.057	-.961	.195	.455	.387
OC3	4.25	.894	-1.457	.195	2.439	.387
OC4	3.95	.959	-1.105	.195	1.359	.387
P1	3.87	1.011	-.539	.195	-.472	.387
P2	4.00	1.013	-.912	.195	.417	.387
P3	3.86	.954	-.588	.195	-.113	.387
P4	3.92	1.029	-.821	.195	.313	.387
Inv1	4.15	.975	-1.212	.195	1.120	.387
Inv2	3.72	1.035	-.488	.195	-.330	.387
Inv3	3.89	.997	-.772	.195	.115	.387
Inv4	4.08	.964	-1.126	.195	1.214	.387
Inv5	4.10	.799	-1.039	.195	2.023	.387
SMPMO1	4.12	.953	-.965	.195	.259	.387
SMPMO2	4.14	.900	-.933	.195	.428	.387
SMPMO3	3.13	1.247	.037	.195	-1.058	.387
SMPMO4	4.04	.946	-1.011	.195	.896	.387
SCAP1	4.30	.799	-1.361	.195	2.374	.387
SCAP2	4.15	.861	-.984	.195	.823	.387
SCAP3	4.21	.866	-1.266	.195	1.886	.387
SCAP4	4.52	.687	-2.066	.195	7.273	.387
SMIC1	4.08	1.035	-1.152	.195	.774	.387
SMIC2	3.85	1.161	-.765	.195	-.371	.387
SMIC3	3.88	1.147	-.986	.195	.277	.387
SMIA4	3.77	1.037	-.723	.195	.197	.387

Table 5. 2: Skewness-Kurtosis Values

*Note that the sample size is N=155; no missing data

*ITI=IT infrastructure; OC= organizational capital; P=performance; Inv=innovation; SMPMO=social media proactive market orientation; SCAP=social capital; SMIC=social media information collection

5.3.4 KMO and Bartlett's Test

Other tests that scholars suggest to do before starting the data analysis are the Kaiser-Meyer-Olkin (KMO) and Bartlett's tests. The KMO test checks the multicollinearity among variables, calculating if they are highly correlated and indistinguishable in that case, a value of 0.5 and above is satisfactory and the higher the better (Hinton et al., 2004). Meanwhile, Bartlett's test checks if there is a relationship between the variables, where a P value <0.05 indicates that there is a relation and

analysis can proceed. Table 5.3 presents the values of these tests, where KMO value is 0.919 which is an excellent value, while for Bartlett's test, P<0.001 meaning that the analysis can proceed to the next step.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.919
Bartlett's Test of Sphericity	Approx. Chi-Square	2520.392
	df	406
	Sig.	.000

Table 5. 3: KMO and Bartlett's Tests

5.3.5 Exploratory versus Confirmatory Factor Analysis

After the data checks, the analysis starts with either an exploratory factor analysis or confirmatory factor analysis. Hair et al. (2010) define factor analysis as an "*interdependence technique whose primary purpose is to define the underlying structure among variables in the analysis*". Factor analysis is also a technique that helps with reducing the number of variables considered in a study (Field, 2018). It provides the researcher with two main outcomes: data summarization and data reduction, wherein the first outcome underlying dimensions are derived, and in the second outcome representative variables are identified (Hair et al., 2010). There are two main types of factor analysis: exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). Kline (2016) explains that when using the method of EFA, the specification of the number of factors is not required a priori, while for a CFA, the exact number of factors must be specified by the researcher. He adds that the exact correspondence between indicators and factors can't be specified in an EFA, so it has unrestricted measurement models since indicators can depend on all factors. While a CFA has restricted measurement models since the researcher specifies which factors the indicators can rely on.

Usually, the method of EFA is used when the underlying factor structure of the data is unknown, while the method of CFA is used when the relationships between latent and observed variables are hypothesized a priori (Sharma, 1996). As a result, no theoretical basis is needed when using an EFA, while for a CFA a strong underlying theory specifying the relationships within data is required as Hurley et al. (1997) explain. They add that an EFA is more beneficial for scale development, while a CFA is more beneficial for confirming pre-existing relationships and structures in data.

In this research, some of the construct measures that are being used were taken from previous studies while the others were adapted from previous studies, so EFA is needed for validation.

5.3.6 Assessing measurement model validity

To assess the measurement model, different model fit indices, and reliability and validity measures can be referred to. In the next two sections, an overview of acceptable measures in literature for the model fit indices, and reliability and validity measures will be presented respectively.

5.3.6.1 Model fit indices

Different model fit indices exist in the literature. Hair et al. (2010) list three major types of these indices: absolute fit indices, incremental fit indices, and parsimony fit indices. The absolute fit indices measure how well the model explains the data, the incremental fit indices measure how well is the model relative to some baseline models, and parsimony fit indices help decide which model is the best between a set of competing models (Hair et al., 2010).

Scholars propose different fit indices that should be reported. Kline (2016) lists four minimum fit indices to be reported: model chi-square with degrees of freedom and p-value, root mean square error of approximation (RMSEA), comparative fit index (CFI), and standardized root mean square residual (SRMR). Hair et al. (2010) suggest that researchers don't need to report all available indices as some of them are redundant, and proposes to typically report three to four indices or at least one incremental index and one absolute index, in addition to the chi-square. Based on these suggestions, the following five fit indices will be reported in this study: chi-square with its degrees of freedom and p-value, adjusted goodness of fit (AGFI), CFI, RMSEA, and SRMR.

- Chi-square: an absolute fit index measure, it is the most fundamental absolute fit index for evaluating overall model fit (Hair et al., 2010)
- AGFI: an absolute fit index to evaluate the goodness-of-fit of a model, where its value can range between 0 and 1 with higher values indicating a better fit (Hair et al., 2010)
- CFI: an incremental fit index, Bentler CFI is a goodness-of-fit measure with values ranging from 0 to 1, where values closer to 1 are better (Kilne, 2016)
- RMSEA: this is an absolute fit index usually related to the badness-of-fit (Kline, 2016), and is usually associated with PCLOSE (*p* of close fit) value
- SRMR: this is a standardized version of root mean square residual (RMR), and an absolute fit index also related to the badness-of-fit measuring the mean absolute covariance residual (Kline, 2016)

The threshold values for the indices mentioned above are listed in Table 5.4 below based on Hu and Bentler's (1999) suggestions:

Measure	Threshold
Chi-square/df (cmin/df) *p*	<3 ≤0.001
CFI	>.95 great; >0.9 traditional
AGFI	>.80
SRMR	<.09
RMSEA	<.05 good; .05-.10 moderate; >.10 bad
PCLOSE	>.05

Table 5. 4: Suggested threshold for model fit indices (Hu and Bentler, 1999)

5.3.6.2 Constructs Validity and Reliability

One important step before starting the hypothesis testing of the structural model is to verify the validity and reliability of the constructs. Holmes-Smith (2001) explains that researchers should check both validity and reliability because for example a construct can be valid (accurate) but not reliable (consistent), or can be reliable (consistent) but not valid (accurate). Hair et al. (2010) define construct validity as "*the extent to which a set of measured items actually reflects the theoretical latent construct those items are designed to measure*". They explain that construct validity can be evaluated through convergent validity and discriminant validity.

Convergent validity represents the extent to which the indicators of a specific construct "*converge or share a high proportion of variance in common*" (Hair et al., 2010). It is measured through three indicators: factor loading, average variance extracted (AVE), and reliability.

- **Factor Loadings**: according to Hair et al. (2010), factor loadings size is an important consideration, where high loadings would indicate that they converge on a common latent construct. They suggest that the standardized factor loadings should be greater than or equal to 0.5, and ideally greater than 0.7.
- **Average Variance Extracted**: a rule of thumb is that the AVE value should be greater than or equal to 0.5, since a value less than that means that more errors remain in the items than the variance explained by the construct (Hair et al., 2010). AVE is calculated using the following formula (Fornell and Larcker, 1981):

AVE= (sum of squared factor loadings)/ (square of sum of factor loadings) + (sum of error variance)

$$AVE = \frac{\sum_{i=1}^{n} \lambda_i^2}{n}$$

- **Reliability**: can be estimated through different measures, where two are the most commonly applied: Cronbach's alpha and composite reliability (CR). The rule of thumb for both measures is to have a value greater than or equal to 0.7 (Hair et al., 2010). CR is calculated based on the following formula (Hair et al., 2010):

CR= (square of sum of factor loadings)/ (square of sum of factor loadings) + (sum of error variances)

$$CR = \frac{(\sum_{i=1}^{n} \lambda_i)^2}{(\sum_{i=1}^{n} \lambda_i)^2 + (\sum_{i=1}^{n} \delta_i)}$$

For both AVE and CR formulas:

- λ is the standardized factor loading
- i is the number of items
- δ is the error variance term for each latent construct

Discriminant validity is "*the extent to which a construct is truly distinct from other constructs*", according to Hair et al. (2010), it provides evidence that a construct is unique by itself and measures things that other constructs don't measure. To evaluate the discriminant validity, the AVE values of two constructs are compared to the square of the correlation estimate of those constructs, where the AVE should be greater than the square correlation estimate (Fornell and Larcker, 1981). To establish discriminant validity, two values (other than AVE) were calculated: maximum shared variance (is equal to the square of the highest correlation coefficient between constructs) and the square root of AVE, as Hari et al. (2010) also suggest that MSV should be less than AVE to establish the discriminant validity.

5.4 The Measurement Model

This section presents the measurement model. In order to assess the measurement model, an EFA was done through SPSS 23, while a CFA was done through AMOS 23.

5.4.1 Exploratory Factor Analysis

Given that constructs that were used are from literature and has been tested and established before, the number of loading factors was selected (7 factors). The purpose of doing the EFA in this study is to make sure latent variables are loading on their constructs and to remove any items that are loading on more than one construct. The extraction method used was principal components methods, with varimax selected as a rotation method. The scree plot shows a cutting point at 7

factors is presented below in figure 5.1, while table 5.5 shows the results of the first iteration which included all the items.

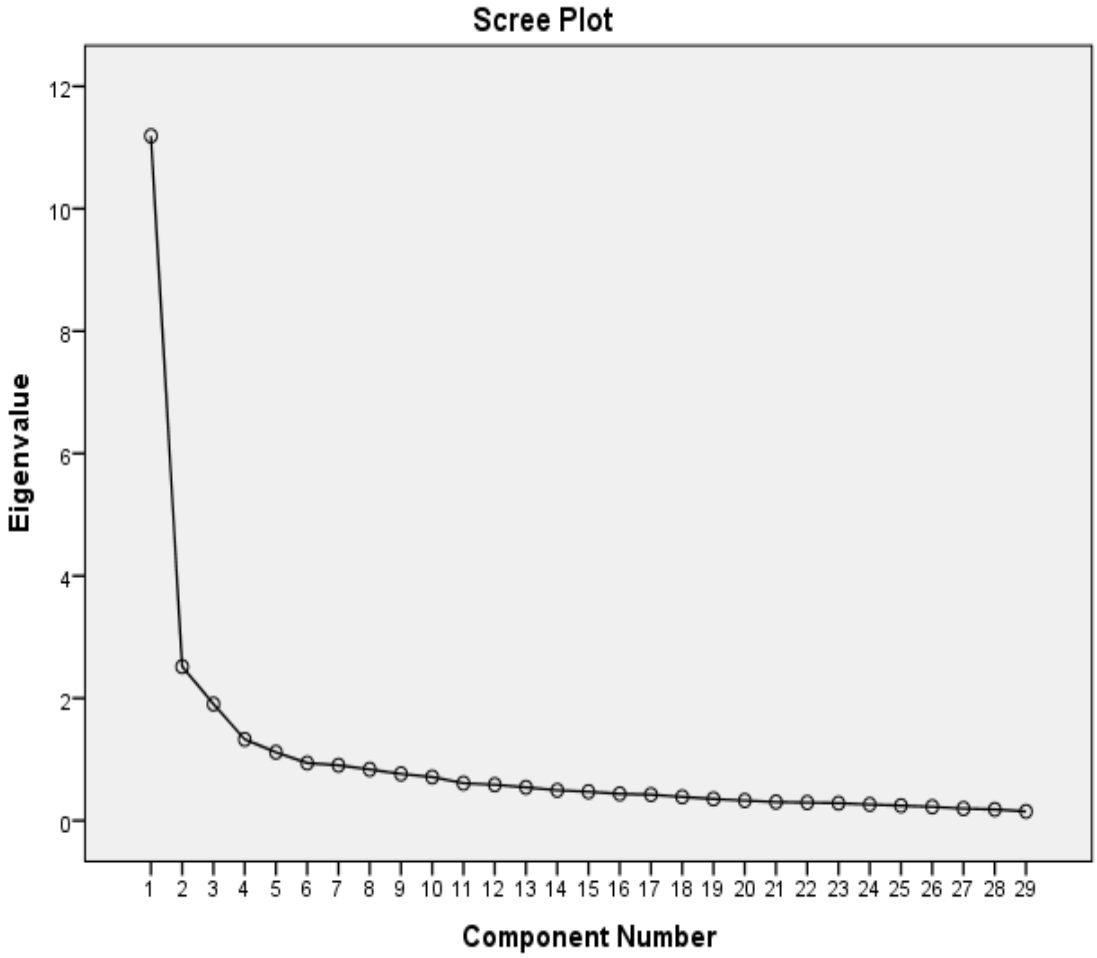


Figure 5. 1: Scree Plot

	Component						
	1	2	3	4	5	6	7
ITI1			.650				
ITI2	.402		.603	.410			
ITI3		.408	.595				
ITI4					.709		
OC1						.751	
OC2						.736	
OC3							.558
OC4					.678		
P1		.832					
P2	.446	.707					
P3		.727					
P4		.795					
Inv4					.489		
Inv5							.763
Inv1				.403			.552
Inv2					.403		
Inv3							
SMPMO1	.657						
SMPMO2	.658						.415
SMPMO3	.453					.426	
SMPMO4	.655						
SCAP3				.635			
SCAP1				.758			
SCAP4				.752			
SCAP2			.644				
SMIC1	.730						
SMIC2	.750						
SMIC3	.805						
SMIC4	.773						

Table 5. 5: EFA results after 1st iteration

As noticed in the above table, there were some items loading of more than one component. These items were removed one by one, each time running a new iteration, until the below result was achieved, where no items are loading on more than one construct (table 5.6). The method used to remove items is backward elimination. Backward elimination begins with all variables selected and eliminates variables one at a time until a stopping criterion is reached (Chatterjeed and Hadi, 2006; Pedhazur, 1997). Freund and Minton (1979) explain: “This procedure is a one-at-a-time elimination, or step-down procedure. The final model maybe selected according to

various criteria: when all remaining coefficients are statistically significant at some predetermined level, by examining all steps and picking an optimum point, or other criteria". We started removing the items that were not loading with their group, or were loading in more than one place. For example, in the IT infrastructure group (ITI), we can notice in table 5.5 that the first three elements are loading together while ITI4 is not, so it was removed. Another example is organizational capital group (OC), where we notice that OC1 and OC2 are loading together, while OC3 and OC4 each loads on a different construct so they were removed. Table 5.6 below shows which items were removed at each iteration, until the final set of elements shown in table 5.7 was reached:

Iteration	Element Removed
1	ITI4
2	OC3
3	OC4
4	INV1
5	INV5
6	SCAP2
7	SMIC4
8	SMPMO3
9	SMPMO2

Table 5. 6: items removed and iterations

	Component						
	1	2	3	4	5	6	7
ITI1				.647			
ITI2				.699			
ITI3				.715			
OC1						.777	
OC2						.820	
P1	.783						
P2	.734						
P3	.749						
P4	.862						
Inv4					.761		
Inv2					.643		
Inv3					.656		
SMPMO1							.636
SMPMO4							.747
SCAP3			.684				
SCAP1			.797				
SCAP4			.793				
SMIC1		.814					
SMIC2		.749					
SMIC3		.793					

Table 5. 7: EFA results after the 9th iteration

5.4.2 Confirmatory Factor Analysis

The items that resulted from the EFA (9th iteration) were carried on to do the CFA. The CFA resulted in the model displayed in figure 5.2. The measures explained in section 5.3.6 were used to assess the model validity by evaluating the model fit measures, and the validity and reliability of the constructs.

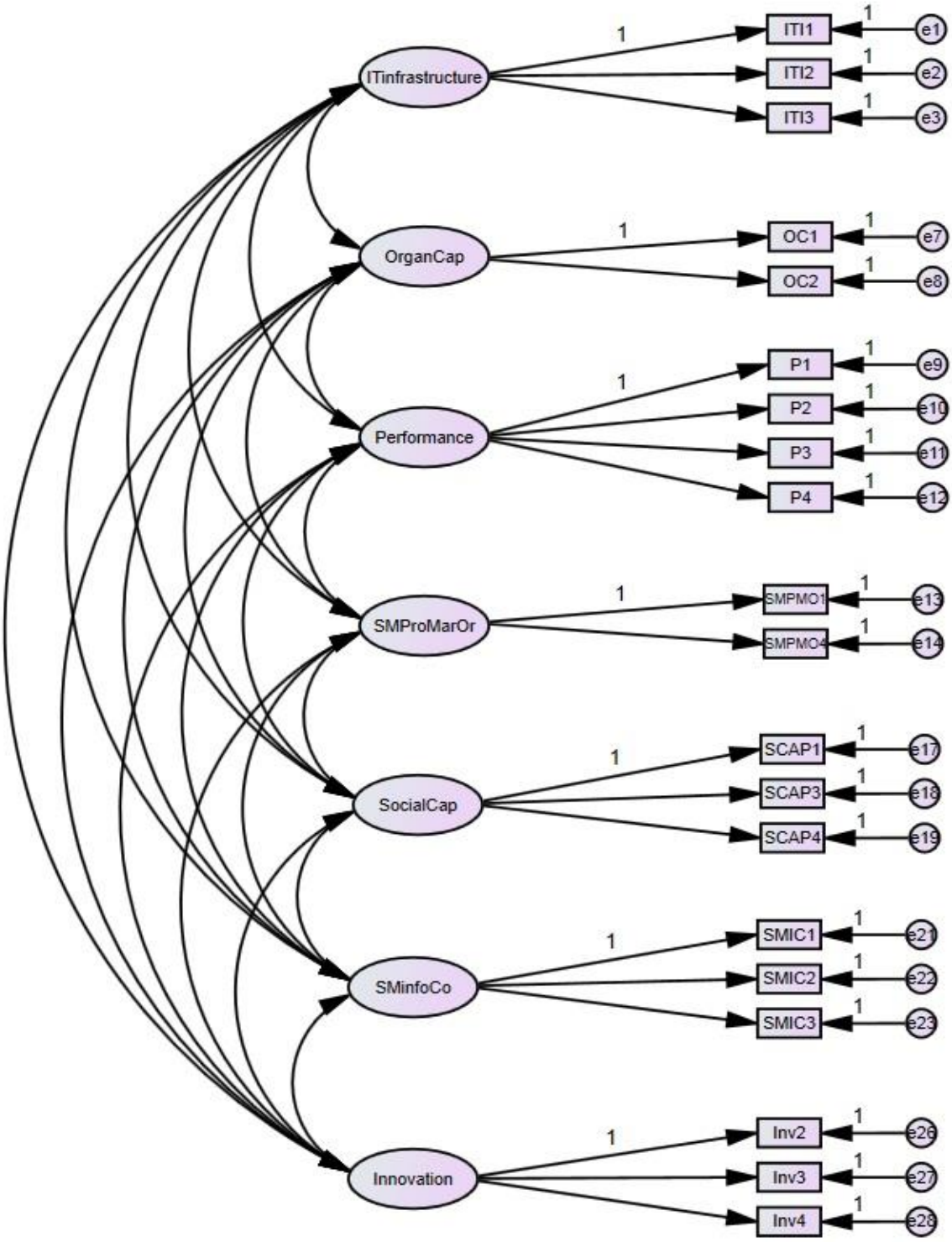


Figure 5. 2: **The measurement model**

5.4.2.1 Model fit measures

All the model fit indices (explained in section 5.3.6.1) that were observed have values within the accepted thresholds values showing a good fit for the measurement model. These values are presented in table 5.8.

Measure	**Value**	**Threshold (Hu and Bentler, 1999)**
Chi-square/df (cmin/df) *p*	1.389 0.001	<3 ≤0.001
CFI	0.963	>.95 great; >0.9 traditional
AGFI	0.830	>.80
SRMR	0.0523	<.09
RMSEA	0.05	<.05 good; .05-.10 moderate; >.10 bad
PCLOSE	0.475	>.05

Table 5. 8: Measurement Model fit indices

5.4.2.2 Constructs validity and reliability

The constructs validity and reliability will be evaluated by checking the convergent and discriminant validity through the following elements (explained in section 5.3.6.2): factor loadings, Cronbach's alpha, AVE, CR, MSV. The factor loadings are presented in table 5.9, while the other elements are presented in table 5.10.

Constructs	Cronbach's Alpha	Variables	Factor Loading
IT Infrastructure	0.811	ITI1	0.807
		ITI2	0.809
		ITI3	0.698
Organizational Capital	0.704	OC1	0.789
		OC2	0.69
Financial Performance	0.881	P1	0.788
		P2	0.796
		P3	0.826
		P4	0.816
Social Media Proactive Market Orientation	0.804	SMPMO1	0.881
		SMPMO4	0.763
Social Capital	0.758	SCAP1	0.721
		SCAP3	0.737
		SCAP4	0.698
Social Media Information Collection	0.839	SMIC1	0.742
		SMIC2	0.744
		SMIC3	0.912
Innovation	0.796	Inv2	0.709
		Inv3	0.774
		Inv4	0.786

Table 5. 9: Factor Loadings

As noticed in the table below (table 5.10), all the values of the measures are within the accepted thresholds:

- CR > 0.7
- AVE > 0.5
- MSV < AVE
- The square root of AVE > inter-construct correlations

**Note that the numbers in bold in the table represent the square root of AVE, and the numbers directly under it represent the inter-construct correlation for the two relevant constructs*

	CR	AVE	MSV	SM Information Collection	IT infrastructure	Organizational Capital	Performance	SM Proactive Market Orientation	Social Capital	Innovation
SM Information Collection	0.844	0.645	0.618	**0.803**						
IT infrastructure	0.816	0.598	0.573	0.611	**0.773**					
Organizational Capital	0.708	0.549	0.500	0.365	0.546	**0.741**				
Performance	0.882	0.651	0.424	0.604	0.637	0.395	**0.807**			
SM Proactive Market Orientation	0.808	0.679	0.618	0.786	0.719	0.449	0.576	**0.824**		
Social Capital	0.762	0.517	0.475	0.302	0.677	0.632	0.392	0.501	**0.719**	
Innovation	0.801	0.573	0.573	0.577	0.757	0.707	0.651	0.642	0.689	**0.757**

Table 5. 10: Validity and reliability measures

*CR: composite reliability

*AVE: average extracted variance

*MSV: maximum shared variance

5.5 The Structural Model and Hypotheses Testing

After establishing the validity and reliability of the measurement model, the hypotheses are tested next. However before that is done, the structural model is validated first, then the mediation analysis method is explained.

5.5.1 Structural Model Fit

To validate the structural model (Figure 3.15), the model fit indices (same used for the measurement model) are checked. All the values fall within the accepted thresholds. Hence, the validity of the structural model is confirmed. Table 5.11 represents the fit indices for the structural model:

Measure	**Value**	**Threshold (Hu and Bentler, 1999)**
Chi-square/df (cmin/df) *p*	1.487 0.000 (<0.001)	<3 ≤0.001
CFI	0.953	>.95 great; >0.9 traditional
AGFI	0.821	>.80
SRMR	0.0535	<.09
RMSEA	0.056	<.05 good; .05-.10 moderate; >.10 bad
PCLOSE	0.245	>.05

Table 5. 11: Structural Model fit indices

5.5.2 Mediation Analysis

Before testing the hypotheses, the mediation analysis method is explained. Hayes (2018) defines mediation analysis as "*a statistical method used to evaluate evidence from studies designed to test hypotheses about how some causal antecedent variable X transmits its effect on a consequent variable Y*". He explains that in a simple mediation model, the independent variable X causally influences the mediator variable M and the outcome variable Y, and the mediator variable M causally influences the outcome variable Y. There are two pathways by which X can influence Y when M is present in the model: one pathway called "direct effect" is from X to Y without passing through M, and the other pathway called "indirect effect" is from X to Y through M (Hayes, 2018). When M is not present, the pathway from X to Y is referred to as "total effect". According to Hayes (2018), the total effect is equal to the summation of the direct effect and the indirect effect.

In the next sections, the procedure that was followed to test the mediation effects, the statistical inference approaches for the indirect effect, and an overview of PROCESS tool (which will be used to test the hypotheses), will be presented.

5.5.2.1 Procedure

To test our hypotheses, the approach used by Field (2018) to evaluate the total effect, direct effect, and indirect effect (figure 5.3 was followed. The total effect is the effect of the predictor on the outcome variable when the mediator is not present in the model (path c), the direct effect is the

effect of the predictor on the outcome variable when the mediator is present in the model (c'), and the indirect effect is the mediator effect (a*b) (Field, 2018). For the mediation to occur, four conditions must be met. Field (2018) states the following four conditions:"

1. *The predictor variable must significantly predict the outcome variable (path c)*
2. *The predictor variable must significantly predict the mediator (path a)*
3. *The mediator must significantly predict the outcome variable (path b)*
4. *The predictor must predict the outcome variable less strongly in the second model (c'<c)"*

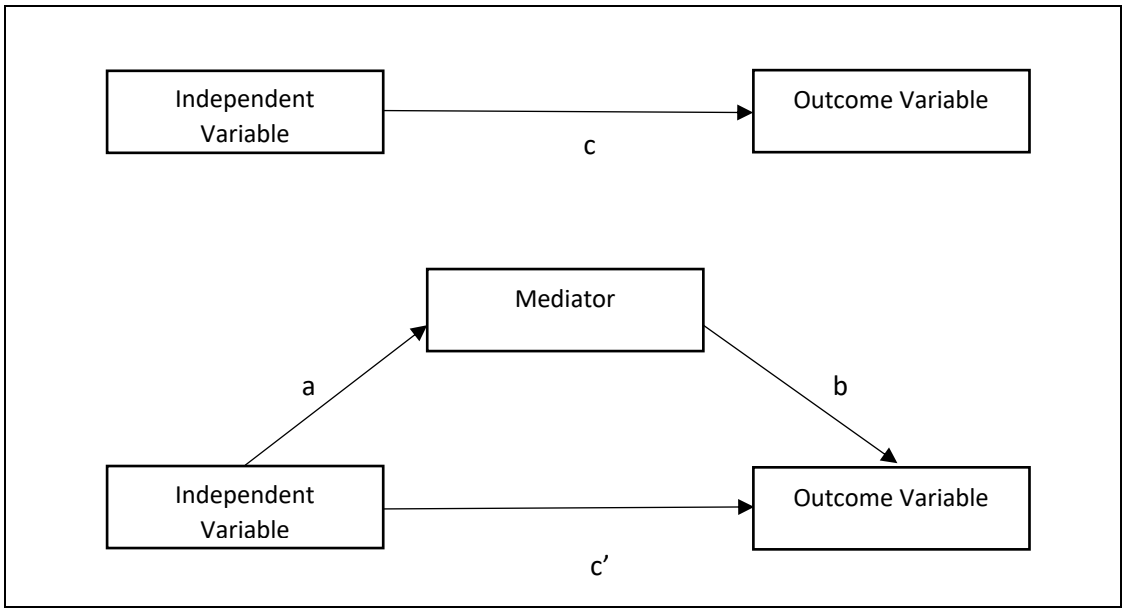


Figure 5. 3: Mediation Approach

5.5.2.2 Statistical Inference Approaches for the Indirect Effect

There are two main approaches to statistical inference for the indirect effect: the normal theory approach and the bootstrap confidence interval (Hayes, 2018).

The **normal theory approach** is also referred to as the Sobel test (Sobel, 1982). It estimates the standard error of the indirect effect (ab) and assumes that its sampling distribution is normal, then derives a p-value for ab given a specific null hypothesized value of ab, or an interval estimate can be generated (Hayes, 2018). If Sobel test is significant, then the independent variable significantly affects the outcome variable through the mediator (Field, 2018).

In a **bootstrap confidence interval approach**, "*the original sample of size n is treated as a miniature representation of the population originally sampled. Observations in this sample are then resampled with replacement, and some statistic of interest is calculated in the new sample size of n constructed through this resampling process*", as Hayes (2018) explains. He adds that this process is repeated thousands of times to empirically construct a representation of the sampling distribution to be used

for the inferential task, and in mediation analysis, bootstrapping is used to generate a sampling distribution to construct a confidence interval for the indirect effect.

Hayes (2018) recommends the use of bootstrap confidence interval approach. However, in this research, both approaches will be used to confirm the results.

5.5.2.3 PROCESS Tool

To do the mediation analysis, PROCESS tool, which is an add-on to SPSS will be used. PROCESS was designed by Hayes (2018) and includes different functions that were written by Andrew Hayes and Kristopher Preacher (Field, 2018) to do mediation and moderation analysis. Hayes (2018) defines PROCESS as "*a computational tool for observed variable path analysis-based moderation and mediation analysis as well as their integration as conditional process analysis*". The tool can estimate model coefficients, *t*- and *p*- values, standard error, confidence intervals, and total, direct and indirect effects in mediation analysis (Hayes, 2018). The use of PROCESS for mediation analysis is recommended (Field, 2018; Hayes, 2018). The full outcome of the data analysis can be viewed in appendix A.

5.5.3 Social media and Innovation

In this section, the hypotheses related to social media and innovation will be tested. Two constructs were used in this research to measure two different social media initiatives: social media information collection and social media proactive market orientation. The impact of these constructs on innovation will be tested, as well as the impact of these constructs on innovation but with the presence of the three mediators: IT infrastructure, social capital, and organizational capital.

5.5.3.1 Social media information collection and innovation

This section tests the hypotheses addressing the impact of social media information collection on innovation, without and with the presence of the following mediators: IT infrastructure, social capital, and organizational capital.

Hypothesis 1*: Social media information collection has a significant positive impact on innovation.*

Figure 5. 4: SM information collection and innovation

The results indicate that social media information collection significantly predicts innovation, where b=0.404 and p<0.001. The R^2 value indicates that the model explains 22% of the variance in innovation. The positive *b*-value indicates that social media information collection has a positive relationship with innovation. Hence hypothesis 1 is supported.

***Hypothesis 1a**: IT infrastructure mediates the relation between social media information collection and innovation.*

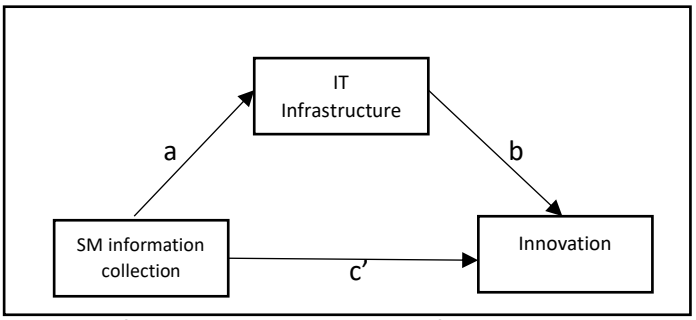


Figure 5. 5: SM information collection, IT infrastructure, and innovation

To test this hypothesis, the direct and indirect effects (paths a, b, and c') were evaluated, to check if the other three conditions for mediation are met (the first condition was met through hypothesis 1, where c=0.404). The results indicate that: social media information collection significantly predicts innovation even with the presence of IT infrastructure in the model (path c'), where *b*=0.166 and *p*=0.0099; social media information collection significantly predicts IT infrastructure (path a) where *b*=0.439 and *p*<0.001; and IT infrastructure significantly predicts innovation (path b) where *b*=0.541 and *p*<0.001. Since c'<c (0.166 < 0.404), the four conditions are met and thus IT infrastructure mediates the relationship between social media information collection and innovation, and the indirect effect a*b = 0.238.

To further confirm the results, a bootstrap test at 95% confidence level using 5000 bootstrap samples was done: "*95% confidence intervals contain the true value of a parameter in 95% of samples, so we tend to assume that our sample isn't one of the 5% that does not contain the true value and use them to infer the population value of an effect*", explains Field (2018). In this case, the true value of the indirect effect falls between 0.143 and 0.364. Table 5.12 presents all the various standardized forms of the indirect effect with a confidence interval based on a bootstrapped standard error. None of the intervals includes zero (*b*=0 would mean no effect), so it can be concluded with confidence that the indirect effect is greater than "no effect". The R-squared mediation effect size is 19% which is a medium effect (Cohen, 1988).

	Effect	BootLLCI	BootULCI
IT infrastructure	0.238	0.143	0.364
IT infrastructure (partially standardized)	0.282	0.183	0.412
IT infrastructure (completely standardized)	0.274	0.177	0.394

Table 5. 12: IT infrastructure indirect effect on innovation

The Normal theory test –also known as Sobel test- was done to confirm the results as well. The size of the indirect effect *b*=0.238 and *p*-value p<0.001 which is under the 0.05 threshold, and confirms in

a different test that there is a significant indirect effect, meaning that there is mediation effect. Hence, *hypothesis 1a* is supported.

Hypothesis 1b*: Social Capital mediates the relation between social media information collection and innovation.*

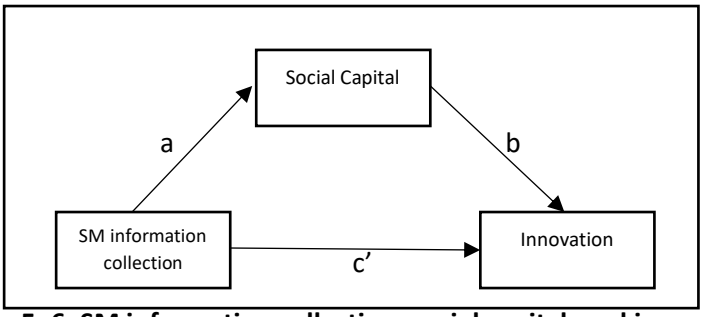


Figure 5. 6: SM information collection, social capital, and innovation

The results of this hypothesis test indicate that: social media information collection significantly predicts innovation with the presence of social capital in the model (path c'), where *b*=0.306 and *p*<0.001; social media information collection significantly predicts social capital (path a) where *b*=0.165 and *p*=0.0019; and social capital significantly predicts innovation (path b) where *b*=0.595 and *p*<0.001. Since c'<c (0.306< 0.404 – c calculated in hypothesis 1), the four conditions are met and thus social capital mediates the relationship between social media information collection and innovation, and the indirect effect a*b = 0.098.

The bootstrap test at 95% confidence level shows that the true value of the indirect effect falls between 0.042 and 0.181. Table 5.13 presents all the various standardized forms of the indirect effect with a confidence interval based on a bootstrapped standard error. None of the intervals includes zero (*b*=0 would mean no effect), so it can be concluded with confidence that the indirect effect is greater than "no effect". The R-squared mediation effect size is 10% which is a medium effect (Cohen, 1988).

	Effect	BootLLCI	BootULCI
Social Capital	0.098	0.042	0.181
Social Capital (partially standardized)	0.116	0.047	0.214
Social Capital (completely standardized)	0.113	0.048	0.191

Table 5. 13: Social capital indirect effect on innovation

The normal theory test results indicate that the size of the indirect effect *b*=0.098 and p-value *p*=0.0041 which is under the 0.05 threshold and confirms in a different test that there is a significant indirect effect, meaning that there is mediation effect. Hence, *hypothesis 1b* is supported.

***Hypothesis 1c**: Organizational Capital mediates the relation between social media information collection and innovation.*

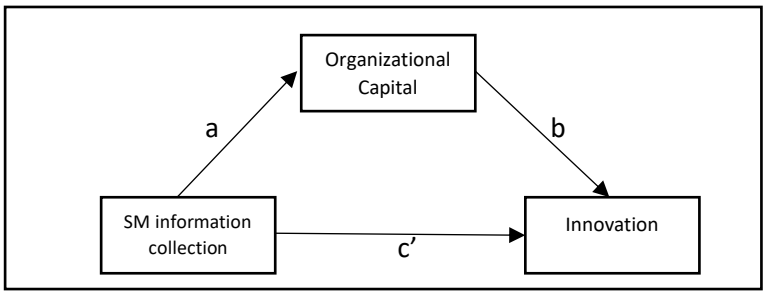


Figure 5. 7: SM information collection, organizational capital and innovation

The results of this hypothesis test indicate that: social media information collection significantly predicts innovation with the presence of organizational capital in the model (path c'), where *b*=0.297 and *p*<0.001; social media information collection significantly predicts organizational capital (path a) where *b*=0.272 and *p*=0.004; and organizational capital significantly predicts innovation (path b) where *b*=0.391 and *p*<0.001. Since c'<c (0.297< 0.404 – c calculated in hypothesis 1), the four conditions are met and thus organizational capital mediates the relationship between social media information collection and innovation, and the indirect effect a*b = 0.106.

The bootstrap test at 95% confidence level shows that the true value of the indirect effect falls between 0.048 and 0.202. Table 5.14 presents all the various standardized forms of the indirect effect with a confidence interval based on a bootstrapped standard error. None of the intervals includes zero (*b*=0 would mean no effect), so it can be concluded with confidence that the indirect effect is greater than "no effect". The R-squared mediation effect size is 10% which is a medium effect (Cohen, 1988).

	Effect	BootLLCI	BootULCI
Organizational Capital	0.106	0.048	0.202
Organizational Capital (partially standardized)	0.126	0.056	0.240
Organizational Capital (completely standardized)	0.123	0.058	0.221

Table 5. 14: Organizational capital indirect effect on innovation

The normal theory test results show that the size of the indirect effect *b*=0.106 and p-value *p*=0.0017 which is under the 0.05 threshold and confirms in a different test that there is a significant indirect effect, meaning that there is mediation effect. Hence, *hypothesis 1c* is supported.

5.5.3.2 Social media proactive market orientation and innovation

This section tests the hypotheses addressing the impact of social media proactive market orientation on innovation, without and with the presence of the following mediators: IT infrastructure, social capital, and organizational capital.

***Hypothesis 2**: Social media proactive market orientation has a significant positive impact on innovation*.

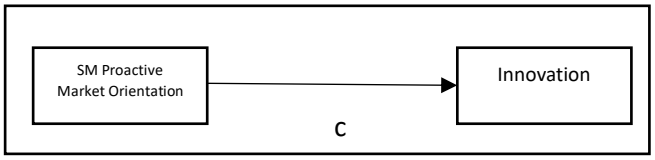


Figure 5. 8: SM proactive market orientation and innovation

The results indicate that social media proactive market orientation significantly predicts innovation, where *b*=0.496 and *p*<0.001. The R^2 value indicates that the model explains 26% of the variance in innovation. The positive b-value indicates that social media proactive market orientation has a positive relationship with innovation. Hence hypothesis 2 is supported.

***Hypothesis 2a**: IT infrastructure mediates the relation between social media proactive market orientation and innovation.*

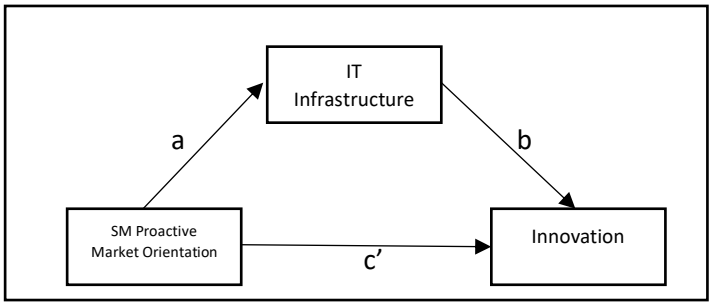


Figure 5. 9: SM proactive market orientation, IT infrastructure, and innovation

The results of this hypothesis test indicate that: social media proactive market orientation significantly predicts innovation with the presence of IT infrastructure in the model (path c'), where *b*=0.215 and *p*=0.0044; social media proactive market orientation significantly predicts IT infrastructure (path a) where *b*=0.548 and *p*<0.001; and IT infrastructure significantly predicts innovation (path b) where *b*=0.510 and *p*<0.001. Since c'<c (0.215< 0.496 – c calculated in hypothesis 2), the four conditions are met and thus IT infrastructure mediates the relationship between social media proactive market orientation and innovation, and the indirect effect a*b = 0.280.

The bootstrap test at 95% confidence level shows that the true value of the indirect effect falls between 0.176 and 0.425. Table 5.15 presents all the various standardized forms of the indirect effect with a confidence interval based on a bootstrapped standard error. None of the intervals includes zero (*b*=0 would mean no effect), so it can be concluded with confidence that the indirect effect is greater than "no effect". The R-squared mediation effect size is 23% which is a medium effect (Cohen, 1988).

	Effect	BootLLCI	BootULCI
IT Infrastructure	0.280	0.176	0.425
IT Infrastructure (partially standardized)	0.332	0.220	0.470
IT Infrastructure (completely standardized)	0.288	0.189	0.420

Table 5. 15: IT infrastructure indirect effect on innovation

The normal theory test results show that the size of the indirect effect *b*=0.280 and p-value *p*<0.001which is under the 0.05 threshold and confirms in a different test that there is a significant indirect effect, meaning that there is mediation effect. Hence, *hypothesis 2a* is supported.

Hypothesis 2b*: Social Capital mediates the relation between social media proactive market orientation and innovation.*

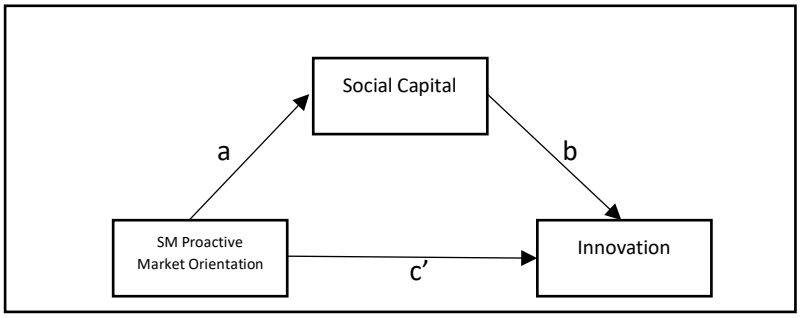


Figure 5. 10: SM proactive market orientation, social capital, and innovation

The results of this hypothesis test indicate that: social media proactive market orientation significantly predicts innovation with the presence of social capital in the model (path c'), where *b*=0.344 and *p*<0.001; social media proactive market orientation significantly predicts social capital (path a) where *b*=0.283 and *p*<0.001; and social capital significantly predicts innovation (path b) where *b*=0.533 and *p*<0.001. Since c'<c (0.344< 0.496 – c calculated in hypothesis 2), the four conditions are met and thus social capital mediates the relationship between social media proactive market orientation and innovation, and the indirect effect a*b = 0.151.

The bootstrap test at 95% confidence level shows that the true value of the indirect effect falls between 0.064 and 0.271. Table 5.16 presents all the various standardized forms of the indirect effect with a confidence interval based on a bootstrapped standard error. None of the intervals includes zero (*b*=0 would mean no effect), so it can be concluded with confidence that the indirect effect is greater than "no effect". The R-squared mediation effect size is 15% which is a medium effect (Cohen, 1988).

	Effect	BootLLCI	BootULCI
Social Capital	0.151	0.064	0.271
Social Capital (partially standardized)	0.179	0.073	0.316
Social Capital (completely standardized)	0.155	0.067	0.260

Table 5. 16: Social capital indirect effect on innovation

The normal theory test results show that the size of the indirect effect *b*=0.151 and p-value *p*=0.0001which is under the 0.05 threshold, and confirms in a different test that there is a significant indirect effect, meaning that there is mediation effect. Hence, *hypothesis 2b* is supported.

***Hypothesis 2c**: Organizational Capital mediates the relation between social media proactive market orientation and innovation.*

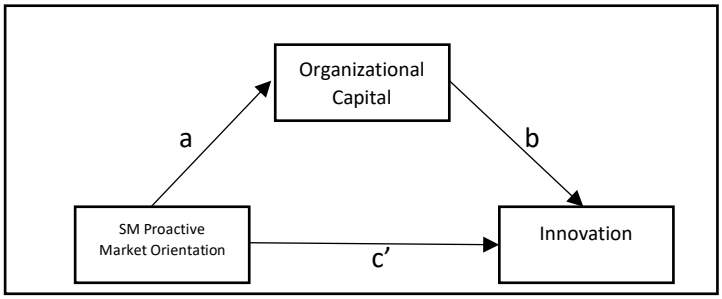


Figure 5. 11: SM proactive market orientation, organizational capital, and innovation

The results of this hypothesis test indicate that: social media proactive market orientation significantly predicts innovation with the presence of organizational capital in the model (path c'), where *b*=0.362 and *p*<0.001; social media proactive market orientation significantly predicts organizational capital (path a) where *b*=0.363 and *p*<0.001; and organizational capital significantly predicts innovation (path b) where *b*=0.366 and *p*<0.001. Since c'<c (0.362< 0.496 – c calculated in hypothesis 2), the four conditions are met and thus organizational capital mediates the relationship between social media proactive market orientation and innovation, and the indirect effect a*b = 0.133.

The bootstrap test at 95% confidence level shows that the true value of the indirect effect falls between 0.063 and 0.254. Table 5.17 presents all the various standardized forms of the indirect effect with a confidence interval based on a bootstrapped standard error. None of the intervals includes zero (*b*=0 would mean no effect), so it can be concluded with confidence that the indirect effect is greater than "no effect". The R-squared mediation effect size is 13% which is a medium effect (Cohen, 1988).

	Effect	BootLLCI	BootULCI
Organizational Capital	0.133	0.063	0.254
Organizational Capital (partially standardized)	0.158	0.076	0.298
Organizational Capital (completely standardized)	0.137	0.067	0.242

Table 5. 17: Organizational capital indirect effect on innovation

The normal theory test results show that the size of the indirect effect *b*=0.133 and p-value *p*=0.0004which is under the 0.05 threshold, and confirms in a different test that there is a significant indirect effect, meaning that there is a mediation effect. Hence, *hypothesis 2c* is supported.

5.5.4 Social media and Financial Performance

In this section, the hypotheses related to social media and financial performance will be tested. As mentioned earlier, two constructs were used in this research to measure two different social media initiatives: social media information collection and social media proactive market orientation. The impact of these constructs on financial performance will be tested, as well as the impact of these constructs on financial performance but with the presence of the three mediators: IT infrastructure, social capital, and organizational capital.

5.5.4.1 Social media information collection and financial performance

This section tests the hypotheses addressing the impact of social media information collection on financial performance, without and with the presence of the following mediators: IT infrastructure, social capital, and organizational capital.

Hypothesis 3*: Social media information collection has a significant positive impact on financial performance.*

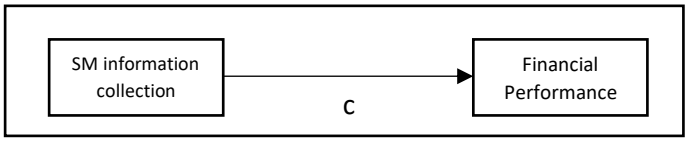


Figure 5. 12: SM information collection and financial performance

The results indicate that social media information collection significantly predicts financial performance, where b=0.465 and p<0.001. The R^2 value indicates that the model explains 27% of the variance in financial performance. The positive b-value indicates that social media information collection has a positive relationship with financial performance. Hence hypothesis 3 is supported.

Hypothesis 3a*: IT infrastructure mediates the relation between social media information collection and financial performance.*

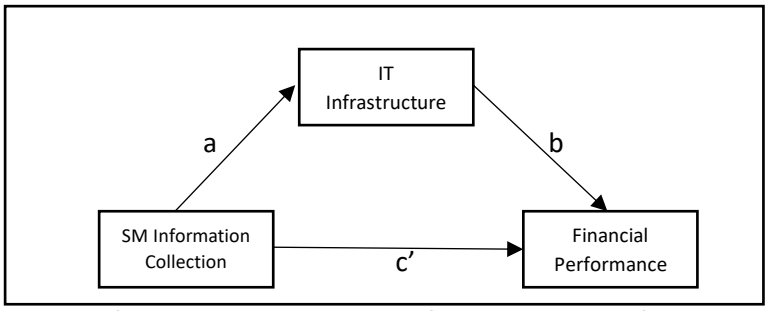


Figure 5. 13: SM information collection, IT infrastructure, and financial performance

The results of this hypothesis test indicate that: social media information collection significantly predicts financial performance with the presence of IT infrastructure in the model (path c'), where b=0.281 and p<0.001; social media information collection significantly predicts IT infrastructure (path

a) where *b*=0.439 and *p*<0.001; and IT infrastructure significantly predicts financial performance (path b) where *b*=0.418 and *p*<0.001. Since c'<c (0.281< 0.465 – c calculated in hypothesis 3), the four conditions are met and thus IT infrastructure mediates the relationship between social media information collection and financial performance, and the indirect effect a*b = 0.184.

The bootstrap test at 95% confidence level shows that the true value of the indirect effect falls between 0.086 and 0.305. Table 5.18 presents all the various standardized forms of the indirect effect with a confidence interval based on a bootstrapped standard error. None of the intervals includes zero (*b*=0 would mean no effect), so it can be concluded with confidence that the indirect effect is greater than "no effect". The R-squared mediation effect size is 20% which is a medium effect (Cohen, 1988).

	Effect	BootLLCI	BootULCI
IT Infrastructure	0.184	0.086	0.305
IT Infrastructure (partially standardized)	0.213	0.106	0.348
IT Infrastructure (completely standardized)	0.207	0.105	0.341

Table 5. 18: IT infrastructure indirect effect on financial performance

The normal theory test results show that the size of the indirect effect *b*=0.184 and p-value *p*<0.001which is under the 0.05 threshold and confirms in a different test that there is a significant indirect effect, meaning that there is mediation effect. Hence, *hypothesis 3a* is supported.

Hypothesis 3b*: Social capital mediates the relation between social media information collection and financial performance*

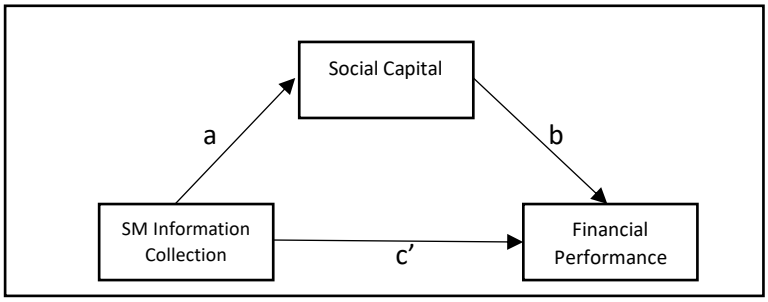


Figure 5. 14: SM information collection, social capital, and financial performance

The results of this hypothesis test indicate that: social media information collection significantly predicts financial performance with the presence of social capital in the model (path c'), where *b*=0.421 and *p*<0.001; social media information collection significantly predicts social capital (path a) where *b*=0.165 and *p*=0.0019; and social capital significantly predict financial performance (path b) where *b*=0.265 and *p*=0.0047. Since c'<c (0.421< 0.465 – c calculated in hypothesis 3), the four conditions are met and thus social capital mediates the relationship between social media information collection and financial performance, and the indirect effect a*b = 0.043.

The bootstrap test at 95% confidence level shows that the true value of the indirect effect falls between 0.002 and 0.118. Table 5.19 presents all the various standardized forms of the indirect effect with a confidence interval based on a bootstrapped standard error. None of the intervals includes zero (*b*=0 would mean no effect), so it can be concluded with confidence that the indirect effect is greater than "no effect". The R-squared mediation effect size is 6% which is a small effect (Cohen, 1988).

	Effect	BootLLCI	BootULCI
Social Capital	0.043	0.002	0.118
Social Capital (partially standardized)	0.034	0.003	0.143
Social Capital (completely standardized)	0.049	0.003	0.128

Table 5. 19: Social capital indirect effect on financial performance

The normal theory test results show that the size of the indirect effect *b*=0.043 and p-value *p*=0.0384 which is under the 0.05 threshold and confirms in a different test that there is a significant indirect effect, meaning that there is mediation effect. Hence, *hypothesis 3b* is supported.

Hypothesis 3c*: Organizational capital mediates the relation between social media information collection and financial performance.*

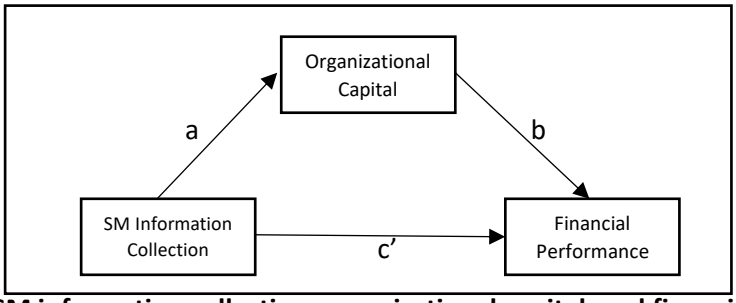


Figure 5. 15: SM information collection, organizational capital, and financial performance

The results of this hypothesis test indicate that: social media information collection significantly predicts financial performance with the presence of organizational capital in the model (path c'), where *b*=0.423 and *p*<0.001; social media information collection significantly predicts organizational capital (path a) where *b*=0.272 and *p*=0.004; and organizational capital significantly predicts financial performance (path b) where *b*=0.155 and *p*=0.0163. Since c'<c (0.423< 0.465 – c calculated in hypothesis 3), the four conditions are met and thus organizational capital mediates the relationship between social media information collection and financial performance, and the indirect effect a*b = 0.042.

The bootstrap test at 95% confidence level shows that the true value of the indirect effect falls between 0.003 and 0.117. Table 5.20 presents all the various standardized forms of the indirect effect with a confidence interval based on a bootstrapped standard error. None of the intervals

includes zero (*b*=0 would mean no effect), so it can be concluded with confidence that the indirect effect is greater than "no effect". The R-squared mediation effect size is 6% which is a small effect (Cohen, 1988).

	Effect	BootLLCI	BootULCI
Organizational Capital	0.042	0.003	0.117
Organizational Capital (partially standardized)	0.049	0.003	0.136
Organizational Capital (completely standardized)	0.047	0.003	0.129

Table 5. 20: Organizational capital indirect effect on financial performance

The normal theory test results show that the size of the indirect effect *b*=0.042 and p-value *p*=0.0499 which is under the 0.05 threshold and confirms in a different test that there is a significant indirect effect, meaning that there is mediation effect. Hence, *hypothesis 3c* is supported.

5.5.4.2 Social media proactive market orientation and financial performance

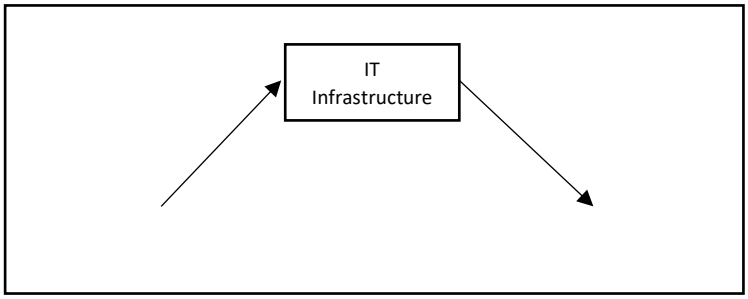
This section tests the hypotheses addressing the impact of social media proactive market orientation on financial performance, without and with the presence of the following mediators: IT infrastructure, social capital, and organizational capital.

Hypothesis 4: Social media proactive market orientation has a significant positive impact on financial performance.

Figure 5. 16: SM proactive market orientation and financial performance

The results indicate that social media proactive market orientation significantly predicts financial performance, where *b*=0.483 and *p*<0.001. The R^2 value indicates that the model explains 24% of the variance in financial performance. The positive *b*-value indicates that social media proactive market orientation has a positive relationship with financial performance. Hence hypothesis 4 is supported.

Hypothesis 4a*: IT infrastructure mediates the relation between social media proactive market orientation and financial performance.*



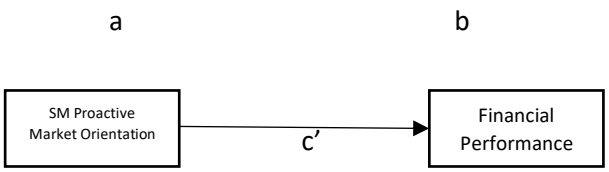


Figure 5. 17: SM proactive market orientation, IT infrastructure, and financial performance

The results of this hypothesis test indicate that: social media proactive market orientation significantly predicts financial performance with the presence of IT infrastructure in the model (path c'), where *b*=0.239 and *p*=0.0034; social media proactive market orientation significantly predicts IT infrastructure (path a) where *b*=0.548 and *p*<0.001; and IT infrastructure significantly predicts financial performance (path b) where *b*=0.445 and *p*<0.001. Since c'<c (0.239 < 0.483 – c calculated in hypothesis 4), the four conditions are met and thus IT infrastructure mediates the relationship between social media proactive market orientation and financial performance, and the indirect effect a*b = 0.244.

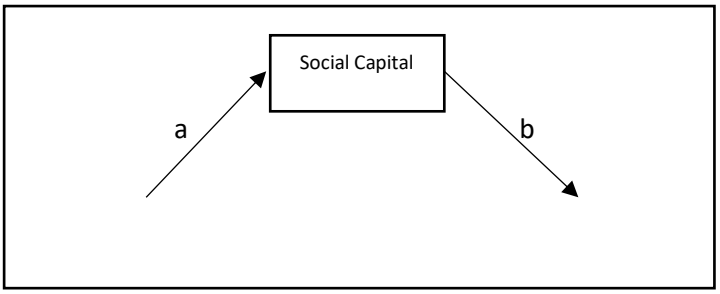
The bootstrap test at 95% confidence level shows that the true value of the indirect effect falls between 0.136 and 0.388. Table 5.21 presents all the various standardized forms of the indirect effect with a confidence interval based on a bootstrapped standard error. None of the intervals includes zero (*b*=0 would mean no effect), so it can be concluded with confidence that the indirect effect is greater than "no effect". The R-squared mediation effect size is 20% which is a medium effect (Cohen, 1988).

	Effect	BootLLCI	BootULCI
IT Infrastructure	0.244	0.136	0.388
IT Infrastructure (partially standardized)	0.284	0.160	0.445
IT Infrastructure (completely standardized)	0.246	0.140	0.390

Table 5. 21: IT infrastructure indirect effect on financial performance

The normal theory test results show that the size of the indirect effect *b*=0.244 and p-value *p* < 0.001 which is under the 0.05 threshold, and confirms in a different test that there is a significant indirect effect, meaning that there is mediation effect. Hence, *hypothesis 4a* is supported.

Hypothesis 4b*: Social capital mediates the relation between social media proactive market orientation and financial performance.*



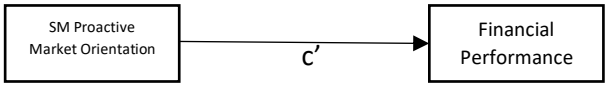


Figure 5. 18: SM proactive market orientation, social capital, and financial performance

The results of this hypothesis test indicate that: social media proactive market orientation significantly predicts financial performance with the presence of social capital in the model (path c'), where *b*=0.425 and *p* < 0.001; social media proactive market orientation significantly predicts social capital (path a) where *b*=0.283 and *p*<0.001; and social capital significantly predicts financial performance (path b) where *b*=0.204 and *p*=0.0439. Since c'<c (0.425 < 0.483 – c calculated in hypothesis 4), the four conditions are met and thus social capital should mediate the relationship between social media proactive market orientation and financial performance, and the indirect effect a*b = 0.058.

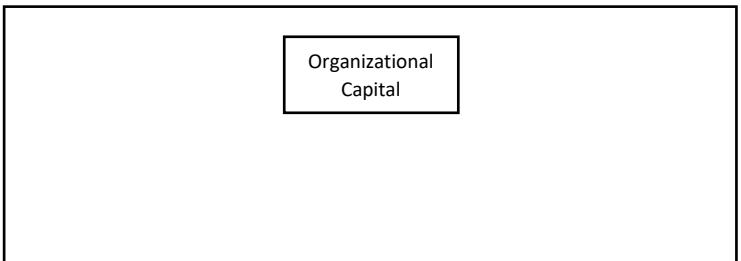
However, the bootstrap test at 95% confidence level shows that the true value of the indirect effect falls between -0.033 and 0.159. Table 5.22 presents all the various standardized forms of the indirect effect with a confidence interval based on a bootstrapped standard error. All the intervals include zero as the lower boundary is negative, so the indirect effect b can be zero, which means there could be no effect.

	Effect	BootLLCI	BootULCI
Social Capital	0.058	-0.033	0.159
Social Capital (partially standardized)	0.067	-0.039	0.194
Social Capital (completely standardized)	0.058	-0.033	0.158

Table 5. 22: Social capital indirect effect on financial performance

The normal theory test results show that the size of the indirect effect *b*=0.058 and p-value *p* = 0.0633 which is above the 0.05 threshold and confirms in a different test the doubts about the mediation effect. Hence, *hypothesis 4b* is rejected.

Hypothesis 4c*: Organizational capital mediates the relation between social media proactive market orientation and financial performance.*



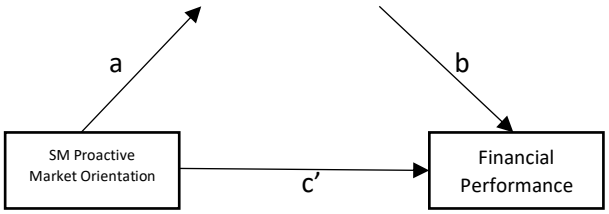


Figure 5. 19: SM proactive market orientation, organizational capital, and financial performance

The results of this hypothesis test indicate that: social media proactive market orientation significantly predicts financial performance with the presence of organizational capital in the model (path c'), where *b*=0.431 and *p* < 0.001; social media proactive market orientation significantly predicts organizational capital (path a) where *b*=0.363 and *p*<0.001; and organizational capital significantly predicts financial performance (path b) where *b*=0.145 and *p*=0.0320. Since c'<c (0.431 < 0.483 – c calculated in hypothesis 4), the four conditions are met and thus organizational capital should mediate the relationship between social media proactive market orientation and financial performance, and the indirect effect a*b = 0.052.

However, the bootstrap test at 95% confidence level shows that the true value of the indirect effect falls between -0.008 and 0.136. Table 5.23 presents all the various standardized forms of the indirect effect with a confidence interval based on a bootstrapped standard error. All the intervals include zero as the lower boundary is negative, so the indirect effect b can be zero, which means there could be no effect.

	Effect	BootLLCI	BootULCI
Organizational Capital	0.052	-0.008	0.136
Organizational Capital (partially standardized)	0.061	-0.009	0.158
Organizational Capital (completely standardized)	0.053	-0.008	0.132

Table 5. 23: Organizational capital indirect effect on financial performance

The normal theory test results show that the size of the indirect effect *b*=0.052 and p-value *p* = 0.0576 which is above the 0.05 threshold and confirms in a different test the doubts about the mediation effect. Hence, *hypothesis 4c* is rejected.

5.5.5 Innovation and Performance

In this section, the results of testing the relation between innovation and financial performance are presented. As explained earlier, this link between innovation and financial performance has been established, however, it is tested in this research to see if the results are consistent with current studies.

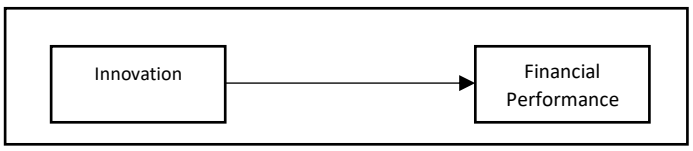


Figure 5. 20: Innovation and financial performance

The results indicate that innovation significantly predicts financial performance, where *b*=0.569 and *p*<0.001. The R^2 value tells us that the model explains 31% of the variance in financial performance. The positive b-value indicates that innovation has a positive relationship with financial performance.

5.6 Summary

This chapter presented the quantitative data analysis and findings. The chapter started with an introduction explaining what to expect from this chapter. Then, a descriptive analysis that provided an overview of the profiles of the firms and respondents who took the survey was shared. After that, the measurement model was developed and then tested, where the exploratory and confirmatory analysis results were presented. The structural model was discussed then, where all the hypotheses developed earlier in chapter three were tested. A summary of the results of the hypotheses testing is presented in table 5.24 below.

Hypothesis	Constructs	Total Effect	Direct Effect	Indirect Effect	Sobel Test *p*	Outcome
1	SMIC -> INV	0.404				Supported
1a	SMIC -> ITI -> INV	0.404	0.166	0.238	***	Supported
1b	SMIC->SCAP->INV	0.404	0.306	0.098	0.004	Supported
1c	SMIC->OC->INV	0.404	0.297	0.106	0.0017	Supported
2	SMPMO->INV	0.496				Supported
2a	SMPMO->ITI->INV	0.496	0.215	0.280	***	Supported
2b	SMPMA->SCAP->INV	0.496	0.344	0.151	***	Supported
2c	SMPMO->OC->INV	0.496	0.362	0.133	***	Supported
3	SMIC->P	0.465				Supported
3a	SMIC->ITI->P	0.465	0.281	0.184	***	Supported
3b	SMIC->SCAP->P	0.465	0.421	0.043	0.0384	Supported
3c	SMIC->OC->P	0.465	0.423	0.042	0.0499	Supported
4	SMPMO->P	0.483				Supported
4a	SMPMO->ITI->P	0.483	0.239	0.244	***	Supported
4b	SMPMO->SCAP->P	0.483	0.425	0.058	0.057	Rejected
4c	SMPMO->OC->P	0.483	0.431	0.052	0.063	Rejected

Table 5. 24: Summary of hypotheses testing results

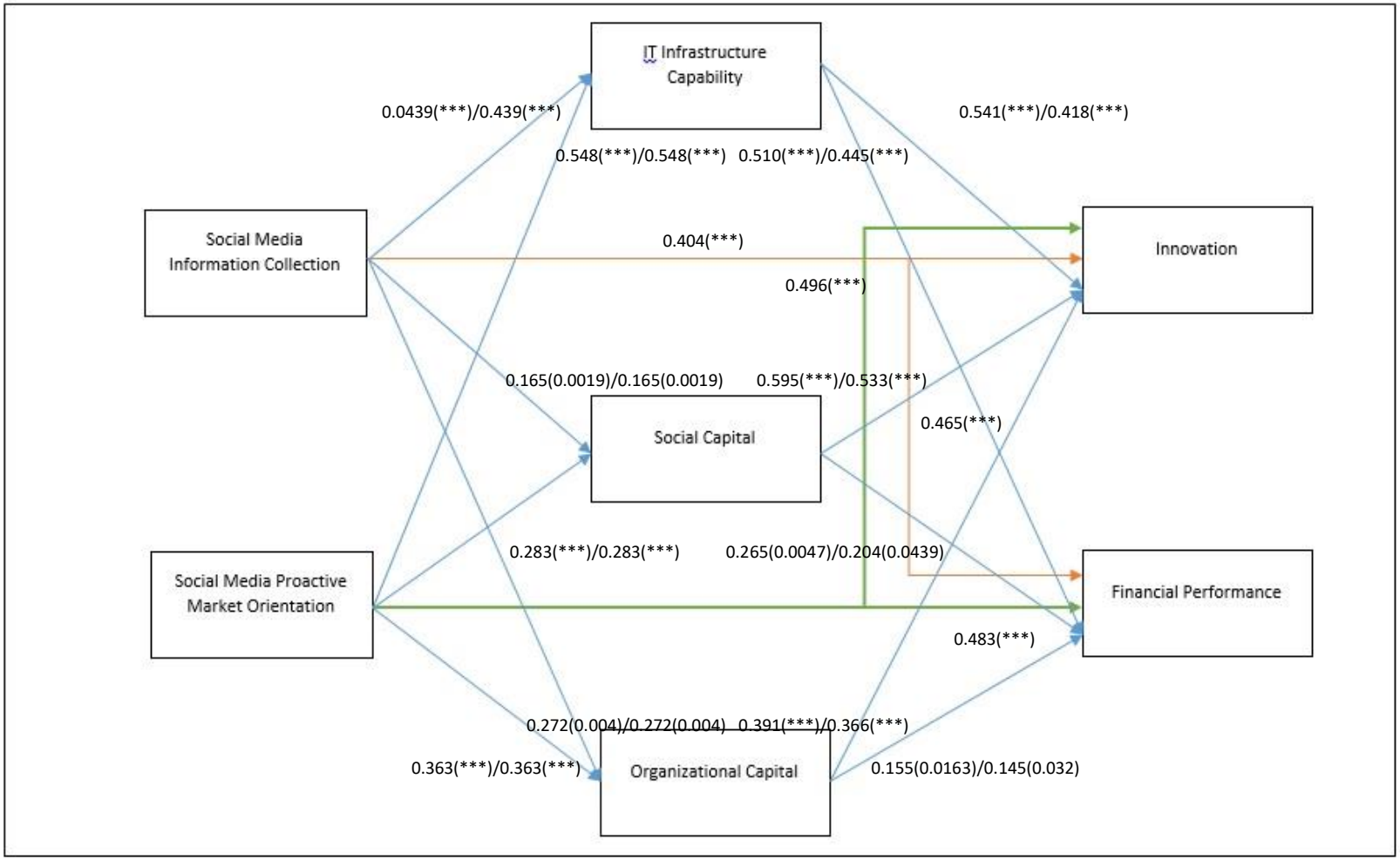


Figure 5. 21: Hypotheses Testing Results

The results indicate that 14 hypotheses were supported, while 2 hypotheses were rejected. The supported hypotheses highlight the impact of both social media constructs – social media information collection and social media proactive market orientation – on innovation and on the financial performance of the firm. The results indicate that there is a direct impact from social media on both innovation and financial performance. IT infrastructure seems to have a mediation role between these relationships as well. More detailed discussions about these results will be presented in chapter seven. In the next chapter (chapter 6), the qualitative data analysis and findings will be presented.

Chapter 6: Qualitative Data Findings and Analysis

6.1 Introduction

In Chapter 4, the methodology that is used in this research was discussed, including both quantitative and qualitative methods. Then in Chapter 5, the quantitative data analysis and findings were presented. In this chapter, the qualitative data analysis and findings will be presented. The purpose of the qualitative data is to triangulate and confirm the quantitative data results. As mentioned in Chapter 4, the qualitative data was collected through an online survey on the Qualtrics platform.

Previously in Chapter 4 (section 4.5.2.3), it was explained that thematic analysis will be used to analyse the data. According to Braun and Clarke (2006), there are six steps to do a thematic analysis: "*familiarizing yourself with your data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report*". These steps were followed to analyse the qualitative data and present the findings in terms of themes.

In the remaining of this chapter, a descriptive analysis showing different characteristics of the responding firms is presented first. Then, the thematic analysis starts and the outcome of the first two steps are discussed in section 6.3. After that, steps 3, 4, and 5 of the thematic analysis are accomplished in section 6.4 explaining how the themes were identified. Then the last step of the thematic analysis is completed by reporting the themes that were identified in section 6.5. Finally, the chapter is concluded in section 6.6.

6.2 Descriptive Analysis

Within our sample, firms operated in 22 different industries, including education (14 firms, 18.66%), retail (11 firms, 14.66%), food and beverages (7 firms, 9.33%), and information technology (7 firms, 9.33%). We acknowledge that the balance of the sectors in this study is somewhat different than that of the quantitative study, however we don't expect that to have an impact on the results of the study. These firms served: businesses –B2B (11 firms, 14.67%), customers – B2C (24 firms, 32%) and both B2B and B2C (40 firms, 53.33%). When asked if they had a social media team, 76% said they had a dedicated social media team while 24% said they didn't have one. Within the firms who had a dedicated social media team, this team belonged to different departments: marketing (24 firms, 42.11%), technology (12 firms, 21.05%), customer service (9 firms, 15.79%), advertisement (5 firms, 8.77%), independent department (5 firms, 8.77%), and other departments (2 firms, 3.51%). Other sample characteristics can be seen in table 6.1.

Firm Size	n	%	SM Team Size*	n	%	SM Annual Spending %**	n	%
0 - 50	18	24	0 - 2	14	24	0 - 2	29	39
51 - 250	19	25	3 - 5	13	23	3 - 5	22	29
251 - 500	9	12	6 - 10	9	16	6 - 10	15	20
501 - 1000	7	9	11 - 20	9	16	11 - 20	8	11
1000+	22	30	20 +	12	21	20 +	1	1

Table 6. 1: The characteristics of responding firms

**Social Media team size within the firms who said they have a dedicated social media team*

***Social Media annual spending percentage of the overall annual budget*

6.3 Generating Initial Codes

According to Braun and Clarke (2006), the first step for the researcher in a thematic analysis is to familiarize himself/herself with the data. This was done by reading through the data many times and getting familiar with the data collected. The reading was done in two different ways: horizontally to read all the answers of one respondent to all questions, and vertically to read the answers of all respondents to one question.

After becoming familiar with the data, the second step of the thematic analysis is to generate initial codes (Braun and Clarke, 2006). The strategy followed to do this was to go through the answers by question to generate initial codes. In the next section, the initial codes are generated and presented based on the questions that were asked.

6.3.1 Social Media Presence

How do you describe your company's presence of social media?

This was the first question of the open-ended questions. The purpose of this question was to understand the level of engagement of different companies with social media, and what kind of presence they have on these platforms. When answering this question, respondents described their company's presence on social media, and most of the times added some explanations of why they use social media or how social media helps their companies. The respondents had different descriptions for their social media presence that ranged from weak and limited to very strong and active. Overall, the responses to this question categorized companies' presence on social media into three main codes: weak, regular, and strong.

Weak Presence

Responses that were categorized into weak presence included words such as weak, limited, needs improvement, paltry, very limited, and basic. In some of the replies, the respondents provided a short explanation of why they think their company's presence on social media is weak. Respondent 4

related the presence to the update rate: "*not very strong and needs improvement like being updated regularly*". Respondent 18 explained that they have social media accounts but they are not frequently used:" *[our presence is] paltry, we have accounts but they are rarely used and not used in an effective manner*". Respondent 28 believed the weak presence is due to lack of resources: "[our presence is] *limited at best, we could certainly do more/have a bigger presence if we dedicated more resources to it*". Respondent 56 said their presence is limited as they only use it occasionally: "*our company's presence is limited, as it is not used every day or even every week. We use it to roll out new products that our competition does not have yet*". The final example is from respondent 65, who mentioned that their company's presence is "*scarce currently. We have tried to increase the company's overall presence on FC [Facebook], Twitter, etc. We would like to gain a larger crowd*."

Regular Presence

Responses that were categorized into regular presence included words such as regular, active, moderate, involved, systematic, and consistent. Respondent 1 explained that they have a "*regular presence on Facebook and Twitter*", and that these accounts are updated on a daily basis. Respondent 10 stated that their presence on social media is moderate, but they need to be more aggressive as they "*get beat on social media from their competitors*". Respondent 22 said that their company is active and systematic, but they "*could be more creative and personable with our ads and interaction with consumers*". Respondent 49 mentioned that they are working on having more presence on social media: "*my company currently has a small to medium presence on social media, compared to the size of the company and number of employees. The company is currently working on expanding its social media presence, especially on Instagram*". The final example is from respondent 51, who explains that they have dedicated employees looking after the social media accounts: "[we are] *actively present, individuals [are] assigned responsibility to follow-up on queries and post information about new programming*".

Strong Presence

Companies also indicated that they have a strong presence on social media. This code included responses that mentioned words that gave the impression of strong presence such as strong, very strong, complete, one of the top, well established, professional, very active, innovative, and powerful. Respondent 7 stated that their presence on social media has been developed over time and that it is "*comprehensive, complete, and wide-ranging*". Respondent 13 highlighted how active their company is on social media: "*we are pretty well established on social media. We are active daily and respond promptly to our customer's outreach. We are almost always active and ready to reply to customers' comments and/or concerns*". Respondent 34 described their presence on social media as

powerful, explaining that their company is "*well know, and it [social media] helps us reach satisfied and unsatisfied customers*". Some respondents mentioned that they have dedicated employees for social media platforms resulting is in a strong presence, respondent 48, for example, stated that their presence on social media is "*very active*". He added that they "*use Facebook on average 4 times a day, and have a dedicated employee specifically for the purpose of promoting products*". The last example is from respondent 52, who said that their presence is "*very active and effective*", explaining that "*business has improved maybe 40 to 45% more since we have expanded our business on social media. Without social media, we probably would not have at least 45% lower sells*".

6.3.2 Reasons behind Social Media Usage

For what reasons do you use social media?

To understand the reasons behind firms' social media usage, the respondents were asked about the reasons their firm uses social media. This question also allows this research to compare the different uses of social media among companies. It is noticed that the majority of companies use social media for multiple purposes rather than just one specific purpose. Analysing the data received from respondents' answers to this question resulted in eight main codes that highlight the reasons behind companies' social media initiatives. These codes are: attracting new customers, customer service, brand awareness, collecting feedback, identifying customer needs, advertising & marketing, competition tracking, and recruitment. An overview of each of these codes, with some examples of what respondents said, is presented next.

Attracting New Customers

Companies are using social media to attract new customers. Respondent 2 stated that they use social media to "*attract more customers to come to our place in New York*". While respondent 15 explained:" [we use social media] *to stay with the normal trends in society and to bring in new clients and customers*". Other respondents as well indicated that they use social media to attract new customers, for example, respondent 52 mentioned that they use social media to "*gain new customer*", and respondent 53 said, "*we use social media to obtain and track new clients*".

Customer Service

One of the most frequent purposes of use that emerged from the data was customer service. Respondents used different terminologies that were all considered under customer service such as communicating with customers, connecting with customers, and engaging with customers. Respondent 21 explained that they use social media "*as another route to contact us for concerns or pricing and as a way to show off our services as well as our outstanding dedication to our work*".

Respondent 26 provided more details of how social media allows their company to connect with their customer:" *social media is a great platform for us to engage with consumers, get input, field product questions and it revolutionized the way consumers and businesses can communicate. Social media meets our needs in connecting with the public*". Another example is from respondent 75, who stated that one of the reasons "*for the use of social media is to continuously engage customers*".

Brand Awareness

Brand awareness is one of the common uses of social media. Companies tend to use social media to raise awareness about their brand in order to improve its value. Different respondents highlighted brand awareness as a reason behind their use of social media, some examples include: "[we use social media for] *brand awareness, improve the brand worth*" respondent 9); "*we use social media for brand recognition primarily*" (respondent 32); and "[we use social media for] *brand awareness and reputation*" (respondent 42).

Collecting Feedback

One of the purposes behind companies' use of social media is to collect feedback. The collected feedback can be general feedback or specific feedback related to a company's product or service. Respondent 1 explained that they use social media so that customers can see what they are doing and provide feedback. He added, indicating how they benefit from this feedback, that they "*frequently check comments to see what people think of what we're putting out and that can allow us to possibly make adjustments based on customer need*". Other respondents mentioned that they use social media to "*gain valuable information from our customers and vendors*" (respondent 4); "*to get community feedback so that we can plan accordingly and fulfil our strategic plan*" (respondent 11); and "*to receive feedback from our customers to see where we need to improve and where we are doing a good job*" (respondent 29).

Identifying Customer Needs

Some companies are also using social media in order to identify customer needs so that they can improve their products and services, and satisfy those needs. Respondent 13 explained that their company uses social media to "*identify customer needs, (and) find out how our customers feel about our services*", while respondent 71 indicated that using social media allows them to "*know the needs of the market*". Another example is from respondent 1 who explained that they identify their customers' needs through the feedback they receive on social media.

Marketing and Advertising

One of the major uses of social media is for marketing and advertising. Most of the companies reported that they use social media for this purpose. Respondent 44, whose company is in the hospitality industry, explained how important social media is for them to promote their products: "*For the most part we do the majority of our business through the peak seasons. Which usually is largely based during spring, summer and late fall. This is a time when consumers tend to travel. Whether it be for vacation or simply to visit with friends and family. The social media platform is essential for us to promote, inform and entice guests to book with our companies*". Other examples highlighting companies' use of social media for advertising and marketing include: "*we use social media for advertising purposes, marketing purposes*" (respondent 16); "*we use it to promote what's going on with our retailers and sponsors*" (respondent 22); and "*our main focus for using social media is to market new products*" (respondent 23).

Competitors Monitoring

Another reason some companies are using social media for is to keep an eye on their competitors since social media allows them easily to follow their competitor's pages and track their activity. Respondent 12 stated that they use social media to "*search out competitors, research the market, get knowledge we didn't have, (and) see trends in the market*". Meanwhile, respondent 19, who is in the information technology (IT) industry, explained that they use social media to "*keep up to date on the current IT market, (and) to learn what the competition is doing on their social media pages*". Respondent 20 also indicated that one of the purposes of using social media is "*keeping an eye on competitors*".

Recruitment

Companies are also using social media platform for recruitment purposes. They explain that there are some people nowadays that search for jobs on social media platforms, so in order to attract these people, they use social media for recruitment. Respondent 6 explained:" *There is a certain type of person on social media [other] than the traditional worker and without social media, we would not be able to recruit [them from] the job [candidates] poo*l". Respondent 21 elaborated:" *we also use it for job recruiting to show our benefits and the positions we need to fill*", and respondent 51 added: "*we use social media for the recruitment of both customers and staff*".

6.3.3 Importance of Social Media Presence

Why it is important for your company to be present and responsive on social media?

This question links to the second question about why companies use social media. It also allows this research to understand what companies expect to get from social media and what kind of benefits

they can acquire through their social media usage. Some answers received fit within the codes that were identified in the previous section (6.3.2). For example, respondent 24 said that it is important to be present on social media for customer service related reasons: "*it is important for our company to be present on social media so we can answer questions about the new products that customers have*". Another example is from respondent 37 and related to the brand awareness code:" [it is *important to be present on social media] to spread brand awareness, [and] educate potential customers on our products and how they compare to other on the market*". However, the following new codes still emerged from the answers to this question: customer relationship, and trend.

Customer Relationship

This code was separated from customer service as it focused more on the relationship between the company and the customer, and the way that these customers think about the company. The two codes customer service and customer relationship are in fact very close. We only separate between them to focus on the type/nature of the relationship as respondents highlighted it. Both connecting and engaging can be as well part of the customer service and customer relationship. We note this didn't have an impact later on as both customer service and customer relationship fell under the same theme which is customer support. Respondent 6 said that they want their customers to think well about them, while respondent 11 explained that they want the people to "*feel as if they are really connected to us and that we are actually listening to them*". Through their presence on social media, companies aim to show their customers that they care about them, as respondent 14 states:" *being responsive to our customers on social media is a good way to show that we care*", while respondent 17 added that it is important for them to be present on social media "*so that our customers feel like we are there for them*". Social media presence is important so that "*customers know that we are reliable and trustworthy enough to get back in touch with them*" as respondent 40 indicated.

Being on Social Media Trend

Some companies highlighted the fact that social media is a trend, and that most of the companies are establishing a presence on social media. As a result, they believe that they can't miss that trend and competition, which motivates them to be present on social media. Respondent 3 explained that "*it is a trend [and] everyone uses it*", while respondent 4 stated that it is "*way of the future and we will be left behind if we don't become present on it*". Highlighting the competition, respondent 23 said that "*social media is a must have in today's world. Everyone is using it and adjusting what they are doing based on technology advances*". Social media is the current and future trend, so it is important not to miss that as respondent 54 explained: "*it is very important to stay on social media because it is the*

wave of the future. Most people look online and hit Facebook before they buy a product". The final example is from respondent 61, who indicated that they have to be present on social media in order to "*keep current in today's world and compete against other business that offer[s] the same services as our company*".

6.3.4 Social Media Platforms Focus

Do you focus on one social media platform more than another? If yes, which one and why?

In order to further understand why firms use social media, they were asked to specify if they focus on certain social media platforms, and why do they do that. Understanding why a firm focuses on a specific social media platform can assist in understanding why they use social media as well since they would explain what they expect to achieve through that platform.

The firms who said they focus on a social media platform more than another represented 80% (60 firms) of the total firms who participated in the survey, while 20% (15 firms) said they don't. Out of the 80% who said they focus on a specific platform, 86.67% (52 out of 60) said they focus on Facebook, while the remaining firms named other platforms they focus on such as Linkedin, Twitter, Instagram, and Youtube.

Given that very few firms focused on platforms other than Facebook, the following three initial codes were based on the respondents who identified Facebook as the platform they focus on: high traffic, reaching the target audience, and ease of use.

High Traffic

The majority of respondents explained that they use Facebook simply because it is what people use. They explain that most of their clients use Facebook more frequently than any other social media platform and that you want to be where the clients are. Phrases that were frequently used by different respondents related to this code included: more people use it, most used, most traffic, and popular. Respondent 11 indicated that they focus on Facebook because "*there are more people on Facebook than any other platform*". Respondent 13 agreed, and stated that "*everyone is on Facebook, [it is] the most popular social media*". Firms want to be able to reach out to more people, and that influences their decision to focus on a certain platform. Respondent 33 explained: "[we focus on] *Facebook because it is so popular and seems like almost everyone has a Facebook account these days. It would be foolish for us to not have an active Facebook page*". Firms want to be where their customers are, in order to connect with them, answer their queries, and receive their feedback: "*We've also found that it is the platform that most of our customers are already using, so it's a good way to reach our current audience*", as respondent 39 stated. Respondent 48 added on why they

focus on Facebook: "*because it is generally the most widely used. And most people have a Facebook account so you can reach the most people*". The final example is from respondent 73, who explained that based on their analytics, they found out that their customers are more active on Facebook than other platforms, and thus they decided to focus more on it: "*it reaches more at once, our clients seem to be most active on Facebook than others when we look at analytics*".

Reaching Target Audience

Another reason why firms choose to focus on Facebook was that it allows them to reach their targeted audience. Respondent 3 said that they focus on Facebook because it provides them with "*the most presence in the age group they are seeking*". Respondent 23 highlighted the same point:" *we use Facebook most because our target shopper is female 25 - 54 and that's who uses this platform of social media*", which is similar to why respondent 28 focuses on Facebook: "[it is] *most widely used among our target audience. 30-60 year olds have this platform more than other platforms*". The final examples are from respondents 52 and 56, who explained that they focus on Facebook because they can reach their targeted audience, since Facebook is popular among the targeted age of customers they want to recruit (respondent 52), and it is widely used by their target audience (respondent 56).

Ease of Use

The last code generated from the answers on this question focused on the ease of use of Facebook when compared to other social media platforms. The respondents explained that posting information on Facebook is easier and has fewer restrictions than other platforms. Some examples of what respondents said in relation to Facebook use: "*it is the easiest to use*" (respondent 37); "[Facebook] *is easy to use and update*" (respondent 59); and "*it is very easy to use and we can add stuff on our page so easy*" (respondent 61). Other examples related to the ease of use, but focusing on the characteristics of the platform in terms of what it allows to post and the restrictions, include: "[we focus on Facebook because of the] *ability to write longer posts (and) add multiple pictures*" (respondent 41); "[it] *is the most robust platform that allows us to post content, including photos and videos*" (respondent 58); and "*because it has the most users and the least amount of restrictions as far as number of words and picture*" (respondent 62).

6.3.5 Social Media Data Collection and Analysis

Do you collect and analyse social media data? If yes, how do you collect the data and how do you analyse it?

The purpose of this question was to further understand how firms are making use of social media, with a specific focus on the data present on these platforms. Collecting data from social media

platforms and analysing it can provide the firm with different insights and valuable information. The respondents' answers to this question would allow us to understand if the firm is benefiting from such opportunities, and what the data collection and analysis processes are if they exist.

Based on the answers received to this question, it is noted that approximately 63% of the firms collect and analyse social media data, while 37% don't. In the next section, the following codes that were generated from the answers of respondents who said they do collect and analyse social media data will be presented: data collection, data analysis, and software packages.

Data Collection

The respondents who said that their company collects social media data provided some more details in their answers. Some explained who collects the data, how they collect the data, or what kind of data they collect. All of these elements are gathered under this data collection code. For example, respondents who mentioned who is responsible for the data collection said: "*our online manager collects the data*" (respondent 2); "*the IT department collects trends on social media sites*" (respondent 4); "[data is] *collected by IT department*" (respondent 52); and "*we have a dedicated associate who [checks] our sites daily to collect any online comments and information request emails*" (respondent 42). Explaining how they collect the data, respondent 25 said: "*we collect it within our IT department both on onsite servers as well as cloud based servers*", while respondent 37 stated: "*everything is collected using Facebook Analytics, the data is then exported to excel sheets*". Different companies collect different types of data, respondent 54 mentions that they "*collect data by what area the consumer is from… average age…products being reviewed*", while respondent 70 highlighted that they "*collect feedback to see how our business is working and what we need to improve on*".

Data Analysis

Respondents said that they analyse the data collected from social media to benefit from the information it provides in different aspects. Respondent 8 indicated that they use the analysed data "*to determine where to put future resources, what products are working well or not, and where we need to put our attention*", while respondent 14 said that they analyse the data to measure their reach and responsiveness to the messages and comments they receive on their page. Respondent 20 explained that they analyse the data "*to determine exactly what types of interaction that our consumers are engaging in and adapt our marketing techniques accordingly. Once we have a new plan set, we launch new test areas and once again analyse the data to see how effective the changes are*". Other respondents indicated different purposes for analysing the data, some examples include: "*we try to analyse the customers' needs and wants to fit with the business/client's needs*"

(respondent 25); "[to identify] *what types of posts people were excited about and what types of products our customers want*" (respondent 37); and "[to identify] *which pages have the most activity to see what programs are popular and track any new ideas users may have suggested*" (respondent 53).

Software Packages

There were some respondents who highlighted the software packages they use to collect and analyse the social media data. Respondent 39 said that they use "*Google metrics to collect data on the number of click throughs to our website, the amount of time they spend on each page, and the percentage of people that then make a purchase*". Respondent 56 also indicated that they use Google products: "*We collect and analyse the data using search engine optimization (SEO) in addition to Google AdWords and Google Analytics*". Other software packages mentioned included ShareRocket: "*We use the existing social media analytics tools in addition to special products such as ShareRocket*" (respondent 58); Keyhole:" [we use] *Keyhole because it giving* [gives] *you access to an intuitive and shareable dashboard, it tracks hashtag, keyword and campaign metrics in real-time*" (respondent 63); and Hootsuite: "[we use] *Hootsuite and analytics that are tracked compared and reported monthly"*. Other respondents indicated that they use third-party companies for their analytics (respondent 75).

6.3.6 Social Media Team Role

Is the social media team involved in the innovation process at your organization? If yes, what kind of input to the innovation process does the social media team provide?

Through this question, the researcher wanted to understand how much is the social media team involved in the innovation process to highlight the impact that social media is having on innovation at the organization, and what kind of input they provide to support the innovation process. The percentage of the firms where the social media team was involved in the innovation process was 53%, while the remaining 47% of firms didn't have the social media team involved in the innovation process. Based on the respondents' answers, three main codes were generated to represent what kind of input the social media team provides to the innovation process. The respondents explained that the social media team provides information about customer preferences and needs, new ideas, and market trends.

Customer Preferences and Needs

The respondents indicated that the social media team provides information about the customers' preferences and their needs. This information comes from the social media accounts of the company

and is based on the feedback they receive from the customers through what these customers post on those social media accounts. Respondent 2 explained how they benefit from the social media team input:" *by providing us with information on what the customers like to see on social media, we are able to make decisions on what to put out there in the future. It allows us to see which direction the public would like us to go*". The social media team provides data and analytics including customer feedback as respondent 33 stated. The information gathered from social media is important and impacts future decisions as respondent 42 explained:" *Depending on the information gathered, our technology team and other senior department personnel determine what new innovations should be implemented, and/or what existing processes/tools/formats need adjustments*". The social media team also provides input about the customer needs: "[the social media team provides] *the preferences and needs of our customers and potential customers*", highlighted respondent 43. Respondent 58 added: "*We use social media so much that we get a good idea of what our customers want and need and we're able to interact with them regularly. So it's essential our social media team gets involved very regularly*".

New Ideas

Another code that was generated from the answers to this question was new ideas. The respondents stated that the social media team provides new ideas which are based on the feedback they receive on social media platforms, or on their own research based on what they see on these platforms. Respondent 4 said that the social media team *"communicate with us ideas and improvements that are suggest [ed] on our social media platform. These suggestions and changes are then discussed with the management team and changes occur as they are feasible within each department*", and respondent 25 confirmed:" [the social media team provides] *new ideas* [based on] *what data we are receiving from our customers and clients*". Based on their expertise and knowledge as well, the social media team provides new ideas, as respondent 27 explained: "*The social media team is constantly researching new tools and new ideas for ways to best engage with those connected to us*". An example of those ideas was provided by respondent 39:" *Our social media team were the ones to come up with the idea of posting short videos and podcasts to social media on hot topics that our customers would likely be interested in. This was an innovative idea for us and was well received*".

Market Trends

The social media team also provides information about the latest trends in the market, as the respondents indicated. Respondent 17 stated that the social media team "*have all the back end research and know what is trending so they can help us put out there what the newest things are*", while respondent 23 provided more details explaining that their social media team "*share(s) trends*

on what's happening so we can stay ahead of the curve. These tools are useful to help us identify better ways to market our centre". Awareness was highlighted by respondent 37 as an important input provided by the social media team:" *The social media team brings awareness to the innovation process by sharing new products that seem to be trending on social media*". Similarly, respondent 52 indicated that their social media team "*reports changes in market, potential new innovations to help to improve our customer recruitment strategy*".

6.3.7 Problems and Customer Needs Identified through Social Media

Have you previously identified problems/customer needs through social media? If yes, how were these problems/needs identified?

To understand more how firms were benefiting from social media to identify problems or customer needs, the respondents were asked if they have previously identified problems or customer needs through social media, and to explain how these were identified. Out of the total respondents, 57% said they have previously identified problems/customer needs through social media, while 43% said they haven't. When explaining how the problems/ customer needs were identified, one code was generated: customer comments.

Customer Comments

The majority of the respondents mentioned that the problems and customer needs that were identified through social media, were identified through the customers' comments and feedback on their social media pages. Respondent 2 said that these problems/needs were identified through comments their customers left on their Facebook page. Respondent 43 provided more details: "*Through the comments of our customers and potential customers. We read every single one and infer what the customers are willing to purchase and we go from there to make a decision process*". Similarly, respondent 61 indicated that they also read all the comments they receive and act accordingly:*" We read the comments that the consumer posts and we identify with their needs. We build on what they say their problems are and what they state they are needing. We then can create a solution for them and present to them on how we can help what their need is*". Other respondents, such as respondent 56, explained that they received important feedback from their customers through social media to understand their customers' needs:" *We were able to receive extremely helpful feedback from our customers. We were able to pinpoint exactly what they were looking for and how we can accommodate them moving forward*". The last example is from respondent 64, who said that they monitor all the feedback they receive on their social media pages: "[we identify problems/needs] *by following the comments and post made by our clients. Also by monitoring the messages the customers send to the company's Facebook page. This gives our clients easier access to*

our trouble shooting department and promotes out company policy of customer service is important and vital to our survival".

6.3.8 Examples of Identified Problems and Needs

Did any of these identified problems/needs result in an innovation to solve a problem or create a new product/service? If yes, can you share an example of those needs and innovations?

The purpose of this question was to further understand how social media can help firms overcome the problems and challenges they face, resulting in solutions and innovations. Within the firms that said they have previously identified problems through social media (in question 7), 58% said that these problems/needs identified through social media have resulted in innovations, while 42% said it didn't. No specific codes were generated from this question, instead, certain examples that help understand the overall picture of how social media is helping companies become more innovative were shared.

One important thing noticed from the respondents' answers to this question was that some didn't want to share their innovations and considered that confidential information. Two clear examples of this matter are from respondents 56 and 58. Respondent 56 said he wasn't comfortable to share such examples: "*an example of these needs and innovations is confidential and I do not feel comfortable going into depth with this question as it would be sharing our strategy. I will say that feedback via social media has enabled us to make significant improvements in the ways we go about our business*". Respondent 58 also had concerns even though he was aware that it is an anonymous survey: "*I cannot share any of those examples as that would be inappropriate for this forum, even though it is anonymous. We need to respect the privacy of our companies and business affairs and not divulge top secret information*".

Even the examples shared were simple examples and respondents didn't go into depth, probably due to concerns similar to the two examples mentioned above. Below, three examples from what respondents said are shared:

Respondent 24:" *We have adjusted our shipping methods for when customers need their product available to them more quickly. We added a quicker option on the website that they can utilize for their products to get to them sooner rather than later*."

Respondent 45:" *Guests were having an issue not having immediate access to towels that they were told to specifically use for the pool area. We made accommodations for a self-service area for them as opposed to them having to come to the front desk or getting them at check in*". (This problem was

identified through guests' comments on social media as the respondent noted in the previous question).

Respondent 50:" *Guests reaching out on social media has brought attention to many areas needing adjustments in the past. One example is that I was unaware that one of my stylists needed more training in a specific area, until a guest reached out to me. Because I was made aware, I was able to correct the issue for the guest, as well as provide more training to my team member so the issue did not arise again*".

6.4 From Initial Codes to Themes

After generating the initial codes, the third, fourth, and fifth steps of the thematic analysis are related to the themes and are searching for themes, reviewing themes, and defining and naming themes respectively (Braun and Clarke, 2006). Since the initial codes were generated by going through the data question by question, the data was again reviewed as a whole set of data regardless of questions in order to finalize the themes.

Braun and Clarke (2006) explain that the third step starts after having a "*long list of the different codes*" that were generated in the previous step. They add: "*This phase, which re-focuses the analysis at the broader level of themes, rather than codes, involves sorting the different codes into potential themes, and collating all the relevant coded data extracts within the identified themes*". This step was applied by going through the data again and sorting the codes generated in section 6.3 into potential themes.

The fourth step begins after that when the researcher has a set of candidate themes (Braun and Clarke, 2006). In this step, some themes are removed (no sufficient data to support them for example), some might collapse into each other, and some might need to be broken down into separate themes (Braun and Clarke, 2006). To do that, the codes and the potential themes that were identified by the researcher were shared and discussed with three faculty members in the operations and information management group at Aston Business School, where feedback resulted in continuous updates to the list of the themes until there was agreement among all regarding the final list of themes. While there were no changes to the codes that emerged, there were some changes to the themes. Initially, there were the following 11 themes: social media presence, customer support, product feedback, new ideas, needs identification, marketing & advertisement, data collection & analysis, talent acquisition, competitors monitoring, brand image, and IT capability. The final list of themes emerged from those themes mentioned above, and is stated in figure 6.1.

The researcher then moved to step number five, which involves defining and further refining the themes that were identified in step number 4 (Braun and Clarke, 2006). This was done by doing further reading and analysis of the data. Braun and Clarke (2006) note that "*By 'define and refine', we mean identifying the 'essence' of what each theme is about (as well as the themes overall), and determining what aspect of the data each theme captures*". As a result of this step, a list of clearly defined themes was produced.

The final list included 10 themes that were identified where some themes were represented by more than one code. These themes are marketing and advertisement, social media presence, customer support, information collection, market orientation, brand image, IT infrastructure, talent acquisition, performance, and innovation. Figure 6.1 presents the link between the initial codes generated and the themes identified.

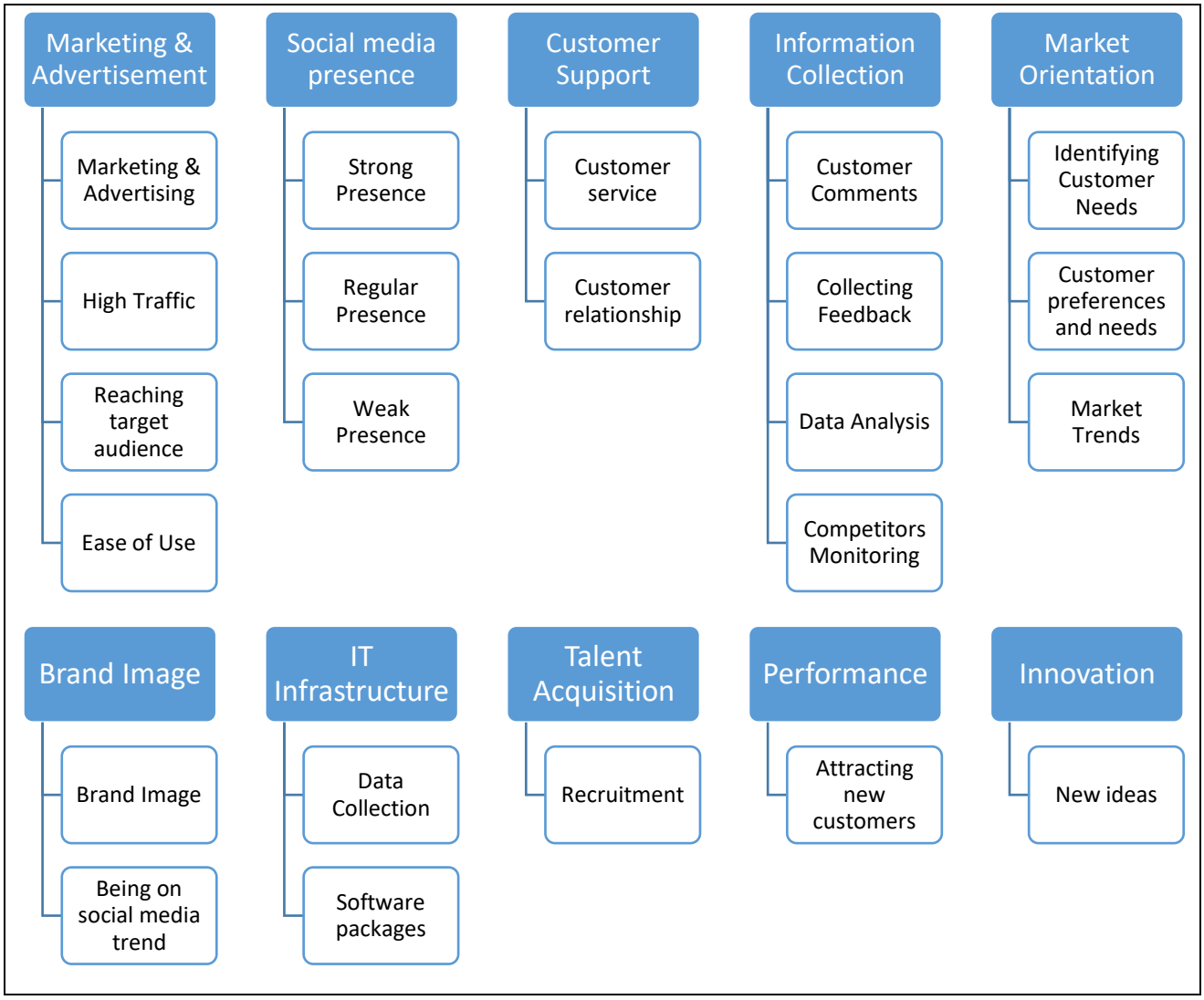


Figure 6. 1: Generated initial codes and themes

6.5 Identified Themes

The last step in a thematic analysis after defining and naming the themes is "*producing the report*" (Braun and Clarke, 2006), where the themes are presented. In this section, the 10 themes that were identified are presented, with some examples of what respondents said in relation to each identified theme.

Marketing and advertisement

One of the main uses for social media is for marketing and advertisement, and our findings confirm that. For example, firms are using social media to share information about new products and to reach their target audience. In relation to advertising new products, some examples of what respondents said about this included: "*keep clients up to date on new products*"; "*release news of new products to the market*"; "*reach our individual customers with new products*"; "*our main focus for using social media is to market new products*". When it comes to using social media for marketing and advertisement, respondents explained: "*it helps us a lot with marketing*"; "*it's an effective and low cost way to advertise*"; "*we use it to promote what's going on with our retailers and sponsors*"; "*to run promotions, to advertise specials in store and online, to advertise sales*". Social media is also used by firms to attract new customers, examples of what respondents said included: "*we use social media to obtain and track new clients*"; "*to gain new customers*"; "*to attract new customers*"; "*to attain new customers*". Respondents also stated that social media allows them to reach audience that they can't reach through other advertising options: "*the newest generation operates online more than the previous generations*"; "*it helps get a population we can't really get from newspapers or radio*"; "*our target shopper is female 25 – 54 and that's who uses this platform [Facebook] of social media*". This theme is consistent with current literature, where different studies associated the usage of social media with marketing and advertisement activity of the firm (Seo and Park, 2017; Wan and Ran, 2017; Change et al., 2017).

Social Media Presence

One of the themes identified was related to the firms' presence on social media. Respondents described their firm's presence on social media using different terms. Some had a strong presence as one respondent explains when describing their presence: "*very active and effective*". Other firms had a regular presence, as one respondent stated:" [we have a*] regular presence on Facebook and Twitter*". Finally, some respondents mentioned that their firm's presence on social media is a weak presence, as one of the respondents said: "*we have accounts but they are rarely used and not used in an effective manner*".

Customer support

Respondents stated that they use social media to connect with the public, in particular with younger generations. It represents a platform where they can interact directly with their customers: "*it (social media) serves as a help desk of sorts for immediate answers to questions or problems*", said one respondent. Another respondent added: "*it is important for us to [be] present and responsive so that our customers feel like we are there for them*". Social media creates a certain type of connection between firms and customers as one respondent explains: "*it [social media] also makes customers feel like they have (an) instant and responsive connection to us*". Respondents also stated that they use social media as a communication channel where they can share any type of messages with their customers, they explained that they use it to "*reach millions*"; "*communicate with the masses*"; "*keep current and new clients up to date*"; "*advise followers of upcoming events*"; "*communicate with stakeholders*". This theme is consistent with previous studies that highlighted the use of social media for customer support and customer relationship purposes (Wang and Kim, 2017).

Information Collection

One of the themes identified is information collection through social media. Firms are collecting different types of information through different channels such as customer comments, product feedback, and competitors' pages. Firms consider social media an important platform to acquire direct feedback from their customers. One respondent stated that his/her firm uses social media to "*receive customer feedback as well as customer concerns, complaints, and comments*", another added, "*we get consumer reviews and product feedback from our buyers*". Respondents also highlighted how beneficial the feedback received through social media is: "*I will say that feedback via social media has enabled us to make significant improvements in the ways we go about our business*", as one respondent explained.

Firms find social media a simple but effective method to collect information about their competitors. It allows them to track their competitors' activity by checking their pages, public messages, and any offerings they have. Some examples of what respondents said about tracking competitors on social media included (using social media): "*to compare products, search out competitors*"; "*to learn what the competition is doing on their social media pages*"; "*to keep an eye on competitors*". Firms also track their competitors on social media to compare themselves to the competition. "*We also look at the competition to see how we measure up*", stated one of the respondents.

Analysing the data that is collected through social media is providing the firms with important information. Respondents emphasized the importance of the data analysis, explaining that "*client*

comments are collected and analysed by our team to mine for relevant information and/or suggestions", and stating that they "*analyse the data provided by the analytics and reach out through social media to determine what the problems were in specific*".

Market Orientation

One theme that emerged from the data is about the market orientation strategy of the firm, and how they are using social media to better understand the market they work in. Social media allows the firms to better know their customers by allowing them to understand their preferences and identify their needs. The respondents explained that they use social media to identify customers' needs, which allows them to customize their offerings accordingly, in order to meet those needs: "*we use social media to identify the exact need so we can customize the experience of the customer*", stated one of the respondents. Some examples of what respondents said of why they use social media in relation to identifying customers' needs included: "*to identify customer needs*"; "*to analyse customer needs*"; "to create knowledge about our customer needs"; "*to find what the consumers need*". When explaining how social media helped his firm to identify their customer needs, one respondent stated*:" We were able to pinpoint exactly what they were looking for and how we can accommodate them moving forward*".

Brand Image

The company image is an important reason for a company to be present on social media. A good presence would keep current customers happy and attract new ones. It would also improve the brand value of the company. To present a good image, firms, for example, use social media to "*show what it is like to work there and show happy employees having fun at work and creating a warm and friendly environment*". Some examples of what respondents said included: "*it is important that we are present and responsive so that people continue to spread our name in a positive light*"; "*to get our name and what we do in front of a much broader market in real time*";" *company always need to display a positive image*"; "*we share what is happening in to improve the image*".

IT Infrastructure

In their responses, respondents explained how they collect social media data and who is responsible for that, in order to benefit from this data. Based on that, this theme emerged: IT infrastructure. Respondents explained that the IT team was responsible for collecting and analysing the data: *"the IT department collect trends*"; "*the data would first be analysed in the IT department*"; "*a process (data collection) done by our IT department*". One respondent explained that his/her firms "*collects the data through analytic programs to determine exactly what types of interaction that our consumers*

are engaging in and adapt our marketing techniques accordingly". Another respondent explained that they "*collect it within IT department both onsite servers as well as (on) cloud based servers*". Respondents also named different software packages they use to collect and analyse the data: "*we use the existing social media analytics tools in addition to special products such as Share Rocket*"; "*we use built in programs with each social media account, as well as hoot suite*"; "*keyhole because it gives you access to an intuitive and shareable dashboard, it tracks hashtag, keyword and campaign metrics in real-time*".

Talent Acquisition

The respondents explained that they use social media for recruitment. They explained that they can attract talent by posting job openings on social media: "*we use it for job recruiting to show our benefits and the positions we need to fil*l", explained one of the respondents. New generations go job hunting on social media nowadays, so the respondents explained that hiring through social media allows them to target and acquire talent that might not be available through other recruitment processes. "*We use it [social media] to recruit better hires*", one respondent explained, while another added:" *newer generations use social media as their platform for job searching, so without social media, we would miss out on those potential employees*".

Performance

A theme that emerged from the data was related to the performance of the firm, and how social media usage enhances it. Respondents indicated how their firms' business has grown as a result of their social media presence: *"if we were not on social media our growth would be nowhere near what it is and our business would be failing*"; "*we would have little to no business if we were not responsive and present on our social media platforms*";" *we have grown tremendously and a constant social media presence is one of the reasons for that growth*". One respondent explained the direct effect social media usage had on their sales: "*Business has improved maybe 40 to 45% more since we have expanded our business on social media*". Another respondent stated how social media usage impacted their operations:" *to be able to develop our products and expand our operations more efficiently, creating a higher ROI and increasing revenue in general*". This theme is also consistent with current studies that discussed how social media is affecting the performance of the firm (Schniederjans et al, 2013; Del-Carmen et al, 2018; Tajvidi and Karami, 2017).

Innovation

Another theme extracted from the data was about how social media usage enhances the innovativeness of the firm.

Firms use social media to acquire ideas. They benefit from the social media platform to harvest ideas people are sharing. One respondent explained: "*we go out and canvass people and their innovative ideas*", while another added that they get "*feedback on products and services as well as new ideas*". Other respondents also highlighted that they get new ideas through social media: "*it's where we sometimes get new ideas*". Others indicated that their customers share with them new ideas: "*they communicate with us ideas*".

Respondents also explained that the information gathered through social media is important to their firms' innovativeness: "*depending on the information gathered, our technology team and other senior department personnel determine what new innovations should be implemented, and/or what existing processes/tools/formats need adjustments*". Some even indicated that the social media team plays an important role in the innovation process:" *the designated member of the social media team sits on an innovations committee. This individual reports changes in market, potential new innovations to help to improve our customer recruitment strategy";" our social media team contributes to the innovation process*"; "*the social media team supplies input to the innovation process for our company*".

6.6 Summary

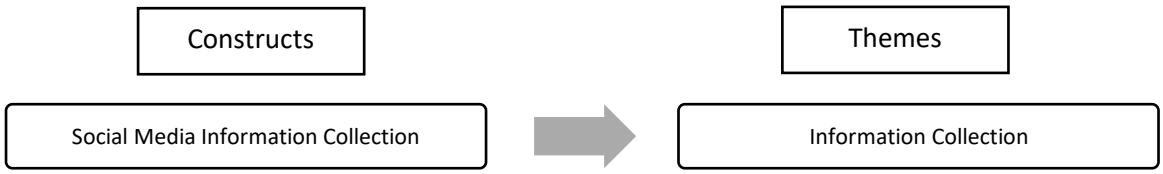
In this chapter, the data analysis and findings of the qualitative data were presented. The analysis method followed was a thematic analysis. Before the thematic analysis results were shared, a descriptive analysis including the characteristics of the responding firms was presented. Then, as part of the thematic analysis, initial codes were generated based on the answers of respondents to each question. These initial codes were: weak presence, regular presence, strong presence, attracting customers, customer service, brand awareness, collecting feedback, identifying customer needs, advertising & marketing, competition tracking, recruitment, customer relationship, trend, high traffic, reaching target audience, ease of use, data collection, data analysis, software packages, customer preferences and needs, new ideas, market trends, and customer comments. After generating the initial codes, the data was reviewed again alongside the generated codes, and as a result, the following themes were identified and presented: marketing and advertisement, social media presence, customer support, information collection, market orientation, brand image, IT infrastructure, talent acquisition, performance, and innovation. These findings, with the findings of the quantitative data presented in chapter 5, will be discussed in the next chapter (chapter 7).

Chapter 7: Discussions

7.1 Introduction

In the previous two chapters, Chapter 5 and Chapter 6, the data findings and analysis of the quantitative and qualitative data respectively were presented. In this chapter (Chapter 7), these findings will be discussed, where the quantitative data was used to test the hypotheses explaining the "what", and the qualitative data was used to triangulate the results explaining the "how" and the "why".

The discussions are presented next in three main separate sections: the first section discusses the total effect relationships, i.e. the relationships between the dependent variable and the outcome variable without the presence of the mediators; the second section discusses the indirect relationships, i.e. the relationships between the dependent variable and outcome variable with the presence of the mediators; and the third section discusses research findings altogether. This would allow us to understand the direct impact of the social media initiatives considered in this study – social media information collection and social media proactive market orientation – on innovation and financial performance, as well as the role and the effect of the mediators (IT infrastructure, social capital, and organizational capital) within the relationships between the social media initiatives and innovation and financial performance. In these discussions, the quantitative data findings will be presented first, followed by the qualitative data findings supporting the quantitative data. After that, both findings will be discussed. Finally, these findings will be positioned with respect to current literature highlighting the new insights these findings provide. The chapter then concludes with a summary and introduces the next chapter. Before the discussions start, we present a mapping between the constructs (quantitative) and the themes (qualitative) that matched.



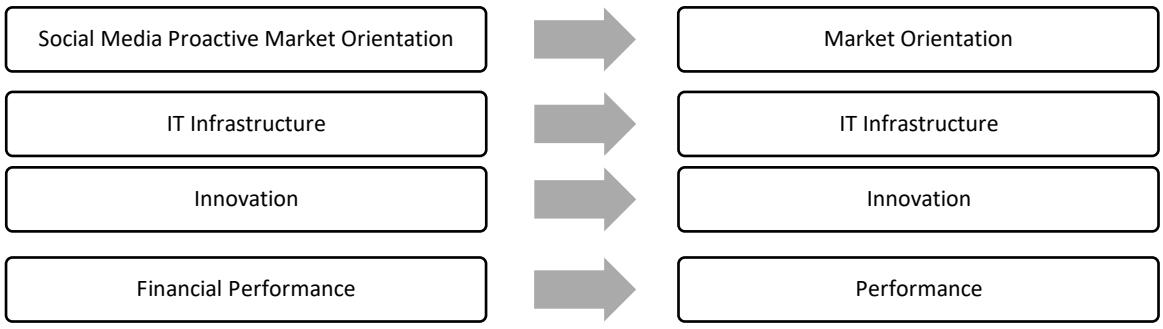


Figure 7. 1: **Mapping constructs to themes**

7.2 Total Effect Relationships

In this section, the total effect relationships will be discussed. These are the relationships between social media, innovation, and financial performance when the mediators are not included. For social media, there were two constructs used: social media information collection and social media proactive market orientation.

These findings are discussed in three sections. First, in section 7.2.1, the relationships between social media and innovation are discussed. Second, in section 7.2.2, the relationships between social media and financial performance will be discussed. Finally, in section 7.2.3, the relationship between innovation and financial performance will be discussed.

7.2.1 Social Media and Innovation

This section discusses the relationships between social media and innovation. Since there were two different social media constructs, this section discusses each separately: first the relationship between social media information collection and innovation will be discussed (section 7.2.1.1), then the relationship between social media proactive market orientation and innovation will be discussed (section 7.2.1.2).

7.2.1.1 SM Information collection and innovation

Social media information collection is defined in this research as the ability to "*accumulate adequate and critical information*" arising from social media platforms (Nguyen et al., 2015). Social media information collection was found to have a positive impact on innovation. This was demonstrated through the quantitative data analysis in section 5.5.3.1 through hypothesis 1 testing, where results showed a significant relationship between the two constructs (b= 0.404 and p<0.001).

Figure 7. 2: SM information collection and innovation

These findings were supported by the qualitative data as well and highlighted through the codes and themes reported in chapter 6. Firms indicated that they are collecting information on social media and that social media is helping them to innovate, where 63% of respondents said they collect social media data, and 53% said that their social media team provides input to the innovation process. Firms are collecting information from social media through different channels. For example, they collect information through customer comments, as respondent 42 explained: "*We read every single one and infer what the customers are willing to purchase and we go from there to make a decision process*"; and through feedback related to their products as respondent 29 stated when explaining why they use social media: "*to receive feedback from our customers to see where we need to improve and where we are doing a good job*". Also, firms are using social media to monitor their competitors, as was elaborated in the previous chapter. All this information that is being collected through social media, is playing a role in the innovation process at the firm's level, where respondents confirmed that the social media team provides insights to senior management or even participates in the innovation committee meetings at some firms.

This is an interesting result that shows that firms are making use of the information that is present on social media in order to innovate. Social media is offering firms with the opportunity to better understand the market around them, by understanding their customers, suppliers, and even their competitors. The information that the firms collect from social media platforms can provide them with valuable insights that can be beneficial in different aspects. For example, firms can collect feedback from their customers about their current products and services that would help them improve these offerings. Firms may also collect information about their competitors and about the current market trends through social media, allowing them to produce innovative products and services matching these trends so that they don't fall behind the competition.

This finding is consistent with previous research, which was discussed in the literature review in chapter 2, where Perez-Gonzalez et al. (2017) reported that using social media to acquire external information had a positive effect on innovation. This study provides new insights compared to their study in terms of location, and type of targeted firms. Perez-Gonzalez et al. (2017) study was done in Spain and targeted industrial firms. The companies participating in their survey were SMEs, where the total number of employees was less than 250. Specifically, 80.1% of their sample was small companies where the number of employees was between 10 and 49, while 19.9% were medium companies where the number of employees was between 50 and 249. In this study, the majority of companies were large companies, where 67.1% were companies with the number of employees

greater than 250, and 32.9% were companies with the number of employees less than or equal to 250 (only 16.13% had employees between 1-50 compared to 80.1% in Perez-Gonzalez et al. (2017) sample). Also, this study targeted firms in the United States market without any industry restrictions, where companies from more than 20 industries participated in the study. The findings also extend Nguyen et al. (2015) findings that reported a positive effect of social media information collection on brand innovation. They suggested that future research should examine the effect of social media information collection on other innovation types, given that they focused on brand innovation. This study fills that gap and proposes that social media information collection has a positive impact on innovation in general and not only brand innovation.

7.2.1.2 SM proactive market orientation and innovation

Social media proactive market orientation is defined in this study as the actions the organization takes in order to identify customer latent needs through social media. Social media proactive market orientation was found to have a positive impact on innovation. This was demonstrated through the quantitative data analysis in section 5.5.3.2 through hypothesis 2 testing, where results showed a significant relationship between the two constructs (b= 0.496 and p<0.001).

Figure 7. 3: SM proactive market orientation and innovation

The qualitative data analysis in chapter 6 support these findings, through the themes and categories that were generated, such as the market orientation and innovation themes. The market orientation theme included the following codes: identifying customer needs, customer preferences and needs, and market trends. Firms are using social media in order to identify their customers' needs and tailor their services based on these identified needs. For example, respondent 13 explained that their company uses social media to "*identify customer needs, (and) find out how our customers feel about our services*". The market trends and the customer preferences that are being collected through social media are affecting the innovativeness of the firm, as respondent 41 indicated: "*Depending on the information gathered, our technology team and other senior department personnel determine what new innovations should be implemented*". This type of information being collected through social media platforms is allowing the firm to become more innovative.

This result indicates that firms that are applying a proactive market orientation strategy on social media are more innovative than firms who don't. By being proactive, firms are able to dig deeper

into the data available on social media platforms in order to identify what are the needs of the customers and the market. Based on these needs, they can tailor their current products and services to fit these needs, or even create totally new innovative products and services to satisfy these needs. Firms are also acquiring new ideas from their customers on social media which has the potential to lead to innovation. So social media is providing firms with the needs of their customers, and sometimes with the ideas to satisfy those needs. As a result, it only makes sense that having a proactive market orientation on social media will have an impact on innovation.

This finding supports previous research associating social media and innovation as discussed in the literature review (in chapter 2), where Lam et al. (2016) reported that social media initiatives had an impact on the innovativeness of the firm. However, Lam et al. (2016) measured general social media initiatives rather than a specific one and used companies' announcements to do that. Meanwhile, this finding focuses on a specific social media initiative -proactive market orientation- and shows its positive impact on innovation. Nguyen et al. (2015) reported that social media proactive market orientation has a positive impact on brand innovation, and suggested to test its impact on other types of innovation. This research result extends their finding showing that social media proactive market orientation has a positive impact on innovation in general, and not only on brand innovation.

7.2.2 Social Media and Financial Performance

This section discusses the relationship between social media and financial performance. Similar to the previous section, since there were two different social media constructs, this section discusses each separately: first the relationship between social media information collection and financial performance will be discussed (section 7.2.2.1), then the relationship between social media proactive market orientation and financial performance will be discussed (section 7.2.2.2).

7.2.2.1 SM Information collection and financial performance

Social media information collection was found to have a positive impact on financial performance. This was demonstrated through the quantitative data analysis in section 5.5.4.1 through hypothesis 3 testing, where results showed a significant relationship between the two constructs (b= 0.465 and p<0.001).

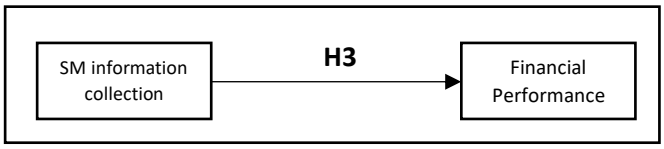


Figure 7. 4: SM information collection and financial performance

This finding was supported by the qualitative data, where themes such as information collection and performance emerged from the data analysis. Firms are collecting information from their customers' comments which allows them, for example, to understand what products are more popular. They can then focus on such products, which could lead to an increase in sales and thus affecting the financial performance. Respondent 42 explained that collecting information from the customer comments allows them to understand "*what the customers are willing to purchase and we go from there to make a decision process*". Similarly, firms collect feedback about their products and services which would result in an improvement leading to more business, as respondent 52 explained: "*Business has improved maybe 40 to 45% more since we have expanded our business on social media*". The qualitative data also showed that firms are collecting information about their competitors, which can allow them to adapt their offerings to better compete and improve business results.

The information collected on social media platforms can affect financial performance in different aspects. The main impact can be related to an increase in sales. Firms are able to maintain their current customers, and attract new ones on social media. Given the information they collect about their customers, they can better target the ones that might have more interest in their products or are within the area they serve. Such initiatives can result in an increase in sales, and thus have an impact on the financial performance of the firm.

This finding is in line with those of previous research that studied the impact of social media on financial performance such as Schniederjans et al. (2013), who reported that there is a positive connection between social media and financial performance. However, Schneiderjans et al. (2012) measured social media usage strategy from an impression management perspective, and tested its impact on financial performance, while our study looked at social media information collection. Thus, our study provides a new insight since it tested the impact of a different social media initiative on the financial performance of the firm, reporting a positive impact by social media information collection on the financial performance.

7.2.2.2 SM proactive market orientation and financial performance

Social media proactive market orientation was found to have a positive impact on financial performance. This was demonstrated through the quantitative data analysis in section 5.5.4.2 through hypothesis 4 testing, where results showed a significant relationship between the two constructs (b= 0.483 and p<0.001).

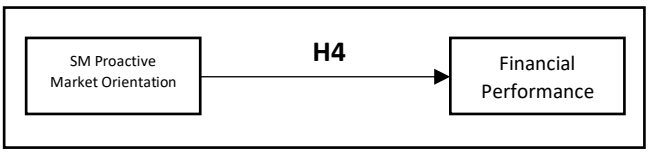


Figure 7. 5: SM proactive market orientation and financial performance

The analysis of the qualitative data supported this result, through the themes that were identified such as the market orientation theme and the performance theme. These themes highlighted how firms are using social media to identify customer needs and preferences, understand market trends, and attract new customers. Firms are being proactive on social media in order to identify their customers' preferences and needs. Respondent 57 explained that they "*use social media so much that we get a good idea of what our customers want and need*". Another respondent indicated that the social media team share the market trends and changes they identify through social media so that the company is aware of what is happening in the market and the competition they face. Firms are also using social media to attract new customers, which can have an impact on financial performance since more customers mean more sales, and leads to higher profits.

The financial performance of the firm can be affected by its social media proactive market orientation strategy in different perspectives. For example, instead of offering products and services that might not meet the customers' needs, then collecting feedback and changing the offerings based on this feedback, firms can initially identify their customers' needs and preferences and build their products and services based on these needs. This can impact the financial performance in two ways. First, it can save the costs of building a product that might not be successful and then having to tailor/upgrade it based on the feedback they receive. Second, offering a product that meets the customers' preferences and needs can lead to more sales and profits, since customers would be more willing to purchase products and services that are built to meet their needs. As a result, lower costs and higher profits would positively affect the financial performance of the firm.

This finding agrees with the findings of previous research that reported an impact of social media usage on the financial performance of the firm, such as Tajvidi and Karami (2017). However, the study in this research provides new interesting insights in two perspectives. The first new insight is with respect to measuring a specific social media initiative, social media proactive market orientation, and testing its impact on the financial performance rather than measuring general use of social media which Tajvidi and Karami (2017) did, where they simply asked the respondents about their preferences in using social networks (which ones). The second new insight is in terms of the context of the study, where Tajvidi and Karami (2017) focused on one industry (hotel industry) in the United Kingdom and on SMEs, while this study targeted more than 20 industries in the United States, without restricting the firm size. In fact, as mentioned previously, the majority (67.1 %) of the firms who participated in this study were large companies (number of employees greater than 250), while

the majority (63.6 %) of firms who participated in Tajvidi and Karami (2017) study were small companies (number of employees less than 50), while the remaining (36.4 %) were medium companies (number of employees between 50 and 250).

7.2.3 Innovation and Financial Performance

In this section, the relationship between innovation and financial performance will be discussed. Innovation was found to have a positive impact on financial performance. This was demonstrated through the quantitative data analysis in section 5.5.5, where results showed a significant relationship between the two constructs (b= 0.569 and p<0.001).

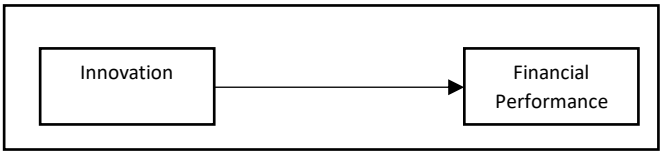


Figure 7. 6: Innovation and financial performance

As explained previously in section 2.4.3, studying the relation between innovation and financial performance is not in the scope of this research, since the link between those variables has already been established in multiple studies. However, since the data was already collected to for the purpose of other hypotheses, the relation between innovation and financial performance was tested, in order to see if it was consistent with previous studies, thus providing additional credibility to the data collected and used in this research.

Indeed, it was the case as this finding was consistent with previous studies that tested the relationship between innovation and performance. An overview of some of these studies was presented in section 2.4.3.

7.3 Indirect Relationships: Mediation

This section discusses the indirect relationships. These are the relationships between social media and innovation, and between social media and financial performance when the mediators are present. The following three mediators were proposed and tested in this research: IT infrastructure, social capital, and organizational capital. The role of these mediators will be discussed in section 7.3.1. 7.3.2, and 7.3.3 respectively.

7.3.1 IT Infrastructure

This research proposed that IT infrastructure plays a mediator role in the relationships between social media and innovation, and social media and performance. Four hypotheses were developed (in section 3.3.4.2) in order to test the mediation role of IT infrastructure: two hypotheses relating the

two social media variables measured in this research (social media information collection and social media proactive market orientation) to innovation through IT infrastructure (hypotheses 1a & 2a; figure 7.7), and two hypotheses relating the two social media variables to financial performance through IT infrastructure (hypotheses 3a & 4a; figure 7.8). The quantitative data analysis (in chapter 5 sections 5.5.3 & 5.5.4) supports these hypotheses, where IT infrastructure was found to play a mediation role between:

1. Social media information collection and innovation (hypothesis 1a, where the indirect effect a*b = 0.238).
2. Social media proactive market orientation and innovation (hypothesis 2a, where the indirect effect a*b = 0.280).
3. Social media information collection and financial performance (hypothesis 3a, where the indirect effect a*b = 0.184).
4. Social media proactive market orientation and financial performance (hypothesis 4a, where the indirect effect a*b = 0.244).

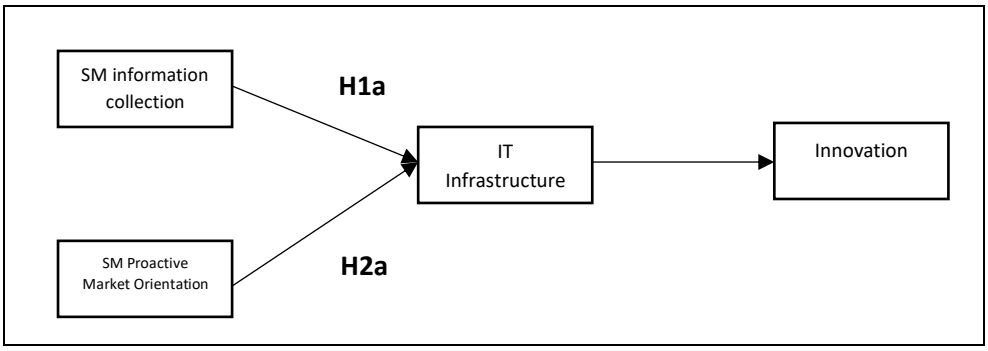


Figure 7. 7: Social media initiatives, IT infrastructure, and innovation

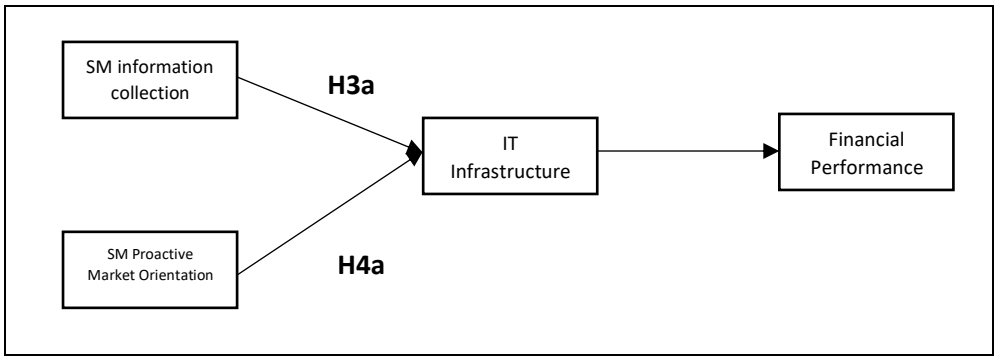


Figure 7. 8: Social media initiatives, IT infrastructure, and financial performance

These findings were supported by the qualitative data, where different related themes emerged from the analysis, such as information collection and market orientation themes relating to the social media variables, IT infrastructure relating to the mediator variable, and innovation and performance relating to the outcome variable. The IT infrastructure theme included the following two codes: data collection and software packages. The data collection code explained that firms are collecting data, and was more related to the hardware part of the data collection, as respondent 24 explained about their social media data collection:" *we collect it within our IT department both on onsite servers as well as cloud-based servers*". Respondents also highlighted in some cases that the data is collected by the IT department. Firms are also using different software packages in order to collect that data. Respondents named different software that they use in the process of social media data collection such as Google analytics, ShareRocket, Keyhole, and Hootsuite. All these provided an overview of different infrastructure at the firms linking these to social media.

These are significant findings. Firms who want to benefit from social media need to have advanced IT infrastructure. A firm that is collecting data, for example from social media, can be considered to have the required IT infrastructure in place because it is what would allow this data collection to happen. The data present on social media is Big Data, and in most of the cases, it is unstructured data that can't be collected using traditional methods. In order to benefit from this data, firms would need to download, store, and analyse this data. Doing that without the proper IT infrastructure might not be possible. Even if firms used traditional methods to collect certain data, the value of the outcome of this data might not be similar to the value of the outcome of data collected and analysed through advanced methods. For example, a firm with poor IT infrastructure might collect some data from a customer's comments on his Facebook page, using excel sheets and manually analyse it, while a firm with advanced IT infrastructure might collect a much larger sample and analyse it using the relevant software in a shorter time. The value of the knowledge acquired by the second firm who had an advanced IT infrastructure would definitely be greater than the value that came out of the data collected manually on excel sheets. The ability to extract more valuable knowledge from social media through a better IT infrastructure would lead to better innovations and better financial performances. Thus, the IT infrastructure mediates the relationship between social media and innovation, and social media and financial performance by allowing the firm to extract more value and more insights from social media.

7.3.2 Social Capital

Social Capital was proposed in this research to play a mediator role in the relationships between social media and innovation, and social media and financial performance. Four hypotheses were developed (in section 3.3.4.3) in order to test the mediation role of social capital: two hypotheses

relating the two social media variables measured in this research (social media information collection and social media proactive market orientation) to innovation through social capital (hypotheses 1b & 2b; figure 7.9), and two hypotheses relating the two social media variables to financial performance through social capital (hypotheses 3b & 4b; figure 7.10). The quantitative data analysis (in chapter 5 sections 5.5.3 & 5.5.4) supports three hypotheses, where social capital was found to play a mediation role between:

1. Social media information collection and innovation (hypothesis 1b, where the indirect effect a*b = 0.098).
2. Social media proactive market orientation and innovation (hypothesis 2b, where the indirect effect a*b = 0.151).
3. Social media information collection and financial performance (hypothesis 3b, where the indirect effect a*b = 0.043).

The quantitative data analysis did not support one hypothesis, where the hypothesis (4b) suggesting that social capital mediates the relationship between social media proactive market orientation and financial performance was rejected.

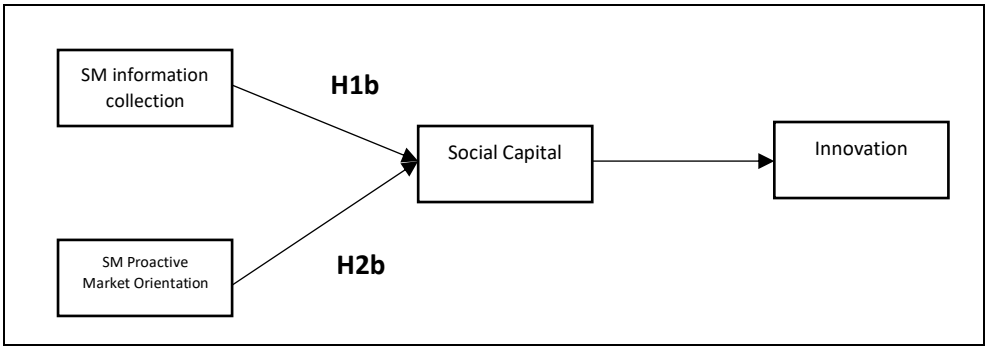


Figure 7. 9: Social media initiatives, social capital, and innovation

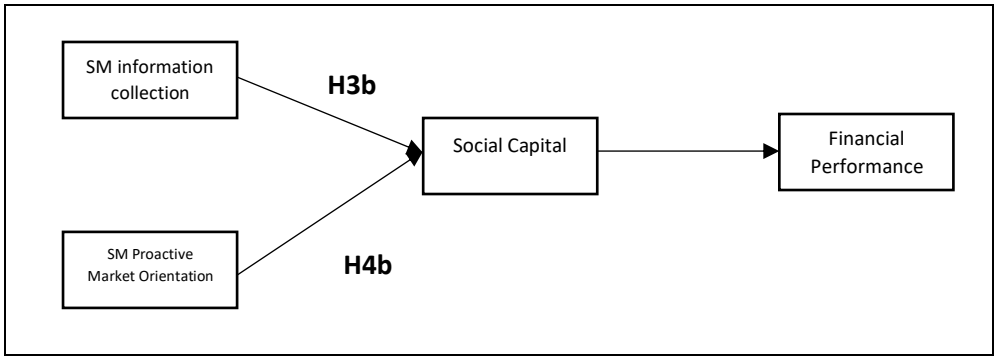


Figure 7. 10: Social media initiatives, social capital, and financial performance

The qualitative data analysis didn't provide support to these findings, as none of the generated codes or themes was relevant to social capital. These results will further be discussed next in two parts: first, the discussion will cover the role that social capital plays between social media and innovation (hypotheses 1b & 2b), and then the discussion will cover the role that social capital plays between social media and financial performance (hypotheses 3b & 4b).

Social capital was found to play a mediation role between social media and innovation (supported by the quantitative data). Social capital is about the knowledge that becomes available through individuals' discussions and interactions as explained in chapter 3. Different departments are involved in social media initiatives at a company, such as marketing, customer service, and information technology. As a result, each department or team might acquire different types of information through social media. At the same time, the innovation process at a company isn't usually a one person task, rather than a team effort where individuals from different teams come together and share ideas. The social media team, for example, participates in the innovation process where 53% of respondents said this team provides relevant input and some specified that the social media team sits within the innovation committee (qualitative data). This provides another piece of evidence that such committees that include employees from different teams to discuss innovation matters exist. In such committees, for example, the social capital role can be evident, since the discussions and interactions of different individuals can lead to new knowledge resulting in new innovations. So the role of social capital as a mediator of the relationship between social media and innovation can be explained through these different individuals who have gathered different types of information through social media, all coming together to discuss their findings from different perspectives creating new knowledge that might lead to innovation.

When it comes to the role of social capital in the relationship between social media and financial performance, the two hypotheses had different results. Social capital was found to play a mediation role in the relationship between social media information collection and financial performance where hypothesis 3b was supported by the quantitative data. However, hypothesis 4b proposing that the relationship between social media proactive market orientation and financial performance is mediated by social capital was rejected. In fact, taking a closer look to the first hypothesis (3b) that was accepted shows that it was very close to being rejected based on two pieces of evidence. First, the three lower boundaries of the bootstrap test were very close to zero (0.002, 0.003, and 0.003), where a zero value would mean no effect. Second, the confidence level of Sobel test was 0.0384 close to the 0.05 threshold which would have resulted to reject this hypothesis. Based on this, it is suggested that there is no potential significant role of social capital as a mediator between social media and financial performance.

These findings provide two new insights. First, it proposes that social capital can play a mediation role in the relationship between social media and innovation, something that no previous studies had suggested before. Second, it suggests that there is no mediating role of social capital in the relationship between social media and firm performance. The second finding is contrary to that of Kamboj et al. (2017), who found that social capital plays a mediating role between social media usage and firm performance. This inconsistency could be mainly because, in their study, Kamboj et al. (2017) measured social media use in terms of social use, hedonic use, and cognitive use, while in this study different social media initiatives were measured.

7.3.3 Organizational Capital

This research proposed that organizational capital plays a mediator role in the relationships between social media and innovation, and social media and performance. Four hypotheses were developed (in section 3.3.4.4) in order to test the mediation role of organizational capital: two hypotheses relating the two social media variables measured in this research (social media information collection and social media proactive market orientation) to innovation through organizational capital (hypotheses 1c & 2c; figure 7.11), and two hypotheses relating the two social media variables to financial performance through organizational capital (hypotheses 3c & 4c; figure 7.12). The quantitative data analysis (in chapter 5 sections 5.5.3 & 5.5.4) supports three hypotheses, where organizational capital was found to play a mediation role between:

1. Social media information collection and innovation (hypothesis 1c, where the indirect effect a*b = 0.106).
2. Social media proactive market orientation and innovation (hypothesis 2c, where the indirect effect a*b = 0.133).
3. Social media information collection and financial performance hypothesis 3c, where the indirect effect a*b = 0.042).

The quantitative data analysis did not support one hypothesis, where the hypothesis (4c) suggesting that organizational capital mediates the relationship between social media proactive market orientation and financial performance was rejected.

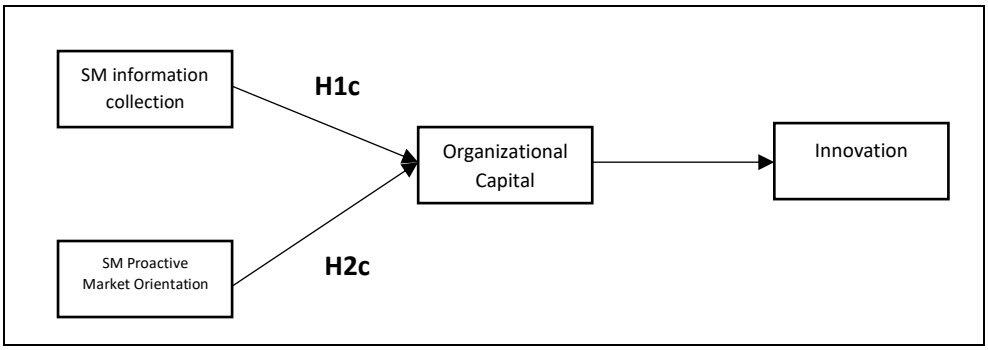


Figure 7. 11: Social media initiatives, organizational capital, and innovation

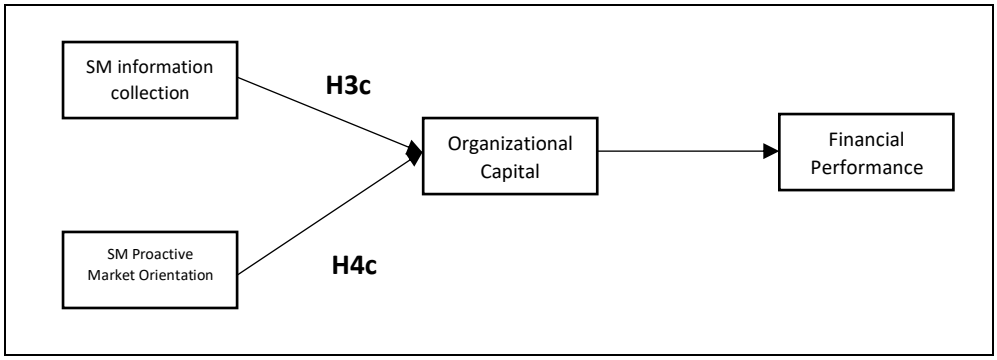


Figure 7. 12: Social media initiatives, organizational capital, and financial performance

Similar to social capital, the qualitative data analysis didn't provide support to these findings, as none of the generated codes or themes was relevant to organizational capital. These results will further be discussed next in two parts: first, the discussion will cover the role that organizational capital plays between social media and innovation (hypotheses 1c & 2c), and then the discussion will cover the role that organizational capital plays between social media and financial performance (hypotheses 3c & 4c).

Organizational capital was found to play a mediation role between social media and innovation (supported by the quantitative data). Organizational capital is about the processes, structures, databases, documents and manuals that establish knowledge within an organization as explained in chapter 3. This finding makes sense since a firm needs to have certain processes first to collect data from social media and then to analyse it, as well as having an innovation process. It is true that the qualitative data didn't point directly to organizational capital, however, it indicated how the firms collect and analyse social media data, where some respondents indicated which teams, for example, are responsible for this, as well as briefly mentioning a "process" of innovation. These indications give the impression that such firms have embedded processes and structures representing organizational capital. Such processes and structures can play a crucial role in the innovation process

that can start from the availability of data on social media and end with an innovation. In this case, what allows the firm to reach from the start point till the end point are the processes that facilitate collecting and analysing the social media data, and transferring it to knowledge that is a major input to the innovation process.

When it comes to the role of organizational capital in the relationship between social media and financial performance, the two hypotheses had different results. Organizational capital was found to play a mediation role in the relationship between social media information collection and financial performance where hypothesis 3c was supported by the quantitative data. However, hypothesis 4c proposing that the relationship between social media proactive market orientation and financial performance is mediated by organizational capital was rejected. In fact, similar to hypothesis 3b about social capital, a closer look to hypothesis 3c shows that it was as well so close to being rejected: the lower boundaries of the bootstrap test were 0.003, thus close to zero, where a zero value would mean no effect; and the confidence level for Sobel test was 0.0499, and very close to the 0.05 threshold level which would have resulted to reject this hypothesis. Based on this, it is suggested that there is no potential role of organizational capital as a mediator between social media and financial performance.

These findings provide two new insights by proposing that organizational capital mediates the relationship between social media and innovation and that it doesn't mediate the relationship between social media and financial performance.

7.4 General Discussion

In this research, the impact of two social media initiatives – social media information collection and social media proactive market orientation – on innovation and financial performance was studied. The results indicated that both social media initiatives have a direct impact on innovation, and a direct impact on financial performance. Firms are using social media for different objectives and applying different initiatives to achieve these objectives. The findings of this study highlight two initiatives that firms can use if their objectives are to become more innovative and to achieve superior performance. These initiatives are collecting information from social media and applying a proactive market orientation strategy on social media as well.

These findings can relate to the resource-based view. As discussed earlier in this study, social media is becoming an important resource for firms. The resource-based view suggests that the firm's distinct/unique identity is provided by its tangible and intangible resources. The resources that the firm possesses determine the firm's competitive advantage (Wernerfelt 1984; Rumelt 1984), and by extension, its financial performance (Corbett and Claridge, 2002). Our findings are consistent with

what the resource-based view suggests, as it (findings) explained how social media as a resource, can impact innovation (which is a source of competitive advantage (Prajogo and Ahmed, 2006)) and financial performance.

This study also tested the mediation role of IT infrastructure, social capital, and organizational capital between the two social media initiatives considered in this research and innovation and financial performance. The results indicate that IT infrastructure plays a mediation role between social media and innovation, and social media and financial performance. IT infrastructure can facilitate knowledge acquisition from social media, by allowing the firm to collect and analyse the data present on these platforms, turning it into knowledge. As mentioned earlier, IT infrastructure can help organizations both share and acquire new information to and from the market, thus facilitating the process of acquiring and creating new knowledge (Benitez et al., 2016). Our findings demonstrated how IT infrastructure plays a role in acquiring knowledge from social media which impacts innovation and financial performance of the firm.

Social capital and organizational capital were found to play a mediation role between social media and innovation. Social capital was defined as the knowledge available through the interactions among individuals (Nahapiet and Ghoshal, 1998), and is proposed to help explain innovation performance (Moran, 2005). Meanwhile, organizational capital was defined as the knowledge created through the processes and structures of an organization (Wright et al., 2001), and is proposed to have an impact on innovation as well (Miles and Clieaf, 2016). Our findings suggest that social capital and organizational capital facilitate knowledge acquisition from social media which impacts innovation.

These findings indicating that social media through IT infrastructure, social capital, and organizational capital impacts innovation reflects on the dynamic capability view. As explained earlier, dynamic capability view highlights the combination of resources across different departments at an organization and considers this combination to be inimitable, suggesting that competitive advantage would not be sustainable without such dynamic capabilities and that the relationship between external and internal resources can lead to innovation (Kim et al, 2014). Our findings show how the relationship between external resource (social media) and internal resources (IT infrastructure, social capital, and organizational capital) impacts innovation.

Finally, the results indicated that social capital and organizational capital do not play a mediation role between social media and financial performance. The literature has explained that both social capital and organizational capital have an impact on the firm's performance (Tsai and Ghoshal, 1998; Lev et al., 2009). However, it is not specified that the impact is on financial performance specifically rather

than any other type of performance. This could be a potential reason why our results indicated that there is no mediation role of social capital and organizational capital between social media and financial performance. Understanding which type of performance social capital and organizational capital affects can be an interesting area for future research.

7.5 Summary

In this chapter, the quantitative and qualitative data findings and analysis were discussed, where the qualitative data findings supported the majority of the quantitative data findings and were used to triangulate these findings. The findings were discussed in three main sections where the first discussed the total effects relationships, the second discussed the indirect effects relationships where the following three mediators where present: IT infrastructure, social capital, and organizational capital, and the third presented a general discussion. The findings provided important new insights from more than one perspective. Both social media constructs, social media information collection and social media proactive market orientation, were found to have a direct impact on both innovation and financial performance. With respect to the mediators, IT infrastructure was found to play a mediation role in the relationship between both social media constructs and innovation and financial performance. Social capital and organizational capital were also found to play a mediation role between both social media constructs and innovation, but not between social media (both constructs) and financial performance.

After discussing the data findings and analysis in this chapter, and highlighting the new insights these discussions provided, the next chapter concludes this research by presenting the theoretical and practical contributions that this research makes, the research limitations, and proposing direction for future research.

Chapter 8: Conclusions

8.1 Introduction

This thesis has contributed to the existing literature by studying the impact that social media initiatives, specifically social media information collection initiative and social media proactive market orientation initiative, have on innovation and on the financial performance of the firms. The majority of the work has been discussed in the previous chapters, thus this chapter will indicate what the main research findings were, highlight how this work has met the aims and the achieved the planned activities, present the key theoretical and practical contributions, consider the research limitations, and propose future research directions.

8.2 Main Research Findings

The literature review that was done in Chapter 2 resulted in identifying a gap. The main gap was that studies didn't address the impact of specific social media initiatives, such as social media information collection and social media proactive market orientation, on innovation and financial performance, or tested potential mediators within these relationships. To fill the gap, the research questions were formulated as follows:

The main question:

- "How can knowledge acquired from social media impact innovation and financial performance of the firm?"

The sub-questions:

- What is the impact of knowledge acquired from social media on innovation?
- What is the impact of knowledge acquired from social media on financial performance?
- What mediators play a role in the relationship between social media and innovation and social media and financial performance?
- Why does knowledge acquired from social media impact innovation and financial performance?

To answer the research questions, both quantitative and qualitative data were collected and analysed. The research proposed a conceptual model in chapter 3. The quantitative data and analysis served the purpose of answering the "what" questions, while the qualitative data served the purpose of answering the "why" question. Being able to answer all the sub-questions lead to the ability to answer the main research question, and show how knowledge acquired from social media impacts innovation and financial performance of the firm. An overview of the main findings of the research -

in terms of the relationships between social media, innovation, and performance, and the role of the mediators - is presented next:

- **Social media and Innovation:** in terms of the impact of social media on innovation, the study found that both social media initiatives – social media information collection and social media proactive market orientation – have a positive impact on innovation of the firm. The results revealed that firms are using social media for different purposes including information collection and market research, allowing them to gain valuable insights which are having a direct impact on their innovativeness.

- **Social media and financial performance:** the study found that both social media information collection and social media proactive market orientation have a positive impact on the financial performance of firms. Firms are benefiting from social media to further understand their customers, their competitors, and the market in general, which is resulting in them offering better products tailored to their customers' needs, and potentially in higher sales and revenues, and thus positively affecting their financial performance.
- **IT Infrastructure:** in terms of the role of IT infrastructure, the study found that it plays a mediator role in the relationships between both social media initiatives and innovation, and between both social media initiatives and financial performance. The results explained that firms need an advanced IT infrastructure in order to acquire knowledge from social media since the process to do that relies on hardware and software to collect and analyse the data present on social media platforms.
- **Social Capital:** the study also found out that social capital plays a mediator role between both social media initiatives – social media information collection and social media proactive market orientation – and innovation. However, it doesn't play that mediation role between social media initiatives and financial performance.
- **Organizational capital:** similar to social capital, the study found out that organizational capital plays a mediator role between both social media initiatives - social media information collection and social media proactive market orientation – and innovation, but not between those social media initiatives and financial performance.

8.3 Meeting the Aims and Planned Activities

This thesis was conducted in order to achieve the aim of developing and proposing a model that may assist in understanding the impact of social media information collection and social media proactive

market orientation on innovation, and on the financial performance of the firm. Several activities were specified in order to meet the research aim. These activities, mentioned earlier in Chapter 1 section 1.3, are presented below in table 8.1, indicating in which chapter each activity was achieved.

Number	Activity	Chapters
1	To perform a literature review on social media, innovation, and performance with a focus on the firms' usage of social media for innovation and for achieving superior performance.	Chapter 2
2	To develop and propose a conceptual model demonstrating the impact of social media on innovation and on performance, and highlighting potential mediators in these relationships.	Chapter 3
3	To collect and analyse primary quantitative data through a survey in order to test the proposed model.	Chapter 4 Chapter 5
4	To collect and analyse primary qualitative data through a questionnaire to triangulate the results, and understand how and why social media impact innovation and performance.	Chapter 4 Chapter 6
5	To discuss the findings from the data analysis and validate the proposed research hypotheses.	Chapter 7
6	To present the theoretical and practical applications of the findings and suggest a path for further research in this domain.	Chapter 8

Table 8. 1: Meeting the Aim and Activities of this Thesis

- ***Activity 1:*** To perform a literature review on social media, innovation, and performance with a focus on the firms' usage of social media for innovation and for achieving superior performance.

  A comprehensive review of the literature was done in this study, discussing the importance of social media for firms in terms of innovation and achieving superior performance. Social media definitions were presented and the link to Big Data was explained. Different social media initiatives were discussed, highlighting how firms are using social media and for what purposes, and explaining how social media can be a source of knowledge. Different studies and experiences linking social media and innovation and social media and performance from different geographical and industrial perspectives were presented and critically analysed. However, a need was found for further research to investigate the link between social media initiatives and innovation and financial performance. Therefore, the current study addressed this gap and proposed a model on social media impact on innovation and on financial performance grounded by resource-based view theory.

- ***Activity 2:*** To develop and propose a conceptual model demonstrating the impact of social media on innovation and on performance, and highlighting potential mediators in these relationships.

A conceptual model was developed in chapter 3 as well as related hypotheses. Within the model, IT infrastructure, social capital, and organizational capital were proposed to play a mediating role in the relationships between the two social media initiatives – social media information collection and social media proactive market orientation – and innovation and financial performance. To assess the proposed model and test the developed hypotheses, an overview of methodologies was presented in chapter 4 in order to select the most appropriate one to conduct the empirical part of this research. This model (and hypotheses) was tested in chapter 5 using a two-stage structural equation modelling: factor analysis (exploratory and confirmatory) and structural modelling.

- ***Activity 3:*** To collect and analyse primary quantitative data through a survey in order to test the proposed model.

  The data collection method for the quantitative data was explained in chapter 4, and the data findings and analysis were presented in chapter 5. Different measures were presented confirming the reliability and validity of the data ahead of the hypotheses testing. Then, each hypothesis test was presented in detail. The final conclusion of the hypotheses tests indicated that 14 hypotheses were supported, while two hypotheses were rejected.

- ***Activity 4:*** To collect and analyse primary qualitative data through a questionnaire to triangulate the results, and understand how and why social media impact innovation and performance

  In chapter 4, the methodology for the qualitative data collection was explained, while the data findings and analysis were presented in chapter 6. To analyse the qualitative data, a thematic analysis was done, where initial codes were generated first, then themes were identified and defined. The final outcome of the qualitative data analysis resulted in 10 themes (marketing and advertisement, social media presence, customer support, information collection, market orientation, brand image, IT infrastructure, talent acquisition, performance, and innovation) that were important to explain how and why firms are using social media.

- ***Activity 5:*** To discuss the findings from the data analysis and validate the proposed research hypotheses.

  The findings of both the quantitative and qualitative data were discussed in chapter 7. The results of the hypotheses tests were discussed, where the results were supported through the

codes and themes identified by the qualitative data. The majority of the hypotheses were accepted and as a result, new insights emerged.

- ***Activity 6:*** To present the theoretical and practical applications of the findings and suggest a path for further research in this domain.

  Based on the discussions and the insights that emerged in chapter 7, the theoretical and practical contributions are presented in chapter 8 (the current chapter), which started by revisiting the aim and objectives of the thesis and identifying the main research findings. The chapter will conclude by stating the research limitations and providing directions for future research.

8.4 Theoretical Contribution

This study provides several important contributions from a theoretical point of view:

First, the primary contribution of this study lies in the creation of the links between both social media constructs considered in this study – social media information collection and social media proactive market orientation – and innovation and financial performance. The results indicate that acquiring knowledge from social media (through information collection and proactive market orientation) has a significant positive effect on innovation and financial performance.

Second, this study extends the scope of the resource-based view theory within the information system literature to consider social media, and more specifically, acquiring knowledge from social media, as a firm's resource enabling it to become more innovative and to achieve superior financial performance. This research employed RBV theory as a lens to support the link between social media initiatives and innovation, and between social media initiatives and financial performance. By providing a theoretical framework and an empirical validation, this research also adds to the literature of the RBV in the field of the information system, as it is one of the first studies to use this theory to investigate the impact of acquiring knowledge from social media on both innovation and financial performance.

Third, this research also contributes to the field of information system studies by proposing and testing the role of three mediators (IT infrastructure, social capital, and organizational capital) in the relationships between social media and innovation, and social media and financial performance. No previous studies have attempted to propose or test the role of these mediators within these relationships.

Fourth, this research contributes to the existing literature on information management by developing a conceptual model to assess the impact of social media on innovation and on financial

performance, and what mediators affect these relationships. It provides a theoretical representation and empirical investigation of the impact of acquiring knowledge from social media (through the initiatives considered in this study) on innovation and on financial performance. This will increase the interest within the information management field to address other social media initiatives and mediators impact on innovation and financial performance.

Finally, there was a need in literature for further empirical investigation on the impact of acquiring knowledge from social media on innovation and on financial performance. After presenting and testing the conceptual model, this research has contributed to literature by empirically investigating the impact of acquiring knowledge from social media on innovation and financial performance. Hence, this research is a contribution to the literature stating that using social media to collect information and to apply a proactive market orientation strategy will result in innovations and in superior financial performance.

8.5 Practical Contribution

After discussing the novelty of this research from a theoretical perspective, this section discusses the novelty of this research from a practical perspective. This study provides managers with a frame of reference to understand the impact of the knowledge acquired through social media on their firm's innovativeness and financial performance. The research findings offer the firm's management and the community of practitioners with a model for improving their innovativeness and their financial performance by collecting information from social media as well as applying a proactive market orientation strategy through it. This model can assist decision makers at the firm level understand the importance of investing in social media initiatives given the return of investment they would get through innovations and better financial performance.

This research alerts firms' management about the importance of acquiring knowledge from social media, and the impact this can have on their innovativeness and financial performance. This study found that firms are using social media more frequently and for different purposes such as information collection, marketing, brand image, recruitment, customer service and many more. The findings may motivate the firms to widen their use of social media and apply more advanced social media initiatives rather than use it for simple purposes or just have a social media profile for the purpose of having one. By seeing the impact that social media initiatives are having on innovation and financial performance, and how other firms are benefiting from social media, firms will be encouraged to take their social media usage to the next level.

Furthermore, this study provides social media managers and decision makers with a clear result indicating the most popular social media platform that firms are using, so that they can better decide

where to focus and allocate resources. The study showed that 86.67 % of firms focus on Facebook as the main social media platform they use.

The study alerts decision-makers and managers to the importance of having an advanced IT infrastructure in order to acquire knowledge from social media and benefit from it. The results showed that IT infrastructure plays an important role in linking social media to innovation and to financial performance. Such findings may support and justify IT managers' request to invest in the IT infrastructure at their firm since they can now show that such investment will have a valuable return, and a potentially positive impact on innovation and on financial performance.

Similarly, the study highlights the important role of organizational and social capital within the relationship between social media and innovation. As such, managers might be interested to further develop their structures, databases, documents, processes and other things that relate to organizational capital, as well as enrich their social capital in order to be in a better position to use social media for innovation purposes.

8.6 Research Limitations

Although the research has achieved its aim, and valuable findings emerged making theoretical and practical contributions, there were some limitations that are fully acknowledged by the researcher. Readers should be aware of the following limitations, and interpret what was presented in this thesis within the context of these limitations:

- This study employed a cross-sectional design, measuring all variables at a single point in time. As a result, it is difficult to identify which variable causes the changes on other variables, since that would need variables to be measured over at least two different periods. Hence, the ordering of the variables is based on theoretical arguments from the literature.
- The data was collected through surveys completed by a single informant from each firm. This might raise issues of potential measurement bias, although different measures were employed in order to reduce any potential bias in the study (questions orders were mixed up, and a trap question was added).
- The financial performance construct only asked about short term financial performance (one year) and was measured through questions asking respondents to compare certain financial values (ROI, sales growth) to their competitors. Although this measurement method is frequently used in literature (Wu, 2016; Del-Carmen et al., 2018; Tajvidi and Karami, 2017), a preferred measurement would have been through the exact ratios within the financial statement of a firm. However, this information is usually confidential for non-publicly listed

companies and is hard to obtain, as many companies consider this information as sensitive information that they are not willing to share.

- All respondents were from the United States and they volunteered to complete the survey through online panels (surveymonkey and qualtrics).

8.7 Future Research Directions

The research findings represent a rich foundation that can be built on in future research. Based on these findings, and on the research limitations, one can specify a number of areas that researchers in future may wish to consider:

- This research used a mixed-methods design to study the impact of social media on innovation and on financial performance and collected data through online surveys for this purpose. Future research can validate the impact of social media on innovation and on financial performance using different methods such as focus groups or case studies. Such methods will allow the researcher to understand in depth the processes applied at the firm's level in terms of knowledge acquisition from social media, innovation, and improving financial performance.
- Future research may test the model proposed in this research in a different country. This research tested the model in the United States which is a developed country. It would interesting to see how firms in developing countries, for example, are benefiting from social media, and compare that to the firms in developed countries.
- This research tested the model in over 20 industries. Further research may focus on specific industries in order to understand if social media usage has different impacts on innovation and financial performance depending on the industry.
- Two social media initiatives were studied in the research: social media information collection, and social media proactive market orientation. Future research may study the impact of other social media initiatives such as brand image, managerial and structural announcements, on innovation or on financial performance.
- This study tested the mediation role of IT infrastructure, social capital, and organizational capital. Future studies may investigate other mediators that might play a role in the relationships between social media, innovation, and financial performance.
- Future research can adopt a different sampling method and target publicly listed companies, which would allow accessing accurate financial performance measures through the financial statement of these companies made available to the public.

In summary, this study is the first to investigate the impact of social media information collection and social media proactive market orientation on both innovation and financial performance, testing the mediation role of IT infrastructure, social capital, and organizational capital within these relationships. The study provided five main findings. First, it showed that both social media initiatives – social media information collection and social media proactive market orientation - have a positive impact innovation. Second, it showed that both social media initiatives also have a positive impact on the financial performance of firms. Third, the study found that IT infrastructure plays a mediator role between both social media knowledge initiatives and both innovation and financial performance. Fourth, social capital was found to play a mediator role between both social media initiatives and innovation but not between those initiatives and financial performance. Finally, similar to social capital, organizational capital was found to play a mediator role between both social media initiatives and innovation, but not between these initiatives and financial performance.

The thesis also provided different theoretical and practical contributions. The theoretical contributions included: creating the links between social media knowledge acquisition and innovation and financial performance; extending the scope of the resource-based view to consider social media as a resource enabling firms to become more innovative and achieve superior financial performance; proposing and testing the role of three mediators (IT infrastructure, social capital, and organizational capital) in the relationships between social media and innovation/ financial performance; developing a conceptual model to assess the impact of social media knowledge acquisition on innovation and on financial performance; and contributing to literature by empirically testing the impact of social media knowledge acquisition on innovation and financial performance. The study also provided practical contributions that included: providing managers with a model to improve their innovativeness and financial performance; alerting firms' management about the importance of acquiring knowledge from social media; indicating that Facebook is the most used social media platform by firms; and highlighting the importance of having an advanced IT infrastructure as well as the important role of social capital and organizational capital.

Overall, the study provided interesting results that will hopefully serve to stimulate further work in the area of social media.

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Appendix A : SPSS Analysis Results

Run MATRIX procedure:

********** PROCESS Procedure for SPSS Release 2.16.3 **********

Written by Andrew F. Hayes, Ph.D. www.afhayes.com

****

```
Model = 4
  Y = Innov
  X = InfoCol
  M = ITinfra

Sample size
     155

**************************************************************************
Outcome: ITinfra

Model Summary
       R      R-sq       MSE         F       df1       df2         p
   .5306     .2815     .4681   59.9434    1.0000   153.0000     .0000

Model
          coeff         se         t         p      LLCI      ULCI
constant   2.2954     .2302    9.9733     .0000    1.8407    2.7501
InfoCol    .4397     .0568    7.7423     .0000     .3275     .5519

**************************************************************************
Outcome: Innov

Model Summary
       R      R-sq       MSE         F       df1       df2         p
   .6404     .4102     .4239   52.8491    2.0000   152.0000     .0000

Model
          coeff         se         t         p      LLCI      ULCI
constant   1.0600     .2814    3.7677     .0002     .5042    1.6159
ITinfra    .5418     .0769    7.0429     .0000     .3898     .6938
InfoCol    .1665     .0638    2.6118     .0099     .0406     .2925

************************** TOTAL EFFECT MODEL ****************************
Outcome: Innov

Model Summary
       R      R-sq       MSE         F       df1       df2         p
   .4666     .2177     .5586   42.5715    1.0000   153.0000     .0000

Model
          coeff         se         t         p      LLCI      ULCI
constant   2.3038     .2514    9.1633     .0000    1.8071    2.8005
InfoCol    .4048     .0620    6.5247     .0000     .2822     .5273

***************** TOTAL, DIRECT, AND INDIRECT EFFECTS ********************

Total effect of X on Y
   Effect        SE         t         p      LLCI      ULCI
   .4048     .0620    6.5247     .0000     .2822     .5273

Direct effect of X on Y
   Effect        SE         t         p      LLCI      ULCI
   .1665     .0638    2.6118     .0099     .0406     .2925

Indirect effect of X on Y
        Effect   Boot SE   BootLLCI   BootULCI
```

```
ITinfra     .2382     .0563     .1436     .3648

Partially standardized indirect effect of X on Y
         Effect    Boot SE   BootLLCI   BootULCI
ITinfra     .2829     .0581     .1834     .4123

Completely standardized indirect effect of X on Y
         Effect    Boot SE   BootLLCI   BootULCI
ITinfra     .2746     .0548     .1779     .3943

Ratio of indirect to total effect of X on Y
         Effect    Boot SE   BootLLCI   BootULCI
ITinfra     .5886     .1399     .3711     .9421

Ratio of indirect to direct effect of X on Y
         Effect    Boot SE   BootLLCI   BootULCI
ITinfra    1.4307   26.5304     .5753    9.7107

R-squared mediation effect size (R-sq_med)
         Effect    Boot SE   BootLLCI   BootULCI
ITinfra     .1912     .0513     .1014     .3004

Normal theory tests for indirect effect
    Effect        se         Z         p
     .2382     .0459    5.1862     .0000

******************** ANALYSIS NOTES AND WARNINGS *************************

Number of bootstrap samples for bias corrected bootstrap confidence intervals:
    5000

Level of confidence for all confidence intervals in output:
   95.00

NOTE: Kappa-squared is disabled from output as of version 2.16.

------ END MATRIX -----
```

```
Run MATRIX procedure:

************* PROCESS Procedure for SPSS Release 2.16.3 ******************

        Written by Andrew F. Hayes, Ph.D.       www.afhayes.com

**************************************************************************
```

```
Model = 4
  Y = Innov
  X = InfoCol
  M = SocCap

Sample size
     155

**************************************************************************
Outcome: SocCap

Model Summary
       R      R-sq       MSE         F       df1       df2         p
   .2479     .0615     .3946   10.0188    1.0000   153.0000     .0019

Model
          coeff         se         t         p      LLCI      ULCI
constant   3.6903     .2113   17.4629     .0000    3.2728    4.1077
InfoCol     .1650     .0521    3.1652     .0019     .0620     .2681

**************************************************************************
Outcome: Innov

Model Summary
       R      R-sq       MSE         F       df1       df2         p
   .6433     .4138     .4213   53.6456    2.0000   152.0000     .0000

Model
          coeff         se         t         p      LLCI      ULCI
constant    .1056     .3778     .2795     .7802    -.6407     .8519
SocCap      .5957     .0835    7.1309     .0000     .4306     .7607
InfoCol     .3065     .0556    5.5105     .0000     .1966     .4163

************************** TOTAL EFFECT MODEL ****************************
Outcome: Innov

Model Summary
       R      R-sq       MSE         F       df1       df2         p
   .4666     .2177     .5586   42.5715    1.0000   153.0000     .0000

Model
          coeff         se         t         p      LLCI      ULCI
constant   2.3038     .2514    9.1633     .0000    1.8071    2.8005
InfoCol     .4048     .0620    6.5247     .0000     .2822     .5273

***************** TOTAL, DIRECT, AND INDIRECT EFFECTS ********************

Total effect of X on Y
   Effect         SE         t         p      LLCI      ULCI
    .4048     .0620    6.5247     .0000     .2822     .5273

Direct effect of X on Y
   Effect         SE         t         p      LLCI      ULCI
    .3065     .0556    5.5105     .0000     .1966     .4163

Indirect effect of X on Y
        Effect   Boot SE   BootLLCI   BootULCI
```

```
SocCap     .0983     .0350     .0422     .1815

Partially standardized indirect effect of X on Y
        Effect    Boot SE   BootLLCI   BootULCI
SocCap     .1167     .0417     .0478     .2145

Completely standardized indirect effect of X on Y
        Effect    Boot SE   BootLLCI   BootULCI
SocCap     .1133     .0364     .0487     .1913

Ratio of indirect to total effect of X on Y
        Effect    Boot SE   BootLLCI   BootULCI
SocCap     .2429     .0934     .0965     .4651

Ratio of indirect to direct effect of X on Y
        Effect    Boot SE   BootLLCI   BootULCI
SocCap     .3208     .1942     .1068     .8694

R-squared mediation effect size (R-sq_med)
        Effect    Boot SE   BootLLCI   BootULCI
SocCap     .1006     .0322     .0475     .1765

Normal theory tests for indirect effect
    Effect        se         Z         p
     .0983     .0343    2.8696     .0041

******************** ANALYSIS NOTES AND WARNINGS *************************

Number of bootstrap samples for bias corrected bootstrap confidence intervals:
    5000

Level of confidence for all confidence intervals in output:
   95.00

NOTE: Kappa-squared is disabled from output as of version 2.16.

------ END MATRIX -----
```

```
Run MATRIX procedure:

************* PROCESS Procedure for SPSS Release 2.16.3 *****************

        Written by Andrew F. Hayes, Ph.D.       www.afhayes.com

**************************************************************************
```

```
Model = 4
  Y = Innov
  X = InfoCol
  M = OrgaCap

Sample size
     155

**************************************************************************
Outcome: OrgaCap

Model Summary
       R      R-sq       MSE         F       df1       df2         p
   .2790     .0778     .8358   12.9146    1.0000   153.0000     .0004

Model
          coeff         se         t         p      LLCI      ULCI
constant   2.6848     .3076    8.7294     .0000    2.0772    3.2924
InfoCol    .2727     .0759    3.5937     .0004     .1228     .4226

**************************************************************************
Outcome: Innov

Model Summary
       R      R-sq       MSE         F       df1       df2         p
   .6304     .3974     .4331   50.1225    2.0000   152.0000     .0000

Model
          coeff         se         t         p      LLCI      ULCI
constant   1.2518     .2710    4.6201     .0000     .7165    1.7872
OrgaCap    .3918     .0582    6.7333     .0000     .2769     .5068
InfoCol    .2979     .0569    5.2372     .0000     .1855     .4103

************************** TOTAL EFFECT MODEL ****************************
Outcome: Innov

Model Summary
       R      R-sq       MSE         F       df1       df2         p
   .4666     .2177     .5586   42.5715    1.0000   153.0000     .0000

Model
          coeff         se         t         p      LLCI      ULCI
constant   2.3038     .2514    9.1633     .0000    1.8071    2.8005
InfoCol    .4048     .0620    6.5247     .0000     .2822     .5273

***************** TOTAL, DIRECT, AND INDIRECT EFFECTS ********************

Total effect of X on Y
   Effect         SE         t         p      LLCI      ULCI
   .4048     .0620    6.5247     .0000     .2822     .5273

Direct effect of X on Y
   Effect         SE         t         p      LLCI      ULCI
   .2979     .0569    5.2372     .0000     .1855     .4103

Indirect effect of X on Y
        Effect   Boot SE   BootLLCI   BootULCI
```

```
OrgaCap     .1069     .0376     .0484     .2020

Partially standardized indirect effect of X on Y
          Effect    Boot SE   BootLLCI   BootULCI
OrgaCap     .1269     .0449     .0561     .2402

Completely standardized indirect effect of X on Y
          Effect    Boot SE   BootLLCI   BootULCI
OrgaCap     .1232     .0402     .0584     .2214

Ratio of indirect to total effect of X on Y
          Effect    Boot SE   BootLLCI   BootULCI
OrgaCap     .2640     .1050     .1141     .5491

Ratio of indirect to direct effect of X on Y
          Effect    Boot SE   BootLLCI   BootULCI
OrgaCap     .3587     .2611     .1288    1.2176

R-squared mediation effect size (R-sq_med)
          Effect    Boot SE   BootLLCI   BootULCI
OrgaCap     .1089     .0342     .0514     .1881

Normal theory tests for indirect effect
    Effect        se         Z         p
     .1069     .0340    3.1435     .0017

******************** ANALYSIS NOTES AND WARNINGS *************************

Number of bootstrap samples for bias corrected bootstrap confidence intervals:
    5000

Level of confidence for all confidence intervals in output:
   95.00

NOTE: Kappa-squared is disabled from output as of version 2.16.

------ END MATRIX -----
```

```
Run MATRIX procedure:

************* PROCESS Procedure for SPSS Release 2.16.3 *****************

        Written by Andrew F. Hayes, Ph.D.       www.afhayes.com

**************************************************************************
```

```
Model = 4
  Y = Innov
  X = ProMaOr
  M = ITinfra

Sample size
     155

**************************************************************************
Outcome: ITinfra

Model Summary
       R      R-sq       MSE         F       df1       df2         p
   .5921     .3506     .4230   82.6100    1.0000   153.0000     .0000

Model
          coeff         se         t         p      LLCI      ULCI
constant   1.7884     .2516    7.1071     .0000    1.2913    2.2856
ProMaOr     .5487     .0604    9.0890     .0000     .4294     .6680

**************************************************************************
Outcome: Innov

Model Summary
       R      R-sq       MSE         F       df1       df2         p
   .6449     .4158     .4198   54.1028    2.0000   152.0000     .0000

Model
          coeff         se         t         p      LLCI      ULCI
constant    .9613     .2891    3.3250     .0011     .3901    1.5325
ITinfra     .5105     .0805    6.3391     .0000     .3514     .6696
ProMaOr     .2159     .0746    2.8926     .0044     .0684     .3633

************************** TOTAL EFFECT MODEL ****************************
Outcome: Innov

Model Summary
       R      R-sq       MSE         F       df1       df2         p
   .5113     .2614     .5273   54.1526    1.0000   153.0000     .0000

Model
          coeff         se         t         p      LLCI      ULCI
constant   1.8743     .2810    6.6714     .0000    1.3193    2.4294
ProMaOr     .4960     .0674    7.3588     .0000     .3628     .6292

***************** TOTAL, DIRECT, AND INDIRECT EFFECTS ********************

Total effect of X on Y
   Effect        SE         t         p      LLCI      ULCI
    .4960     .0674    7.3588     .0000     .3628     .6292

Direct effect of X on Y
   Effect        SE         t         p      LLCI      ULCI
    .2159     .0746    2.8926     .0044     .0684     .3633

Indirect effect of X on Y
        Effect   Boot SE   BootLLCI   BootULCI
```

```
ITinfra     .2801     .0634     .1768     .4253

Partially standardized indirect effect of X on Y
          Effect    Boot SE   BootLLCI   BootULCI
ITinfra     .3326     .0647     .2204     .4704

Completely standardized indirect effect of X on Y
          Effect    Boot SE   BootLLCI   BootULCI
ITinfra     .2888     .0585     .1891     .4203

Ratio of indirect to total effect of X on Y
          Effect    Boot SE   BootLLCI   BootULCI
ITinfra     .5648     .1321     .3495     .8746

Ratio of indirect to direct effect of X on Y
          Effect    Boot SE   BootLLCI   BootULCI
ITinfra    1.2977    6.3421     .5304    6.3345

R-squared mediation effect size (R-sq_med)
          Effect    Boot SE   BootLLCI   BootULCI
ITinfra     .2293     .0557     .1318     .3501

Normal theory tests for indirect effect
    Effect        se         Z         p
     .2801     .0541    5.1784     .0000

******************** ANALYSIS NOTES AND WARNINGS *************************

Number of bootstrap samples for bias corrected bootstrap confidence intervals:
    5000

Level of confidence for all confidence intervals in output:
   95.00

NOTE: Kappa-squared is disabled from output as of version 2.16.

------ END MATRIX -----
```

```
Run MATRIX procedure:

************* PROCESS Procedure for SPSS Release 2.16.3 *****************

        Written by Andrew F. Hayes, Ph.D.       www.afhayes.com

**************************************************************************
```

```
Model = 4
  Y = Innov
  X = ProMaOr
  M = SocCap

Sample size
     155

**************************************************************************
Outcome: SocCap

Model Summary
       R      R-sq       MSE         F       df1       df2         p
   .3810     .1452     .3594   25.9826    1.0000   153.0000     .0000

Model
          coeff         se         t         p      LLCI      ULCI
constant   3.1833     .2319   13.7243     .0000    2.7250    3.6415
ProMaOr     .2836     .0556    5.0973     .0000     .1737     .3936

**************************************************************************
Outcome: Innov

Model Summary
       R      R-sq       MSE         F       df1       df2         p
   .6361     .4046     .4279   51.6487    2.0000   152.0000     .0000

Model
          coeff         se         t         p      LLCI      ULCI
constant    .1765     .3780     .4669     .6412    -.5703     .9234
SocCap      .5334     .0882    6.0464     .0000     .3591     .7076
ProMaOr     .3447     .0657    5.2494     .0000     .2150     .4745

************************** TOTAL EFFECT MODEL ****************************
Outcome: Innov

Model Summary
       R      R-sq       MSE         F       df1       df2         p
   .5113     .2614     .5273   54.1526    1.0000   153.0000     .0000

Model
          coeff         se         t         p      LLCI      ULCI
constant   1.8743     .2810    6.6714     .0000    1.3193    2.4294
ProMaOr     .4960     .0674    7.3588     .0000     .3628     .6292

***************** TOTAL, DIRECT, AND INDIRECT EFFECTS ********************

Total effect of X on Y
   Effect        SE         t         p      LLCI      ULCI
    .4960     .0674    7.3588     .0000     .3628     .6292

Direct effect of X on Y
   Effect        SE         t         p      LLCI      ULCI
    .3447     .0657    5.2494     .0000     .2150     .4745

Indirect effect of X on Y
        Effect   Boot SE   BootLLCI   BootULCI
```

```
SocCap     .1513     .0521     .0645     .2711

Partially standardized indirect effect of X on Y
        Effect    Boot SE   BootLLCI   BootULCI
SocCap     .1796     .0614     .0738     .3164

Completely standardized indirect effect of X on Y
        Effect    Boot SE   BootLLCI   BootULCI
SocCap     .1559     .0493     .0677     .2609

Ratio of indirect to total effect of X on Y
        Effect    Boot SE   BootLLCI   BootULCI
SocCap     .3050     .1202     .1153     .5738

Ratio of indirect to direct effect of X on Y
        Effect    Boot SE   BootLLCI   BootULCI
SocCap     .4389     .3430     .1303    1.3462

R-squared mediation effect size (R-sq_med)
        Effect    Boot SE   BootLLCI   BootULCI
SocCap     .1535     .0394     .0909     .2472

Normal theory tests for indirect effect
    Effect        se         Z         p
     .1513     .0391    3.8664     .0001

******************** ANALYSIS NOTES AND WARNINGS *************************

Number of bootstrap samples for bias corrected bootstrap confidence intervals:
    5000

Level of confidence for all confidence intervals in output:
   95.00

NOTE: Kappa-squared is disabled from output as of version 2.16.

------ END MATRIX -----
```

```
Run MATRIX procedure:

************* PROCESS Procedure for SPSS Release 2.16.3 *****************

        Written by Andrew F. Hayes, Ph.D.       www.afhayes.com

**************************************************************************
```

```
Model = 4
  Y = Innov
  X = ProMaOr
  M = OrgaCap

Sample size
     155

**************************************************************************
Outcome: OrgaCap

Model Summary
       R      R-sq       MSE         F       df1       df2         p
   .3323     .1104     .8063   18.9856    1.0000   153.0000     .0000

Model
          coeff         se         t         p      LLCI      ULCI
constant   2.2773     .3474    6.5549     .0000    1.5909    2.9636
ProMaOr     .3632     .0833    4.3572     .0000     .1985     .5278

**************************************************************************
Outcome: Innov

Model Summary
       R      R-sq       MSE         F       df1       df2         p
   .6428     .4132     .4217   53.5058    2.0000   152.0000     .0000

Model
          coeff         se         t         p      LLCI      ULCI
constant   1.0396     .2844    3.6560     .0004     .4778    1.6014
OrgaCap     .3665     .0585    6.2692     .0000     .2510     .4821
ProMaOr     .3629     .0639    5.6782     .0000     .2366     .4892

************************** TOTAL EFFECT MODEL ****************************
Outcome: Innov

Model Summary
       R      R-sq       MSE         F       df1       df2         p
   .5113     .2614     .5273   54.1526    1.0000   153.0000     .0000

Model
          coeff         se         t         p      LLCI      ULCI
constant   1.8743     .2810    6.6714     .0000    1.3193    2.4294
ProMaOr     .4960     .0674    7.3588     .0000     .3628     .6292

***************** TOTAL, DIRECT, AND INDIRECT EFFECTS ********************

Total effect of X on Y
   Effect        SE         t         p      LLCI      ULCI
    .4960     .0674    7.3588     .0000     .3628     .6292

Direct effect of X on Y
   Effect        SE         t         p      LLCI      ULCI
    .3629     .0639    5.6782     .0000     .2366     .4892

Indirect effect of X on Y
        Effect   Boot SE   BootLLCI   BootULCI
```

```
OrgaCap     .1331     .0458     .0639     .2545

Partially standardized indirect effect of X on Y
          Effect    Boot SE   BootLLCI   BootULCI
OrgaCap     .1581     .0536     .0766     .2982

Completely standardized indirect effect of X on Y
          Effect    Boot SE   BootLLCI   BootULCI
OrgaCap     .1372     .0437     .0671     .2424

Ratio of indirect to total effect of X on Y
          Effect    Boot SE   BootLLCI   BootULCI
OrgaCap     .2684     .1022     .1172     .5227

Ratio of indirect to direct effect of X on Y
          Effect    Boot SE   BootLLCI   BootULCI
OrgaCap     .3668     .2632     .1327    1.0953

R-squared mediation effect size (R-sq_med)
          Effect    Boot SE   BootLLCI   BootULCI
OrgaCap     .1369     .0390     .0737     .2280

Normal theory tests for indirect effect
    Effect        se         Z         p
     .1331     .0375    3.5476     .0004

******************** ANALYSIS NOTES AND WARNINGS *************************

Number of bootstrap samples for bias corrected bootstrap confidence intervals:
    5000

Level of confidence for all confidence intervals in output:
   95.00

NOTE: Kappa-squared is disabled from output as of version 2.16.

------ END MATRIX -----
```

```
Run MATRIX procedure:

************* PROCESS Procedure for SPSS Release 2.16.3 *****************

        Written by Andrew F. Hayes, Ph.D.       www.afhayes.com

**************************************************************************
```

```
Model = 4
  Y = Performa
  X = InfoCol
  M = ITinfra

Sample size
     155

**************************************************************************
Outcome: ITinfra

Model Summary
       R      R-sq       MSE         F       df1       df2         p
   .5306     .2815     .4681   59.9434    1.0000   153.0000     .0000

Model
          coeff         se         t         p      LLCI      ULCI
constant   2.2954     .2302    9.9733     .0000    1.8407    2.7501
InfoCol    .4397     .0568    7.7423     .0000     .3275     .5519

**************************************************************************
Outcome: Performa

Model Summary
       R      R-sq       MSE         F       df1       df2         p
   .6211     .3857     .4609   47.7202    2.0000   152.0000     .0000

Model
          coeff         se         t         p      LLCI      ULCI
constant   1.1219     .2934    3.8241     .0002     .5423    1.7016
ITinfra    .4185     .0802    5.2161     .0000     .2600     .5770
InfoCol    .2815     .0665    4.2344     .0000     .1502     .4129

************************* TOTAL EFFECT MODEL ****************************
Outcome: Performa

Model Summary
       R      R-sq       MSE         F       df1       df2         p
   .5251     .2758     .5399   58.2546    1.0000   153.0000     .0000

Model
          coeff         se         t         p      LLCI      ULCI
constant   2.0825     .2472    8.4249     .0000    1.5941    2.5708
InfoCol    .4655     .0610    7.6325     .0000     .3450     .5860

***************** TOTAL, DIRECT, AND INDIRECT EFFECTS ********************

Total effect of X on Y
   Effect         SE         t         p      LLCI      ULCI
   .4655     .0610    7.6325     .0000     .3450     .5860

Direct effect of X on Y
   Effect         SE         t         p      LLCI      ULCI
   .2815     .0665    4.2344     .0000     .1502     .4129

Indirect effect of X on Y
        Effect   Boot SE   BootLLCI   BootULCI
```

```
ITinfra     .1840     .0564     .0865     .3059

Partially standardized indirect effect of X on Y
          Effect    Boot SE   BootLLCI   BootULCI
ITinfra     .2138     .0628     .1065     .3486

Completely standardized indirect effect of X on Y
          Effect    Boot SE   BootLLCI   BootULCI
ITinfra     .2076     .0602     .1053     .3412

Ratio of indirect to total effect of X on Y
          Effect    Boot SE   BootLLCI   BootULCI
ITinfra     .3952     .1271     .1973     .6983

Ratio of indirect to direct effect of X on Y
          Effect    Boot SE   BootLLCI   BootULCI
ITinfra     .6536    1.8507     .2447    2.3071

R-squared mediation effect size (R-sq_med)
          Effect    Boot SE   BootLLCI   BootULCI
ITinfra     .2033     .0539     .1085     .3170

Normal theory tests for indirect effect
    Effect        se         Z         p
     .1840     .0428    4.3013     .0000

******************** ANALYSIS NOTES AND WARNINGS *************************

Number of bootstrap samples for bias corrected bootstrap confidence intervals:
    5000

Level of confidence for all confidence intervals in output:
   95.00

NOTE: Kappa-squared is disabled from output as of version 2.16.

------ END MATRIX -----
```

```
Run MATRIX procedure:

************* PROCESS Procedure for SPSS Release 2.16.3 *****************

        Written by Andrew F. Hayes, Ph.D.       www.afhayes.com

**************************************************************************
```

```
Model = 4
  Y = Performa
  X = InfoCol
  M = SocCap

Sample size
     155

**************************************************************************
Outcome: SocCap

Model Summary
       R      R-sq       MSE         F       df1       df2         p
   .2479     .0615     .3946   10.0188    1.0000   153.0000     .0019

Model
          coeff         se         t         p      LLCI      ULCI
constant   3.6903     .2113   17.4629     .0000    3.2728    4.1077
InfoCol    .1650     .0521    3.1652     .0019     .0620     .2681

**************************************************************************
Outcome: Performa

Model Summary
       R      R-sq       MSE         F       df1       df2         p
   .5595     .3130     .5155   34.6286    2.0000   152.0000     .0000

Model
          coeff         se         t         p      LLCI      ULCI
constant   1.1034     .4179    2.6406     .0091     .2778    1.9290
SocCap     .2653     .0924    2.8713     .0047     .0828     .4479
InfoCol    .4217     .0615    6.8554     .0000     .3002     .5433

************************** TOTAL EFFECT MODEL ****************************
Outcome: Performa

Model Summary
       R      R-sq       MSE         F       df1       df2         p
   .5251     .2758     .5399   58.2546    1.0000   153.0000     .0000

Model
          coeff         se         t         p      LLCI      ULCI
constant   2.0825     .2472    8.4249     .0000    1.5941    2.5708
InfoCol    .4655     .0610    7.6325     .0000     .3450     .5860

***************** TOTAL, DIRECT, AND INDIRECT EFFECTS ********************

Total effect of X on Y
   Effect        SE         t         p      LLCI      ULCI
   .4655     .0610    7.6325     .0000     .3450     .5860

Direct effect of X on Y
   Effect        SE         t         p      LLCI      ULCI
   .4217     .0615    6.8554     .0000     .3002     .5433

Indirect effect of X on Y
       Effect   Boot SE   BootLLCI   BootULCI
```

```
SocCap     .0438     .0283     .0028     .1189

Partially standardized indirect effect of X on Y
        Effect    Boot SE   BootLLCI   BootULCI
SocCap     .0509     .0338     .0031     .1431

Completely standardized indirect effect of X on Y
        Effect    Boot SE   BootLLCI   BootULCI
SocCap     .0494     .0310     .0030     .1288

Ratio of indirect to total effect of X on Y
        Effect    Boot SE   BootLLCI   BootULCI
SocCap     .0941     .0667     .0046     .2748

Ratio of indirect to direct effect of X on Y
        Effect    Boot SE   BootLLCI   BootULCI
SocCap     .1038     .0920     .0046     .3789

R-squared mediation effect size (R-sq_med)
        Effect    Boot SE   BootLLCI   BootULCI
SocCap     .0633     .0313     .0137     .1387

Normal theory tests for indirect effect
    Effect        se         Z         p
     .0438     .0211    2.0707     .0384

******************** ANALYSIS NOTES AND WARNINGS *************************

Number of bootstrap samples for bias corrected bootstrap confidence intervals:
    5000

Level of confidence for all confidence intervals in output:
   95.00

NOTE: Kappa-squared is disabled from output as of version 2.16.

------ END MATRIX -----
```

```
Run MATRIX procedure:

************* PROCESS Procedure for SPSS Release 2.16.3 *****************

        Written by Andrew F. Hayes, Ph.D.       www.afhayes.com

**************************************************************************
```

```
Model = 4
  Y = Performa
  X = InfoCol
  M = OrgaCap

Sample size
     155

**************************************************************************
Outcome: OrgaCap

Model Summary
       R       R-sq        MSE          F        df1        df2          p
   .2790      .0778      .8358    12.9146     1.0000   153.0000      .0004

Model
          coeff         se          t          p       LLCI       ULCI
constant   2.6848      .3076     8.7294      .0000     2.0772     3.2924
InfoCol    .2727      .0759     3.5937      .0004      .1228      .4226

**************************************************************************
Outcome: Performa

Model Summary
       R       R-sq        MSE          F        df1        df2          p
   .5503      .3028      .5231    33.0108     2.0000   152.0000      .0000

Model
          coeff         se          t          p       LLCI       ULCI
constant   1.6654      .2978     5.5921      .0000     1.0770     2.2537
OrgaCap    .1554      .0640     2.4292      .0163      .0290      .2817
InfoCol    .4231      .0625     6.7681      .0000      .2996      .5467

************************* TOTAL EFFECT MODEL ****************************
Outcome: Performa

Model Summary
       R       R-sq        MSE          F        df1        df2          p
   .5251      .2758      .5399    58.2546     1.0000   153.0000      .0000

Model
          coeff         se          t          p       LLCI       ULCI
constant   2.0825      .2472     8.4249      .0000     1.5941     2.5708
InfoCol    .4655      .0610     7.6325      .0000      .3450      .5860

***************** TOTAL, DIRECT, AND INDIRECT EFFECTS ********************

Total effect of X on Y
   Effect         SE          t          p       LLCI       ULCI
   .4655      .0610     7.6325      .0000      .3450      .5860

Direct effect of X on Y
   Effect         SE          t          p       LLCI       ULCI
   .4231      .0625     6.7681      .0000      .2996      .5467

Indirect effect of X on Y
        Effect   Boot SE   BootLLCI   BootULCI
```

```
OrgaCap     .0424     .0278     .0034     .1173

Partially standardized indirect effect of X on Y
          Effect    Boot SE   BootLLCI   BootULCI
OrgaCap     .0492     .0325     .0038     .1366

Completely standardized indirect effect of X on Y
          Effect    Boot SE   BootLLCI   BootULCI
OrgaCap     .0478     .0307     .0039     .1293

Ratio of indirect to total effect of X on Y
          Effect    Boot SE   BootLLCI   BootULCI
OrgaCap     .0910     .0629     .0060     .2570

Ratio of indirect to direct effect of X on Y
          Effect    Boot SE   BootLLCI   BootULCI
OrgaCap     .1001     .0854     .0060     .3460

R-squared mediation effect size (R-sq_med)
          Effect    Boot SE   BootLLCI   BootULCI
OrgaCap     .0656     .0347     .0148     .1513

Normal theory tests for indirect effect
    Effect        se         Z         p
     .0424     .0216    1.9611     .0499

******************** ANALYSIS NOTES AND WARNINGS *************************

Number of bootstrap samples for bias corrected bootstrap confidence intervals:
    5000

Level of confidence for all confidence intervals in output:
   95.00

NOTE: Kappa-squared is disabled from output as of version 2.16.

------ END MATRIX -----
```

```
Run MATRIX procedure:

************* PROCESS Procedure for SPSS Release 2.16.3 *****************

        Written by Andrew F. Hayes, Ph.D.       www.afhayes.com

**************************************************************************
```

```
Model = 4
  Y = Performa
  X = ProMaOr
  M = ITinfra

Sample size
     155

**************************************************************************
Outcome: ITinfra

Model Summary
       R      R-sq       MSE         F       df1       df2         p
   .5921     .3506     .4230   82.6100    1.0000   153.0000     .0000

Model
          coeff         se         t         p      LLCI      ULCI
constant   1.7884     .2516    7.1071     .0000    1.2913    2.2856
ProMaOr     .5487     .0604    9.0890     .0000     .4294     .6680

**************************************************************************
Outcome: Performa

Model Summary
       R      R-sq       MSE         F       df1       df2         p
   .5925     .3510     .4870   41.1067    2.0000   152.0000     .0000

Model
          coeff         se         t         p      LLCI      ULCI
constant   1.1445     .3114    3.6755     .0003     .5293    1.7597
ITinfra     .4459     .0867    5.1412     .0000     .2746     .6173
ProMaOr     .2391     .0804    2.9742     .0034     .0803     .3979

************************* TOTAL EFFECT MODEL ****************************
Outcome: Performa

Model Summary
       R      R-sq       MSE         F       df1       df2         p
   .4880     .2382     .5679   47.8304    1.0000   153.0000     .0000

Model
          coeff         se         t         p      LLCI      ULCI
constant   1.9420     .2916    6.6607     .0000    1.3660    2.5180
ProMaOr     .4838     .0699    6.9160     .0000     .3456     .6220

***************** TOTAL, DIRECT, AND INDIRECT EFFECTS ********************

Total effect of X on Y
   Effect        SE         t         p      LLCI      ULCI
    .4838     .0699    6.9160     .0000     .3456     .6220

Direct effect of X on Y
   Effect        SE         t         p      LLCI      ULCI
    .2391     .0804    2.9742     .0034     .0803     .3979

Indirect effect of X on Y
        Effect   Boot SE   BootLLCI   BootULCI
```

```
ITinfra     .2447     .0636     .1360     .3886

Partially standardized indirect effect of X on Y
          Effect    Boot SE   BootLLCI   BootULCI
ITinfra     .2843     .0707     .1608     .4456

Completely standardized indirect effect of X on Y
          Effect    Boot SE   BootLLCI   BootULCI
ITinfra     .2469     .0622     .1403     .3902

Ratio of indirect to total effect of X on Y
          Effect    Boot SE   BootLLCI   BootULCI
ITinfra     .5058     .1629     .2741     .9308

Ratio of indirect to direct effect of X on Y
          Effect    Boot SE   BootLLCI   BootULCI
ITinfra    1.0236   29.9745     .3584    7.9475

R-squared mediation effect size (R-sq_med)
          Effect    Boot SE   BootLLCI   BootULCI
ITinfra     .2004     .0578     .0988     .3258

Normal theory tests for indirect effect
    Effect        se         Z         p
     .2447     .0549    4.4546     .0000

******************** ANALYSIS NOTES AND WARNINGS *************************

Number of bootstrap samples for bias corrected bootstrap confidence intervals:
    5000

Level of confidence for all confidence intervals in output:
   95.00

NOTE: Kappa-squared is disabled from output as of version 2.16.

------ END MATRIX -----
```

```
Run MATRIX procedure:

************* PROCESS Procedure for SPSS Release 2.16.3 *****************

        Written by Andrew F. Hayes, Ph.D.       www.afhayes.com

**************************************************************************
```

```
Model = 4
  Y = Performa
  X = ProMaOr
  M = SocCap

Sample size
     155

**************************************************************************
Outcome: SocCap

Model Summary
        R       R-sq        MSE          F        df1        df2          p
     .3810      .1452      .3594    25.9826     1.0000   153.0000      .0000

Model
          coeff         se          t          p       LLCI       ULCI
constant   3.1833      .2319    13.7243      .0000     2.7250     3.6415
ProMaOr     .2836      .0556     5.0973      .0000      .1737      .3936

**************************************************************************
Outcome: Performa

Model Summary
        R       R-sq        MSE          F        df1        df2          p
     .5082      .2583      .5565    26.4693     2.0000   152.0000      .0000

Model
          coeff         se          t          p       LLCI       ULCI
constant   1.2912      .4311     2.9951      .0032      .4395     2.1430
SocCap      .2044      .1006     2.0322      .0439      .0057      .4032
ProMaOr     .4258      .0749     5.6851      .0000      .2778      .5737

************************* TOTAL EFFECT MODEL ****************************
Outcome: Performa

Model Summary
        R       R-sq        MSE          F        df1        df2          p
     .4880      .2382      .5679    47.8304     1.0000   153.0000      .0000

Model
          coeff         se          t          p       LLCI       ULCI
constant   1.9420      .2916     6.6607      .0000     1.3660     2.5180
ProMaOr     .4838      .0699     6.9160      .0000      .3456      .6220

***************** TOTAL, DIRECT, AND INDIRECT EFFECTS ********************

Total effect of X on Y
    Effect         SE          t          p       LLCI       ULCI
     .4838      .0699     6.9160      .0000      .3456      .6220

Direct effect of X on Y
    Effect         SE          t          p       LLCI       ULCI
     .4258      .0749     5.6851      .0000      .2778      .5737

Indirect effect of X on Y
         Effect   Boot SE   BootLLCI   BootULCI
```

```
SocCap     .0580     .0481    -.0331     .1599

Partially standardized indirect effect of X on Y
        Effect    Boot SE   BootLLCI   BootULCI
SocCap     .0674     .0575    -.0391     .1941

Completely standardized indirect effect of X on Y
        Effect    Boot SE   BootLLCI   BootULCI
SocCap     .0585     .0479    -.0337     .1580

Ratio of indirect to total effect of X on Y
        Effect    Boot SE   BootLLCI   BootULCI
SocCap     .1199     .1156    -.0731     .4036

Ratio of indirect to direct effect of X on Y
        Effect    Boot SE   BootLLCI   BootULCI
SocCap     .1362     .1990    -.0681     .6767

R-squared mediation effect size (R-sq_med)
        Effect    Boot SE   BootLLCI   BootULCI
SocCap     .0805     .0359     .0168     .1597

Normal theory tests for indirect effect
    Effect        se         Z         p
     .0580     .0312    1.8571     .0633

******************** ANALYSIS NOTES AND WARNINGS *************************

Number of bootstrap samples for bias corrected bootstrap confidence intervals:
    5000

Level of confidence for all confidence intervals in output:
   95.00

NOTE: Kappa-squared is disabled from output as of version 2.16.

------ END MATRIX -----
```

```
Run MATRIX procedure:

************* PROCESS Procedure for SPSS Release 2.16.3 *****************

        Written by Andrew F. Hayes, Ph.D.       www.afhayes.com

**************************************************************************
```

```
Model = 4
   Y = Performa
   X = ProMaOr
   M = OrgaCap

Sample size
      155

**************************************************************************
Outcome: OrgaCap

Model Summary
        R       R-sq        MSE          F        df1        df2          p
     .3323      .1104      .8063    18.9856     1.0000   153.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     2.2773      .3474     6.5549      .0000     1.5909     2.9636
ProMaOr       .3632      .0833     4.3572      .0000      .1985      .5278

**************************************************************************
Outcome: Performa

Model Summary
        R       R-sq        MSE          F        df1        df2          p
     .5108      .2609      .5546    26.8333     2.0000   152.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     1.6116      .3261     4.9423      .0000      .9673     2.2558
OrgaCap       .1451      .0670     2.1644      .0320      .0126      .2776
ProMaOr       .4311      .0733     5.8820      .0000      .2863      .5759

************************** TOTAL EFFECT MODEL ****************************
Outcome: Performa

Model Summary
        R       R-sq        MSE          F        df1        df2          p
     .4880      .2382      .5679    47.8304     1.0000   153.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     1.9420      .2916     6.6607      .0000     1.3660     2.5180
ProMaOr       .4838      .0699     6.9160      .0000      .3456      .6220

***************** TOTAL, DIRECT, AND INDIRECT EFFECTS ********************

Total effect of X on Y
    Effect         SE          t          p       LLCI       ULCI
     .4838      .0699     6.9160      .0000      .3456      .6220

Direct effect of X on Y
    Effect         SE          t          p       LLCI       ULCI
     .4311      .0733     5.8820      .0000      .2863      .5759

Indirect effect of X on Y
          Effect   Boot SE   BootLLCI   BootULCI
```

```
OrgaCap     .0527     .0357    -.0081     .1361

Partially standardized indirect effect of X on Y
         Effect    Boot SE   BootLLCI   BootULCI
OrgaCap     .0612     .0419    -.0099     .1580

Completely standardized indirect effect of X on Y
         Effect    Boot SE   BootLLCI   BootULCI
OrgaCap     .0532     .0351    -.0080     .1326

Ratio of indirect to total effect of X on Y
         Effect    Boot SE   BootLLCI   BootULCI
OrgaCap     .1089     .0824    -.0172     .3206

Ratio of indirect to direct effect of X on Y
         Effect    Boot SE   BootLLCI   BootULCI
OrgaCap     .1223     .1239    -.0169     .4720

R-squared mediation effect size (R-sq_med)
         Effect    Boot SE   BootLLCI   BootULCI
OrgaCap     .0699     .0333     .0177     .1535

Normal theory tests for indirect effect
    Effect        se         Z         p
     .0527     .0278    1.8987     .0576

******************** ANALYSIS NOTES AND WARNINGS *************************

Number of bootstrap samples for bias corrected bootstrap confidence intervals:
    5000

Level of confidence for all confidence intervals in output:
   95.00

NOTE: Kappa-squared is disabled from output as of version 2.16.

------ END MATRIX -----
```

Appendix B: Quantitative Survey Questions

- **Screening Questions**

    1. Does your company use social media, as in having pages on one or more of Facebook/twitter/Instagram or any other social media platform?

    2. Are you aware of how your company uses social media and for what purposes?

- **Trap Question**

1. Please select Somewhat Agree as an answer for this question.

- **Performance**

    1. Our company's ROI (return on investment) is better than our competitors' over the last year. (overall investment)
    2. Our company's profitability is better than our competitors' over the last year.
    3. Our company's sales growth is better than our competitors' over the last year.
    4. Our company's market share is better than our competitors' over the last year.

- **Innovation**

    1. Our company often develops new products and services that are accepted by the market.
    2. Our company can often launch new products or services faster than our competitors.
    3. Our company always develops novel skills for transforming old products into new ones.
    4. Our company always acquires new skills or equipment to improve the manufacturing operation or service process.
    5. Our company can develop more efficient manufacturing process or operation procedure.

- **Social Media Proactive Market Orientation**

    1. We help customers anticipate developments in the markets using social media.
    2. We continuously try to discover additional needs of our customers of which they are unaware using social media.
    3. We innovate using social media even at the risk of rendering our products obsolete.
    4. We search for opportunities using social media in areas where customers have difficulty expressing their needs.

- **Social Media Information Collection**

    1. Our company has a process for continuously collecting information from customers using social media.
    2. Our company has a process for continuously collecting information about competitor activities using social media.
    3. Our company has a process for continuously collecting information from suppliers using social media.
    4. Our company has a process for continuously collecting information from intermediaries using social media.

- **Social Capital**

1. Our employees are skilled at collaborating with each other to diagnose and solve problems.
2. Our employees partner with customers, suppliers, alliance partners, etc., to develop solutions.
3. Our employees interact and exchange ideas with people from different areas of the company.
4. Our employees share information and learn from one another.

- **Organizational Capital**
    1. Our company uses patents and licenses as a way to store knowledge.
    2. Much of our company's knowledge is contained in manuals, databases, etc.
    3. Our company's culture (stories, rituals) contains valuable ideas, ways of doing business, etc.
    4. Our company embeds much of its knowledge and information in structures, systems, and processes.
- **IT Infrastructure**
    1. The technology infrastructure for current business operations in place today is efficient.
    2. Our company has identified and standardized data to be shared across systems and business units.
    3. The current technology infrastructure needed to electronically link our business units is efficient.
    4. Corporate data is currently sharable across business units and organizational boundaries.

Appendix C: Qualitative Survey Questions

1. Our Company serves:
    - Businesses
    - Consumers
    - Both
2. The number of employees at our company is between:

- 0 – 10
- 11 – 50
- 51 – 250
- 251 – 500
- 501 – 1000
- 1000 +

3. Our Company belongs to the following industry:
   - Advertising & Marketing
   - Airlines
   - Automotive
   - Business Support & Logistics
   - Construction
   - Education
   - Entertainment & Leisure
   - Finance & Financial Services
   - Food & Beverages
   - Insurance
   - Information Technology
   - Manufacturing
   - Retail
   - Other
4. In our company, we use social media for: (Please select all that applies)

   - ☐ Customer Engagement
   - ☐ Brand Recognition / Advertisement
   - ☐ Marketing
   - ☐ Identifying customer needs
   - ☐ Idea generation for new products/services
   - ☐ Getting feedback on products/services

5. We have a dedicated social media team.

- Yes
- No

6. The social media team in our company reports directly to senior management (board level).
   - Yes
   - No
7. In our company, the social media team belongs to the following department:
   - Marketing
   - Customer Service
   - Advertisement
   - Technology
   - Independent Department
   - Other
8. The number of employees in our social media team is:
   - 0 – 2
   - 3 – 5
   - 6 – 10
   - 11 – 20
   - 20 +
9. Our company's annual spending on social media initiatives with respect to the overall budget is between:
   - 0 – 2 %
   - 3 – 5 %
   - 6 – 10 %
   - 11 – 20 %
   - 20 + %
10. Our company is present on the following social media platforms:
    - ☐ Twitter
    - ☐ Facebook
    - ☐ Instagram
    - ☐ YouTube
    - ☐ LinkedIn

- ☐ Pinterest
- ☐ Google +

11. Our company's Twitter account has the following number of followers.
    - 0 – 10,000
    - 10,001 – 50,000
    - 50,001 – 100,000
    - 100,001 – 250,000
    - 250,000 +

12. The daily average tweets our account receives is between:
    - 0 – 50
    - 51 – 100
    - 101 – 500
    - 501 – 1000
    - 1000 +

13. Our company's daily average tweets including replies to customer tweets is between:
    - 0 – 50
    - 51 – 100
    - 101 – 500
    - 501 – 1000
    - 1000 +

14. How do you describe your company's presence on social media?
15. For what reasons do you use social media?
16. Why it is important for your company to be present and responsive on social media?
17. Do you focus on one social media platform more than another?
18. Which one and why?
19. Do you collect and analyse social media data?
20. How do you collect the data and how do you analyse it?

21. Is the social media team involved in the innovation process at your organization?
22. What kind of input to the innovation process does the social media team provide?
23. Have you previously identified problems/customer needs through social media?
24. How were these problems/needs identified?
25. Did any of these identified problems/needs result in an innovation to solve a problem or create a new product/service?
26. Can you share an example of those needs and innovations?