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O efeito das informações compartilhadas via perfis públicos de sites de redes sociais na formação inicial de confiança em novos parceiros de trabalhos virtuais

Versão Original

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Catalogação-na-publicação

To Eliana and Isadora,
for always being by my side.

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"… research in the information systems field examines more than just the technological system, or just the social system, or even the two side by side; in addition, it investigates the phenomena that emerge when the two interact" Lee (2001, p.3).

ABSTRACT

The issue of trust development between individuals in virtual contexts has been gaining increased attention from Information Systems (IS) scholars, as more and more organizations shift collaborative work from a collocated paradigm to a virtual one. Despite the research efforts made so far on this topic, intriguing questions remain to be explored around the elements that nowadays can contribute to initial formation of trust between new virtual work partners. From an IS perspective, the massive usage of novel Information Technology (IT) artefacts by the society, such as social networking sites, can represent a timely and viable research opportunity to help explore this phenomenon. Given that the trust development is a process heavily dependent on the processing of individual´s behavioural information, and that the public profiles of social networking sites constitute a rich source of second-hand knowledge about a great proportion of individuals around the globe, the general objective of this thesis is to propose a framework for the effect of information disclosed via public profiles from social networking sites on the initial formation of trust formation in new virtual work partners. To this aim, this thesis utilizes a collection of five papers. The first two papers cover the research initiation and delimitation. The third and fourth papers present the conceptual framework proposed to answer the research questions. The fifth paper presents the final research results. Taken together, the thesis results suggest that the information a new work partner discloses via public profiles in social networking sites possess a moderate effect in the initial formation of trust toward him/her. On the trustor´s side a combination of unit grouping and reputation categorization processes drive the development of trust beliefs toward the new work partner. On the trustee´s side, the presence of online reputation building and management practices in social networking sites contribute to initial trust development toward him/her, both from an affect and cognition-based perspectives. Implications of these findings for theory and practice are discussed.

Keywords: Virtual collaboration. Interpersonal trust. Trust formation. Social networking sites. Information self-disclosure.

RESUMO

A questão do desenvolvimento de confiança entre indivíduos em contextos virtuais tem ganhado cada vez mais atenção dos pesquisadores de Sistemas de Informação (SI) à medida que mais organizações migram o trabalho colaborativo de um paradigma colocalizado para um paradigma virtual. Apesar dos esforços de pesquisa feitos até agora, oportunidades ainda precisam ser exploradas em torno dos elementos que atualmente podem contribuir para a formação inicial de confiança entre novos parceiros virtuais de trabalho. Da perspectiva da área de SI, o uso massivo de novos artefatos de Tecnologia da Informação (TI) pela sociedade, tais como sites de redes sociais, pode representar uma oportunidade de pesquisa para ajudar a explorar esse fenômeno. Dado que o desenvolvimento da confiança é um processo fortemente dependente do processamento das informações comportamentais de um indivíduo; e que os perfis públicos dos sites de redes sociais constituem uma rica fonte de conhecimento sobre uma grande parcela da população mundial; o objetivo geral desta tese é propor um quadro conceitual para o efeito da informação divulgada por meio de perfis públicos de sites de redes sociais na formação inicial de confiança em novos parceiros virtuais de trabalho. Para tanto, esta tese utiliza uma coleção de cinco artigos. Os dois primeiros artigos cobrem o início e a delimitação da pesquisa. O terceiro e o quarto artigos apresentam o quadro conceitual proposto para responder às questões de pesquisa. O quinto artigo apresenta os resultados finais da pesquisa. Tomados em conjunto, os resultados da tese sugerem que as informações que um novo parceiro de trabalho divulga por meio de perfis públicos em sites de redes sociais têm um efeito moderado na formação inicial de confiança em relação a ele. Da perspectiva do indivíduo que confia, uma combinação de processos de agrupamento de unidade e categorização de reputação promovem o desenvolvimento de crenças de confiança em relação ao novo parceiro de trabalho. Da perspectiva do indivíduo que é confiado, a presença de práticas de construção e gestão de reputação online em sites de redes sociais contribui para o desenvolvimento inicial de confiança em relação a ele, tanto do ponto de vista afetivo quanto do ponto de vista cognitivo. As implicações desses resultados para a teoria e a prática são discutidas.

FIGURES

TABLES

ABREVIATIONS

AIS   Association for Information Systems

CONTECSI   International Conference on Information Systems and Technology

GO   General Objective

IS   Information Systems

ICT   Information and Communication Technology

ILO   International Labour Organization

ISI   Institute for Scientific Information

IT   Information Technology

PLS   Partial Least Squares

SEM   Structural Equation Modelling

SLR   Systematic Literature Review

SNA   Social Network Analysis

SO   Specific Objective

UKAIS   United Kingdom Academy for Information Systems

WHO   World Health Organization

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PART I – INTEGRATED THESIS OVERVIEW

1 INTRODUCTION

When two individuals are asked to collaborate mainly via information and communication technologies (ICT´s), the lack of face-to-face contact becomes a pivotal element changing the traditional ways individuals used to interact (Cheng & Macaulay, 2014; Cheng, Yin, Azadegan, & Kolfschoten, 2016; Espinosa, Nan, & Carmel, 2015; Jarvenpaa & Leidner, 1998; Jarvenpaa, Shaw, & Staples, 2004; Ruiller, Van Der Heijden, Chedotel, & Dumas, 2019). The ambiguity and uncertainty frequently associated with such virtual relationships tend to repel work partners who are used to face to face interaction and, consequently, can undermine virtual collaboration (Brown, Poole, & Rodgers, 2004; Cheng, Nolan, & Macaulay, 2013; Ruiller et al., 2019; Schiller, Mennecke, Nah, & Luse, 2014; Wilson, Straus, & McEvily, 2006). In these scenarios, it can become challenging for new virtual work partners to collaborate effectively, even though an increased number of organizations are relying on virtual work structures to achieve their organizational objectives (Acharya, 2019; Cheng, Fu et al. 2016; Cheng, Yin et al., 2016; Cummings & Dennis, 2018; Dissanayake, Zhang, & Gu, 2015; Dulebohn & Hoch, 2017; Lowry, Zhang, Zhou, & Fu, 2010; Johnson, Heimann, & O´neill, 2001; Watanuki & Moraes, 2016; Zhang, Lowry, Zhou, & Fu, 2007).

In such scenarios, the interpersonal trust between virtual work partners, can represent both a solution and a problem. According to McAllister (1995), interpersonal trust can be defined as the extent to which an individual, namely a trustor; is confident in, and willing to act on the basis of the words, actions, and decisions of another individual, namely a trustee. Although interpersonal trust is fundamental for effective virtual collaboration because it encourages virtual work partners to collectively perform transactions and mitigate risk during the virtual interaction (Jarvenpaa, Knoll, & Leidner, 1998; Kuo & Thompson, 2014; Schiller et al., 2014; Tsai & Hung, 2019; Wilson et al., 2006); the development of interpersonal trust in virtual contexts can be severely constrained by the lack of physical proximity among individuals (Altschuller & Benbunan-Fich, 2013; Bente, Rüggenberg, Krämer, & Eschenburg, 2008; Jarvenpaa et al., 1998; Kanawattanachai & Yoo, 2002; Kuo &

Thompson, 2014; Nolan, Brizland, & Macaulay, 2007; Söllner, Benbasat, Gefen, Leimeister, & Pavlou, 2016; Tsai & Hung, 2019).

From this perspective, one important issue that can be approached is the formation of interpersonal trust toward a future new virtual relationship as recent research has emphasized the need to understand what contributes to the initial baseline levels of trust (Shareef et al., 2020), especially between virtual work partners with no history of previous collaboration (Cheng, Yin et al., 2016; Cummings & Dennis, 2018; Kuo & Thompson, 2014; Tsai & Hung, 2019).

Traditionally, trust related research in the Information Systems (IS) domain has divided the process of interpersonal trust development at organizational settings into two separate stages: before and after the behaviour of the trustee is known to the trustor, and that the process of initial formation of trust was mainly dependent on elements that are mostly outside the control of the trustee, such as his/her institutional affiliation and the trustor´s personality traits (McKnight, Choudhury, & Kacmar, 2002; McKnight, Cummings, & Chervany, 1998; Meyerson, Weick, & Kramer, 1996; Robert, Dennis, & Hung, 2009). Interestingly, some authors have found evidence that a certain level of interpersonal trust can be present at the outset of a new virtual work relationship even without knowledge about the trustee behaviour just to allow initial work interaction (Jarvenpaa et al., 1998; Jarvenpaa & Leidner, 1998). This trust assumes a fragile and depersonalized form of "swift trust" that is replaced over time as knowledge about the trustee behaviour becomes apparent from day-to-day interactions (Jarvenpaa & Leidner, 1998; Meyerson et al., 1996; Robert et al., 2009). This is a well-accepted trust development model that has been prevalent in IS research since the late 1990's (Watanuki & Moraes, 2019a).

However, the first two decades of the 21st century have noticed the rise and dissemination of a specific IS artefact: the social media platforms (Baier, 2019; Boyd & Ellison, 2007; Spagnoletti, Resca, & Sæbø, 2015); whose ubiquity in today´s society seems to be capable of blurring the frontiers between the two stages of the traditional trust development model. The public profiles from social networking sites, for instance, represent a rich source of personal information readily available such as personal background, character traits, hobbies, and interests (Baier, 2019; Cao, Vogel, Guo, Liu, & Gu, 2012; Cummings & Dennis, 2018; Neeley & Leonardi, 2018; Shareef et al., 2020; Tsay-Vogel, Shanahan, & Signorielli, 2018). By considering that, as of the fourth quarter of 2020, Statista (2020) shows that almost 2.8 billion people

hold an active account in Facebook, each public profile from social networking sites represents a source of second-hand knowledge from where trustors can obtain, by inference and observation, detailed information about a great proportion of potential trustees around the globe. It is still not completely understood whether this second-hand knowledge can be useful to facilitate initial trust building between new virtual work partners (Cummings & Dennis, 2018; Kuo & Thompson, 2014; Lim & Van Der Heide, 2015; Neeley & Leonardi, 2018; Seufert et al., 2016; Shareef et al., 2020); even though recent research has shown that the practice of scrutinizing public profiles in social networking sites to obtain information about individuals has become commonplace also amongst professionals (Baier, 2019; Stiff, 2019).

Under these circumstances, the following questions arise: can the information an individual discloses via public profiles in social networking sites affect the initial trust formation toward him/her as a future virtual work partner? If so, what elements drive this cause-effect relationship from the perspective of the trustor? Can the trustee manage this effect via his/her public profile in social networking sites? These are the research questions that this thesis discusses.

1.1 MOTIVATION

IS research goes beyond a focus primarily on the technology artefact and involves the intersection of people, processes, technology, and organization to improve results at the individual, team, and organizational levels (Lowry et al., 2010). IS researchers, for instance, can adopt a behavioural and a psychological focus when studying interactions between people and IT; or a collaboration and communication focus when investigating issues related to collaboration via IT and virtual team performance (Gao et al., 2011).

Watanuki and Moraes (2019a), in a first attempt to quantify the academic interest in the theme of virtual collaboration, conducted a search in the main collection of ISI (Institute for Scientific Information) Web of Science by using the search terms *"virtual team*" OR "dispersed team*" OR "distributed team*" OR "global team*" OR "international team*"*. This search has resulted in 1,269 papers and, in order to narrow the focus of this initial sample into the IS domain, a subsequent filter was applied by the authors to only consider articles published by the Association for Information Systems (AIS) Senior Scholar´s Basket of Journals (AIS, 2011). As a

result of this filter, 112 papers were found, and amongst them, 13 papers (approximately, 12% from the total) focus on the issue of trust in virtual collaboration.

The careful reading of this sample of papers, expanded to their main bibliographical references suggests that the development of trust during virtual collaboration represents a challenge that has been historically difficult to address (Brown et al., 2004; Cheng et al., 2013; Cheng, Fu et al., 2016; Jarvenpaa & Leidner, 1998; Kanawattanachai & Yoo, 2002; Lowy et al., 2010; Nolan et al., 2007; Wilson et al., 2006). Researchers justify the complexity of this issue given the paradox between the concepts of trust and virtual collaboration: whereas trust is essential for effective virtual collaboration since it prevents physical distance from generating psychological distance; the development of trust itself is facilitated by physical proximity which is exactly the element being constrained during the virtual collaboration (Cheng et al., 2013; Cheng, Fu et al., 2016; Jarvenpaa et al., 1998; Wilson et al., 2006).

Interestingly, despite the sample of papers that were reviewed possess an IS-centric focus, only two publications (Altschuller & Benbunan-Fich, 2013; Zahedi & Song, 2008) have focused on investigating how IS artefacts and their features can impact the trust formation between virtual workers. By considering the central role played by the availability of trustee´s behavioural information for the building of trust on the trustor side (Mayer et al., 1995; McAllister, 1995; McKnight et al., 1998), and that IS artefacts, such as social networking sites, have largely been enhanced from the perspective of information exchange in the last decades (Baier, 2019; Cao et al., 2012; Cummings & Dennis, 2018; Jahng & Littau, 2016; Neeley & Leonardi, 2018; Seufert et al., 2016; Shareef et al., 2020; Tsay-Vogel et al., 2018), this calls for additional research exploring whether IT can facilitate the interpersonal trust development in virtual work settings (Watanuki & Moraes, 2019a).

Also, from a research model perspective, with the exception of the work from Jarvenpaa et al. (1998), no other article from the sample of papers reviewed has tried to develop a formal model for trust development in virtual settings. Most of the papers reviewed have relied upon trust models developed for traditional collocated organizational settings during the second half of the 1990´s. As time goes by and technologies shape new behaviours in society, one should question whether the legacy trust development models from the 1990´s are still largely valid to be used in virtual settings or, otherwise, efforts should be made to establish new research models specifically suited for virtual settings in today´s society (Watanuki & Moraes,

2019a). Therefore, this study aims at contributing to the IS research on trust by providing more understanding regarding the effect that novel IS artefacts and their associated usage behaviours at the workplace, such as scrutinizing public profiles from future virtual work partners in social networking sites, can have on the development of interpersonal trust in organizational settings.

From a practical perspective, it is expected that this study will assist remote workers with increased awareness of how to build public profiles in social networking sites aiming at facilitating trust development in virtual settings. This is a welcome and timely knowledge as researchers suggest that, not only interpersonal trust seems to be an important element for the effective virtual team functioning (Jarvenpaa et al., 1998; Kanawattanachai & Yoo, 2002; Kuo & Thompson, 2014; Schiller et al., 2014; Tsai & Hung, 2019; Wilson et al., 2006), but also that the majority of professionals in different countries are already working with some form of virtual collaboration (Acharya, 2019; Dulebohn & Hoch, 2017; Ruiller, Van der Heijden, Chedotel, & Dumas, 2019). This trend has been further increased with the COVID-19 pandemic in 2020 (World Health Organization [WHO], 2020) due to the enforced social distancing measures being adopted around the world and a consequent massive shift to a remote or virtual workforce by organizations. According to the International Labour Organization (ILO, 2020), as of April 2020, 59 countries had implemented remote work strategies for non-essential employed staff, representing millions of professionals working from home for the first time while surrounded by uncertainty in many dimensions, such as the health risk itself, novelty of working from home, job instability, and financial insecurity (Caliguri, De Cieri, Minbaeva, Verbeke, & Zimmermanm, 2020). Given that new collaborations and work teams will continue to be formed within and across organizations during the pandemic, all of this can exacerbate the challenge of trust formation between new virtual work partners (Cheng, Yin et al., 2016; Cummings & Dennis, 2018; Kuo & Thompson, 2014; Tsai & Hung, 2019), and therefore deserves immediate researchers' attention.

1.2 RESEARCH OBJECTIVES

The general objective (GO) of this research is to propose a framework for the effect of information disclosed via public profiles from social networking sites on the

initial formation of trust in new virtual work partners. This general objective can be further unfolded into three specific objectives (SO):

a) SO1: To assess the relevance of interpersonal trust for effective virtual collaboration and the relevance of the topic in the IS domain;

b) SO2: To identify informational elements of public profiles from social networking sites that potentially affect the initial formation of trust in new virtual work partners;

c) SO3: To assess the magnitude of the effect that the information disclosed in public profiles from social networking sites can have on the initial formation of trust in new virtual work partners.

Table 1 illustrates the GO and SO´s.

Table 1 - Research general and specific objectives

Research objectives		
General objective (GO): To propose a framework for the effect of information disclosed via public profiles from social networking sites on the initial formation of trust in new virtual work partners		
Specific objective 1 (SO1):	Specific objective 2 (SO2):	Specific objective 3 (SO3):
To assess the relevance of interpersonal trust for effective virtual collaboration and the relevance of the topic in the IS domain	To identify informational elements of public profiles from social networking sites that potentially affect the initial formation of trust in new virtual work partners	To assess the magnitude of the effect that the information disclosed in public profiles from social networking sites can have on the initial formation of trust in new virtual work partners

1.3 THESIS STRUCTURE

This is a paper-based thesis and it is divided into two main parts:

a) Part I: Integrated thesis overview, and;

b) Part II: Appended papers

Part I of this thesis is composed by five chapters and its goal is to integrate each publication toward the achievement of the thesis´ research objectives. The first chapter presents an introduction to the research context along with the research questions, the motivation of the study, the research objectives and the structure of the thesis. Chapter 2 presents a summarized delimitation of the main concepts utilized in the research. Chapter 3 describes the research methods applied during the course of this research, followed by chapter 4 where the research results are presented. Finally, chapter 5 contains the concluding remarks of the research.

Part II is composed by five appended papers. The first paper (Paper #1), included in Appendix A, was initially developed in 2017 following the author´s master dissertation and has focused SO1 by exploring survey data collected during the author´s master research. The findings of this first paper have highlighted the importance of interpersonal trust for the functioning of virtual teams and were utilized as a starting point for the current thesis by giving empirical support and motivation to its further development. After a series of editor´s suggested reviews since 2017, this paper was later submitted to the International Journal of Information Systems in the Service Sector in 2021 and has been suggested minor reviews before final acceptance (Watanuki & Moraes, 2021a).

Based on the empirical findings of the Paper#1 that have illustrated the relevance of interpersonal trust for virtual team functioning and, therefore, partially addressed SO1; the objective of the second paper (Paper#2), included in Appendix B, was to fully address SO1, by assessing the relevance of this topic in IS research. To this aim, a systematic literature review was conducted on the topic of trust development in virtual team research from the perspective of the main IS journals and opportunities for future research were identified. Paper #2 was presented at the 16th CONTECSI - International Conference on Information Systems and Technology Management that occurred in 2019 (Watanuki & Moraes, 2019a).

Supported by the findings of Paper #2, the third paper (Paper#3), included in Appendix C, has focused SO2, by identifying informational elements of public profiles from social networking sites that could potentially affect the initial formation of trust in new virtual work partners. By combining different theories from IS research on virtual teams, an initial theoretical model was proposed. Paper #3 was originally presented at the 24th UK Academy for Information Systems (UKAIS) International Conference in 2019 and later selected for fast track and publication at the Informatics journal in the special issue "Selected Papers from 24th UK Academy for Information Systems International (UKAIS) Conference" (Watanuki & Moraes, 2019b).

The fourth paper (Paper #4), included in Appendix D, has focused both SO2 and SO3. By approaching the individual´s information disclosure and impression formation behaviours on public profiles from social networking sites, Paper#4 has further refined the theoretical model proposed by Paper #3. It has also tried to assess the magnitude of the effect that information disclosed in public profiles can have on the initial formation of trust in new virtual work partners by conducting an initial

empirical analysis of the model. Paper #4 was presented at the 17th CONTECSI - International Conference on Information Systems and Technology Management in 2020 (Watanuki & Moraes, 2020) and has been acknowledged with the best papers award from the conference chairs. The certificate award is included in the Annex A.

The fifth paper (Paper #5), included in Appendix E, has also focused SO3 by improving and completing the empirical assessment of the theoretical model proposed by Paper #4. Paper #5 was submitted in 2021 to the Journal of Trust Research and is currently under review process (Watanuki & Moraes, 2021b).

A summary of the five appended papers that constitute the part II of this thesis is presented in Table 2.

Table 2 - Publications presented in the part II of the thesis

Appendix	Paper number	Paper title	Authors	Objective	Journal / Conference
A	Paper #1	"Team dispersion, emergent states, and performance in virtual IT service-provisioning teams"	Watanuki and Moraes (2021a)	SO1	International Journal of Information Systems in the Service Sector
B	Paper #2	"The issue of trust in virtual team research: a systematic review of information systems literature"	Watanuki and Moraes (2019a)	SO1	16th CONTECSI
C	Paper #3	"Exploring the influence of social media information on interpersonal trust in new virtual work partners"	Watanuki and Moraes (2019b)	SO2	Informatics
D	Paper #4	"Initial trust formation in new virtual work partners: The impact of online reputation building and management practices in social networking sites"	Watanuki and Moraes (2020)	SO2, SO3	17th CONTECSI
E	Paper #5	"The impact of online reputations in social networking sites on the initial trust formation in new virtual work partners: An experiment during the COVID-19 pandemic"	Watanuki and Moraes (2021b)	SO3	Journal of Trust Research

It is important to highlight that the five appended papers that constitute the Part II of this thesis are an integral part of the main text and their reading is critical for the complete comprehension of the thesis results and contributions. The aim of the Part I of this thesis is to give the reader a logical and connected perspective of the five appended papers with a focus on the main steps and results of this doctorate research, however, not all the content from the appended papers is reproduced in the

integrated thesis overview. From this point onwards, the reader can opt to start reading the five appended papers from Part II in sequence and then return to chapter 2 from Part I to continue reading the remaining chapters from the integrated thesis overview; or complete the reading of the remaining chapters from Part I, followed by the reading of the five appended papers from Part II in sequence.

2 DELIMITATION OF THE MAIN CONCEPTS

This chapter presents and defines the main concepts explored in this research, namely: virtual work partners, formation of interpersonal trust in virtual contexts, and social networking sites. Given that this thesis is composed by five papers, the literature review and theoretical development of this thesis has followed an incremental development process where each paper represented an incremental step toward the complete literature review. The concept definitions presented in this section represent the end state of this incremental literature review process and their purpose is to provide a common knowledge base for interpreting the remainder sections of the part I of this thesis.

2.1 VIRTUAL WORK PARTNERS

Collaboration can be defined as the process where two or more agents – individuals or organizations – share information, resources and competences to execute interdependent activities toward common goals and benefits (Boughzala & De Vreede, 2015; Cheng, Fu et al. 2016). Organizations have already realized that a considerable part of their competitive advantage lies in their capacity for collaborating not only inside their boundaries but also with external partners (Acharya, 2019; Boughzala & De Vreede, 2015; Zhang et al., 2007); and IT has been considerably changing the traditional way individuals and organizations used to collaborate (Cheng, Fu et al. 2016; Cheng & Macaulay, 2014; Cheng et al., 2013; Cheng, Yin et al., 2016; Dissanayake et al., 2015; Dulebohn & Hoch, 2017; Espinosa et al., 2015; Schiller et al., 2014).

According to Dissanayake et al. (2015, p.14), given the recent advances in collaborative IT tools, "it is no longer necessary for employees to work in the same physical location". This is because IT is now able to provide the required support for the development of collaborative processes across geographical boundaries inside and outside organizations. Consequently, in the organizational context, a considerable number of individuals are moving away from collaborating with partners within their visual proximity and starting to work with partners around the globe (Acharya, 2019; Dulebohn & Hoch, 2017; Johnson et al., 2001; Ruiller et al., 2019). Supported by this context, the concept of virtual work partners utilized on this thesis

refers to two geographically dispersed individuals that communicate solely through information and communication technologies (ICT´s) in order to achieve a common organizational goal. Along the same lines, a reference to a new virtual work partner means that the two individuals share no past interaction history between them.

This shift in the collaborative paradigm from a co-located activity to a dispersed or virtual activity has presented organizations several potential benefits, such as increasing flexibility and responsiveness, reduction of relocation time and costs, and access to specialized knowledge elsewhere (Acharya, 2019; Dissanayake et al. 2015; Dulebohn & Hoch, 2017; Steinmacher, Chaves, & Gerosa, 2013; Watanuki & Moraes, 2016). However, numerous challenges have also been added to the proper establishment of collaboration between individuals. Among them, Espinosa et al. (2015), in their literature review of dispersed teamwork, have highlighted the following challenges: communication and coordination issues, lack of mutual understanding and trust, interpersonal conflicts, and fragile social relationships. Though important, trust between virtual work partners can be difficult to establish given the constrained context of a virtual relationship. Elements that facilitate trust building during face-to-face interactions, such as social dialogs and opportunities to monitor each other´s behaviour, may not be available between virtual work partners (Brown et al., 2004; Cheng & Macaulay, 2014; Jarvenpaa et al., 1998; Kanawattanachai & Yoo, 2002; Kuo & Thompson, 2014; Ruiller et al., 2019; Wilson et al., 2006).

2.2 FORMATION OF INTERPERSONAL TRUST IN VIRTUAL CONTEXTS

Before a discussion on interpersonal trust formation can happen, it is important to define what trust is, given its many perspectives and definitions available in the literature.

2.2.1   The concept of trust

The ubiquity of trust in the everyday life of human society has resulted in a concept of complex definition, with different typologies according to the perspective or approach adopted by the researcher.

Jarvenpaa et al. (1998), in a first approach to the concept of trust, suggest that trust can be analyzed from a social or a rational perspective. In the social perspective, the moral duties or obligations of a particular social group play a prominent role, and trust is established because it is the morally appropriate attitude in the group. This would be the perspective to be adopted, for example, to analyze the confidence developed between close members of the same family, such as children, parents, and grandparents. In the rational perspective, the focus is on the calculation of self-interest. In this case, the perception that increased trust reduces the costs of maintaining a relationship - since the respective parties need to develop fewer defensive attitudes against the opportunistic behaviour of the other - encourages individuals to take risks. This would be the perspective to be used, for example, in the case of an investigation exploring the development of trust between work partners.

Apart from these two perspectives, the literature on virtual teams specifies three important types of trust to be considered when studying virtual relationships:

a) Dispositional trust: specific to each individual and associated with his/her respective personal traits. It is independent of any context and related to the belief of each individual in human nature, i.e., a natural tendency to trust other people (Mayer, Davis, & Schoorman, 1995; McKnight et al., 1998);

b) Interpersonal trust: developed from the relationship between two or more individuals and based on the expectation that verbal and written statements of one of the parties can be fully entrusted by the other party (MAYER et al., 1995; McAllister, 1995; McKnight et al., 1998; Meyerson et al., 1998);

c) Structural or institution-based trust: it is dependent on a context and on an impersonal system or institution, whose perceived properties can inspire confidence in individuals (McKnight et al., 1998).

As it can be inferred from the taxonomy above, the phenomenon of trust usually involves two parts: one that trusts (i.e., the trustor) and the other that is entrusted (i.e., the trustee), the latter being a person, inanimate system or situation. Therefore, the establishment of trust depends not only on the attributes of the trustor, but also on the attributes of the trustee (Avgerou, 2013; Mayer et al., 1995; McKnight et al., 1998; Schiller et al., 2014).

This study leverages McAllister´s (1995) definition of interpersonal trust as the extent to which the trustor is confident in, and willing to act on the basis of, the words,

actions, and decisions of the trustee. This conceptualization of trust is also referenced as trust belief by some authors, as it is grounded in individual beliefs about peer reliability, dependability and reciprocal interpersonal concern and care (McAllister, 1995; McKnight et al., 1998; Kanawattanachai & Yoo, 2002; Chowdhury, 2005; Robert et al., 2009; Schiller et al., 2014; Shareef et al., 2020; Zahedi & Song, 2008).

The basic model from McAllister (1995) suggests that trust beliefs are composed by two fundamental dimensions: affect and cognition-based. The affect-based trust beliefs involve emotional elements such as reciprocal interpersonal care and concern; whereas the cognition-based trust beliefs refer to the calculative and rational characteristics displayed by the trustee (Altschuller & Benbunan-Fich, 2013; Bente et al., 2008; Chen, Lu, Wang, & Pan, 2019; Chen, Saparito, & Belkin, 2011; Chowdhury, 2005; McAllister, 1995; Robert et al., 2009; Wilson et al., 2006; Tsai & Hung, 2019; Zahedi & Song, 2008).

Past research has suggested that the cognitive component of interpersonal trust can be facilitated via elements that help make the behaviour of other individuals predictable such as social similarity, reliable role performance and professional credentials (Chowdhury, 2005; McAllister, 1995; Kanawattanachai & Yoo, 2002; Lowry et al., 2010).

In McAllister´s model, social similarity is defined as the cultural and ethnical similarity between the trustor and the trustee (McAllister, 1995; Lowry et al., 2010), whereas professional credentials refer to the preparedness of the trustee for the role as perceived by the trustor; and it can be reflected by the trustee´s educational level and institutions, training, professional association memberships, professional certifications, and relevant experience (McAllister, 1995; Kanawattanachai & Yoo, 2002; Lowry et al., 2010). Lastly, if the trustee exhibits reliability in performing target roles – i.e., reliable role performance; then it is also likely that the trustor will develop a high level of trust toward the trustee (Chowdhury, 2005; McAllister, 1995).

The affective dimension of trust is grounded on the altruistic motives of the relationship between the trustor and the trustee. It can be facilitated via elements that demonstrate the willingness of the trustee to provide help and assistance conducive to effective organizational functioning without being directly rewarded, a concept known as citizenship behaviour (McAllister, 1995). If the trustee exhibits a high level of citizenship behaviour toward the trustor and if both of them socially interact

frequently, it is highly likely that the trustor would develop trust toward the trustee (Chowdhury, 2005; McAllister, 1995).

Based on its constituent elements, interpersonal trust on the trustor side typically develops via a combination of two processes: constructive interactions with the trustee and assessment of trustee´s interpersonal cues that indicate trustworthiness. Whereas the first process tends to contribute to the affective foundations of interpersonal trust, the latter supports its cognitive foundations. As it can be noticed from the trust conceptualizations presented so far, both the affective and cognitive elements of interpersonal trust depend on a fundamental prerequisite in order to develop: first-hand knowledge about the trustee´s behaviour that can arise from a direct interaction with trustee (Bente et al., 2008; Chowdhury, 2005; Gefen & Straub, 2004; Kanawattanachai & Yoo, 2002; McAllister, 1995; McKnight et al., 1998; Robert et al., 2009). This knowledge constraint restricts the development of interpersonal trust between two previously unknown individuals to begin only after the formal interactions between them initiate, as long as the virtual context of the ongoing interaction facilitates the acquisition of the trustee´s behavioural information.

2.2.2   The initial formation of interpersonal trust

The investigation of interpersonal trust formation in virtual contexts has its roots on the seminal works of Meyerson et al. (1996) and McKnight et al. (1998). Both researchers have dedicated efforts to understand the results of previous organizational studies that had unexpectedly identified the presence of certain levels of trust in new organizational relationships or temporary groups. This unexpected finding, named later by some authors as swift trust (Jarvenpaa et al., 1998), was originally considered paradoxical since the general understanding at the time was that interpersonal trust could only develop over time as first-hand knowledge about the trustee behaviour is accumulated on the trustor side. Subsequent research has characterized swift trust as a fragile and depersonalized form of trust, with less emphasis on affection or knowledge toward the trustee, and with the purpose of allowing individuals to take action in a situation of time pressure. As the interactions between individuals evolve over time, swift trust is gradually replaced by trust that is developed based on first-hand knowledge about the trustee (Jarvenpaa et al., 1998; Robert et al., 2009).

In order to explain the phenomenon of swift trust, Meyerson et al. (1996) and McKnight et al. (1998) have proposed that during the beginning of a relationship, since the behaviour of the trustee is mostly or completely unknown to the trustor, a combination of cognitive processes on the trustor side, as well as his/her personality traits and institutional based elements would drive the initial trust development process. Specifically, the main elements that enable the trustor to develop trust toward the yet unknown trustee are the trustor´s disposition to trust, institution-based trust, and categorization processes based on second-hand knowledge about the trustee (Meyerson et al., 1996; McKnight et al., 1998).

According to McKnight et al. (1998), the categorization processes can be of three basic types:

a) Reputation categorization: involves the assignment of trustworthy attributes to the trustee;

b) Unit grouping: refers to the classification of the trustee on the same category as oneself;

c) Stereotyping: places the trustee into a general category of persons.

These three processes can be utilized together by the trustor and can enable high levels of trusting beliefs toward the trustee. Regarding reputation categorization, those with good reputations are categorized as trustworthy individuals because reputation may reflect professional competence. In this case, a person may be perceived as a competent individual because he or she is a member of a competent group (such as a professional group) or because of his/her past actions. Regarding unit grouping, because those individuals who are grouped together tend to share common goals and values, they tend to also be perceived in a positive perspective, therefore being more likely for one individual to form trusting believes toward another group member. Finally, stereotyping may be done on a broad level, such as gender, or on a more specific level, such as occupation group. By positive stereotyping one can quickly form positive trusting beliefs about the other by generalizing or inferring from the favorable category into which the person was placed (McKnight et al., 1998).

The importance of Meyerson´s et al. (1996) and McKnight´s el at. (1998) work for the investigation of trust issues on virtual contexts relies on the fact that these authors have explored trust formation in a context that is usually common place for virtual relationships: new and temporary relationships. These authors have stablished

the foundations upon which several virtual team researchers have investigated initial trust formation between virtual work partners (Cummings & Dennis, 2018; Kuo & Thompson, 2014; Jarvenpaa et al., 1998; Jarvenpaa et al., 2004; Robert et al., 2009).

Though important, the establishment of swift trust has been historically harder to predict, as in the absence of significant information about the trustee behaviour, this form of trust has shown larger dependency on trustor´s personality traits (Jarvenpaa et al., 1998; Meyerson et al., 1996; Robert et al., 2009). It was not until recent years that virtual team researchers have started exploring ways to reduce the uncertainty associated with swift trust by pursuing additional sources of informational cues regarding the trustee´s characteristics (Cummings & Dennis, 2018; Kuo & Thompson, 2014; Shareef et al., 2020). This is mostly due to the fact that new sources of information about individuals have become increasingly popular in the last decade: the social networking sites.

2.3 INFORMATION DISCLOSURE IN SOCIAL NETWORKING SITES

Social media technologies can be conceptualized as an IS artefact consisting of three components: the technological, supporting social interactions; the informational, consisting of user generated digital content; and the social, involving communication and collaboration among people (Spagnoletti et al., 2015; Wakefield & Wakefield, 2016).

The preset study focuses on a specific category of social media technologies: the social networking sites. Social networking sites can be defined as web-based solutions that enable individuals to construct and publish personal profiles and connect to other individuals within the system (Boyd & Ellison, 2007; Ryan, Cruickshank, Hall, & Lawson, 2018). Popular examples of social networking sites in Western countries are Facebook, LinkedIn, and Twitter (Baier, 2019; Jahng & Littau, 2016; Kuo & Thompson, 2014; Ryan et al., 2018; Seufert et al., 2016; Shareef et al., 2020; Stiff, 2019; Tsai & Hung, 2019; Tsay-Vogel et al., 2018; Wakefield & Wakefield, 2016).

Social networking sites provide strangers with the possibility to exchange information in various forms, comprising not only the user-generated digital content (Boyd & Ellison, 2007; Spagnoletti et al., 2015; Lim & Van Der Heide, 2014), but also

the perception of social interaction (Jahng & Littau, 2016; Wakefield & Wakefield, 2016) which can potentially influence future virtual relationships between them (Kuo & Thompson, 2014; Neeley & Leonardi, 2018; Seufert et al., 2016; Shareef et al., 2020). This is justified by the informational cues provided by social networking sites that can be interpreted as signals, as described by the signaling theory from informational economics studies (Chen et al., 2019). According to this theory, inequalities in access to information between two parties tend to make the exchange of goods and services between them difficult. Under these conditions, signals that reveal relevant and meaningful information purposefully emanating from one party to the other party can reduce uncertainty and shape a positive behaviour from this last one toward the first party (Chen et al., 2019; Spence, 1973; Connelly, Certo, & Ireland, 2011).

This thesis suggests that a similar mechanism can promote positive stereotyping, unit grouping and reputation categorization toward a new virtual work partner based on the exploration of his/her public profiles in social networking sites. In this case, positive signals such as identity, presence, reputation, and relationships can emanate from the trustee's public profiles in social networking sites (Boyd & Ellison, 2007; Jahng & Littau, 2016; Kietzmann, Hermkens, McCarthy, 2011), potentially influencing the trustor's perceptions of trustworthiness (Cao et al., 2012; Chen et al., 2019; Lim & Van Der Heide, 2015; Neeley & Leonardi, 2018).

In virtual contexts, the amount of personal information unknown to others that an individual decides to make common knowledge and that allows others to associate his/her virtual identity with his/her real-world identity is defined as self-disclosure (Altschuller & Benbunan-Fich, 2013; Kietzmann et al., 2011; Mesch & Becker, 2010; Tsay-Vogel et al., 2018). In this sense, individuals aiming at impression formation and the proper presentation of identity in social networking sites can adopt specific behaviours of self-disclosure of information in an attempt to build and manage their online reputations (Baier, 2019; Jahng & Littau, 2016; Ryan et al., 2018).

Ryan et al. (2018) has conducted an extensive research on how users from social networking sites build and manage their reputations online and has suggested a set of behaviours that can be consolidated into three main groups of practices:

a) Managing the blur between professional and private lives online: leverage the appropriate platforms for the sharing of specific types of information,

such as using one platform for the private identity and another for the public
identity;

b) Managing online connections: carefully managing what content is available
to whom and adhering to rules or guidelines to determine connecting
practices on different platforms;

c) Practicing censorship: avoid publishing content that is excessively personal,
intimate in nature or offensive, particularly in respect of sensitive topics.

Table 3 further details and exemplifies the practices that individuals can
leverage in social networking sites for building and managing their online reputation.

Table 3 - Practices for building and managing reputation in social networking sites

Reputation building and management practice	Tactics deployed in social networking sites
Managing the blur between professional and private lives online	– Maintenance of private account and professional account separately – Intimate information restricted to private account – Careful presentation of credentials in professional account – Concern of private account content leaking into professional account – Decision to connect with others are made based on the platform (i.e., professional account for connecting with professional contacts, private account for family and friends) – Direct invites in the private account to the professional account in case the requestor is not familiar
Managing online connections	– Provide replies and comments in posts to expand network and correct misunderstandings – Provide likes and comments to show support or to acknowledge achievements or life events of others – Tag individuals to make sure that information is viewed – Forcibly connect with people to acquire interesting content or to create an alignment with a knowledgeable person. – Hide posts from connections that are not appreciated instead of deleting them
Practicing censorship	– Refrain from sharing information that conveys controversial views or is contrary to social etiquette – Avoid sharing overly personal or intimate information, information that is too controversial or unimportant or uninteresting information – Avoid interacting with contentious topics, inflammatory debates and fight with strangers – Deleting comments that may generate negative images or may have spelling or grammatical errors

Source: Adapted from Ryan et al. (2018).

3   RESEARCH APPROACH AND METHODS

The methodological approach utilized in this thesis is based on the integration of diverse research methods in order to achieve the research objectives. From this perspective, the development of this thesis can be divided in three main stages:

d)   Initiation and delimitation of the research theme (Paper #1), identification of knowledge gaps and definition of key constructs (Paper #2);

e)   Initial development of the theoretical framework (Paper #3), further refinement of the theoretical model and design of the experiment (Paper #4);

f)   Data collection and empirical assessment of the theoretical model (Paper #5).

The core research methods adopted are survey, systematic literature review (SLR), and experiment. The survey method was applied as a starting point for this research in stage 1 (Paper #1) to empirically assess the practical relevance of interpersonal trust for effective virtual collaboration. The survey results have supported the initiation and delimitation of the thesis research theme on the trust phenomenon. The data utilized for the survey was extracted from a previous data collection effort (Watanuki & Moraes, 2016). The development and execution of the survey was supported by recommendations of the literature (Creswell, 2003; Forza, 2002) and data analysis was conducted by using Structural Equation Modelling (SEM) techniques. The software utilized to support the statistical analysis was SmartPLS 2.0 (Ringle, Wende, & Will, 2005).

Still in stage 1, the SLR technique applied in Paper #2 has leveraged an explicit systematic and replicable method to help define key trust-related constructs and opportunities for the thesis development in the IS domain. In an attempt to reduce the bias towards the review of a certain body of knowledge (Kitchenham, 2004; Steinmacher, Chaves, & Gerosa, 2013), and supported by previous research (Watanuki, Nadae, Carvalho, & Moraes, 2014); the SLR was performed applying a multi-methods approach, including bibliometrics, content analysis, and social network analysis (SNA). A computer-aided approach was also leveraged in Paper #2, by applying Sitkis (Schildt, 2002) and UCINET software's (Borgatti, Everett, & Freeman, 2002) to support both the bibliometric analysis as well as the social network analysis.

Once the research theme and key concepts and frameworks have been identified in stage 1 by Papers #1 and #2; the initial theoretical framework of the thesis was established in stage 2 with Paper #3. The initial theoretical model was further refined to produce hypothesis in Paper #4, along with the design of a between-subjects experiment with students to support the subsequent assessment of the theoretical model.

Finally, in stage 3, the data collected via the experiment supported the empirical assessment of the theoretical model and produced the final research outcomes. The development and execution of the experiment was supported by recommendations of the literature (Cummings & Dennis, 2018; Kuo & Thompson, 2014; Robert et al., 2009; Trevino, 1992) and data analysis was conducted by using SEM Partial Least Square (PLS) techniques. The software utilized for the statistical analysis was SmartPLS 2.0 (Ringle et al., 2005). Table 4 summarizes the research method applied at each paper, including aspects such as the paper aim, data sources, and selection criteria.

Table 4 - Research methods applied for each paper

Paper	Method	Research aim	Primary empirical source	Source selection criteria
Paper #1	Survey	To investigate the mediating role that team trust has on the performance of virtual teams in the IT service-provisioning industry	139 survey responses	IT service-provisioning professionals who work in virtual teams
Paper #2	Systematic literature review	To review and consolidate the issue of trust development in virtual team research from the perspective of main IS journals	112 papers	ISI Web of Science (AIS Senior Scholar´s Basket of Journals). Search terms: virtual team(s), dispersed team(s), distributed team(s), global team(s), and international team(s)
Paper #3	Theoretical research	To propose an exploratory investigation regarding the impact of social media information on interpersonal trust in new virtual work partners	Not applicable	Not applicable
Paper #4	Experiment	To evaluate the impact of online reputation building and management practices in social networking sites on initial trust development in new virtual work partners	88 participants	undergraduate students attending a remote university course
Paper #5	Experiment	To evaluate the impact of online reputation building and management practices in social networking sites on initial trust development in new virtual work partners	137 participants	graduate and undergraduate students attending a remote university course

4 RESULTS

This chapter discusses the research results by combining the findings from each of the five papers presented in part II of this thesis.

The first specific objective of the thesis was SO1 and aimed to assess the relevance of interpersonal trust for effective virtual collaboration and the relevance of the topic in the IS discipline. This specific objective was addressed mainly by Papers #1 and #2. First, the findings from Paper #1 have indicated that interpersonal trust between work partners is a full mediator between the variety of work practices that a virtual team displays and the quality outcome of the work produced by the virtual team (Figure 1). The variety of work practices - a dimension of organizational dispersion of the team - presented a negative effect on the levels of interpersonal trust displayed by the virtual team members (β=-0.349, p<0.01); whereas trust itself presented a positive effect on the quality of the work produced by the virtual team (β=0.197, p<0.05).

Figure 1 - Path coefficients and the explained variance of the dependent variables (* p<0.05, ** p<0.01, *** p<0.001)
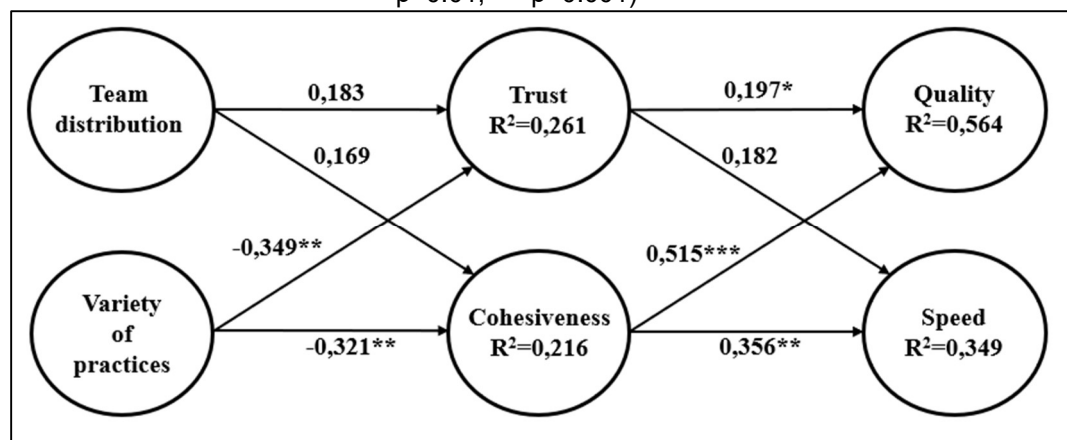
Source: Watanuki and Moraes (2021a, p.16).

Although it was not the goal of the Paper #1, the strong correlation value found between trust and cohesiveness (r=0.664) have also generated the suspicious that team trust might have a positive effect on team cohesiveness, therefore also contributing to the positive outcomes of the later in virtual team performance. These are important findings that highlight the relevance of interpersonal trust for effective virtual collaboration and has also evidenced the negative effect that the virtual context, specifically when organizational dispersion is present, can have on the levels of interpersonal trust between virtual work partners. Take together these results help

set the initial delineation and motivation for the further development of the thesis with a specific focus on the trust development phenomena.

Second, the findings from Paper #2 have provided further understanding of the relevance of the topic in the IS discipline. Based on a systematic review of the IS literature on virtual teams, it was possible to assess the degree of importance for the concept of trust in this research domain. By deploying a SNA approach to analyze the bibliometric data, such as the publication´s keyword co-occurrence, it was possible to construct a graphical network that highlighted strong ties for the trust keyword, as a socio-emotional process, with other important input´s, task processes and outputs of virtual team functioning (Figure 2).

Figure 2 - The keyword co-occurrence network
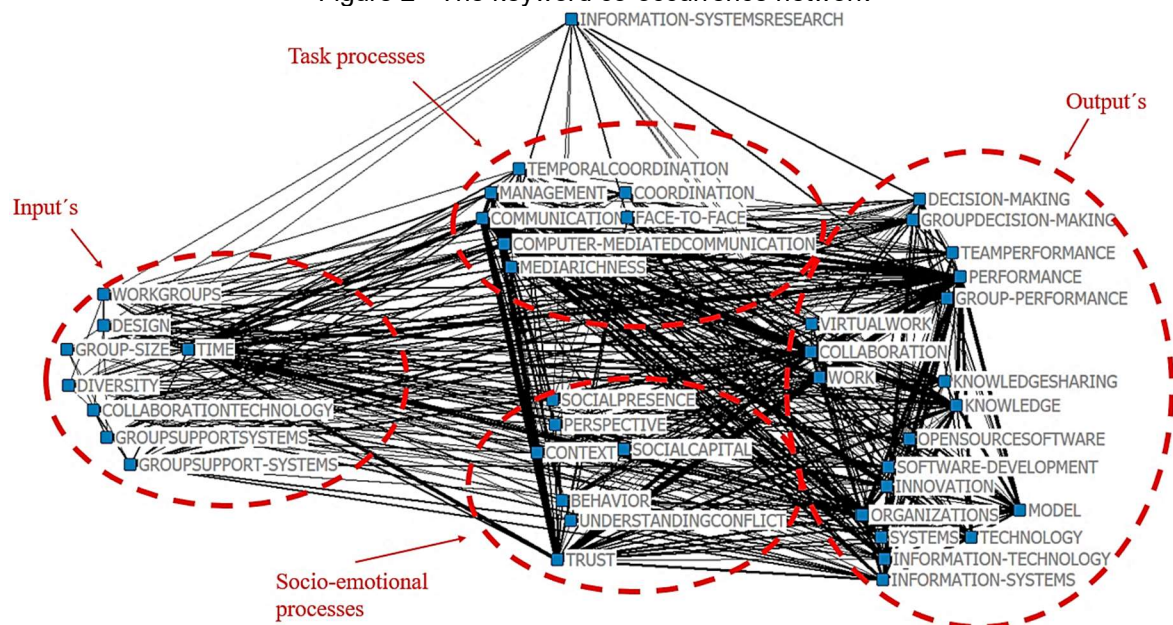
Source: Watanuki and Moraes (2019a, p.5). Note: The blue squares represent the keywords from the articles, and the thickness of the lines connecting the blue squares represents the magnitude of the connection between the two keywords, based on its frequency of occurrence. Due to the large amount of data this type of analysis usually involves, and in order provide a clearer view of the relationships within the network, a filter was applied in this graphical network to only display the keywords from articles of the sample that possessed more than five citations in ISI Web of Science on the date of the metadata extraction. The cutoff value of five citations was determined after starting the analysis with no citation cutoff value and increasing the citation cutoff value by one unit until it became visually practical to group the keywords in a graphical diagram.

To complement the visual assessment of the graphical diagram, and to help evaluate the relative importance of the keywords, the degree of centrality (C_i values) from each keyword in the network were calculated, and the trust keyword has emerged in the fourth position overall and as the main socio-emotional state (Table 5).

Table 5 - Normalized centrality degree from the keywords

Keyword	Normalized centrality degree (C_i)
Performance	17.676
Communication	15.548
Collaboration	13.912
Trust	13.339
Knowledge	10.720
Organizations	9.165
Time	8.347
Model	8.020
Information technology	7.938
Management	7.856

Source: Watanuki and Moraes (2019a, p.6).

The deployment of SNA approach on the cited references of the publications analyzed have also generated evidences regarding the main theoretical foundations of the topic, such as the graphical co-citation network displayed in Figure 3 along with the normalized centrality degrees of the cited references (Table 6).

Figure 3 - The co-citation network
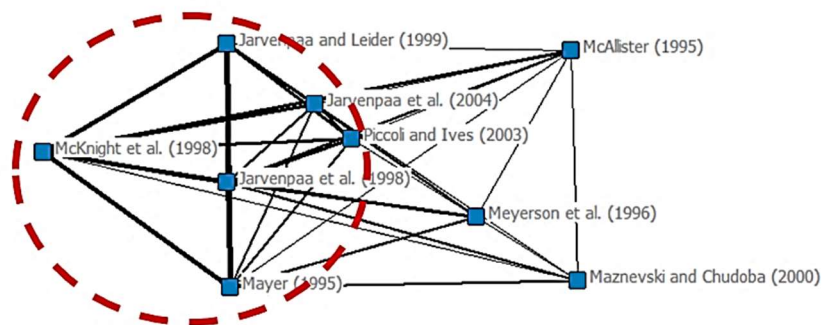
Source: Watanuki and Moraes (2019a, p.9). Note: The blue squares represent the cited references from the sample of articles, and the thickness of the lines connecting the blue squares represent the magnitude of the connection between the two cited references, based on its frequency of occurrence. In order provide a clearer view of the relationships within the network, a filter was applied in this graphical network to only display the cited references from articles of the sample that possessed more than five citations in ISI Web of Science on the date of the metadata extraction. The cutoff value of five citations was determined after starting the analysis with no citation cutoff value and increasing the citation cutoff value by one unit until it became practical to visualize the main cited references in a graphical diagram.

Table 6 - Normalized centrality degree from the cited references

Cited reference	Normalized centrality degree (C_i)
McKnight et al. (1998)	65.625
Jarvenpaa et al. (1998)	64.063
Jarvenpaa and Leidner (1999)	64.063
Mayer (1995)	62.500
Piccoli and Ives (2003)	45.313
Jarvenpaa et al. (2004)	42.188
Meyerson et al. (1996)	40.625
Maznevski and Chudoba (2000)	32.813
McAllister (1995)	32.813

Source: Watanuki and Moraes (2019a, p.10).

Based on the findings of Paper #2, it was possible to delineate not only the main conceptualizations and frameworks of trust in IS research, but also to identify a need for the re-assessment of the traditional trust development models with a focus on contemporary behaviours adopted by the society, such as the reliance on social networking sites to exchange personal information. The results from Paper #2 where, therefore, crucial not only to set the proper theoretical foundations but also to drive the thesis development towards a meaningful contribution to IS research.

The second specific objective of the thesis was SO2 and aimed to identify informational elements of public profiles from social networking sites that potentially affect the initial formation of trust in new virtual work partners. This specific objective was addressed with Papers #3 and #4. Supported by the theoretical foundations and the opportunity for re-assessment of the traditional trust development models identified by Paper #2, Paper #3 has leveraged a comprehensive set of theories, mainly from virtual team research and information economic studies, to propose a model regarding the potential effect of information disclosed in public profiles from social networking sites in the initial formation of trust in new virtual work partners (Figure 4).

Figure 4 – The initial theoretical model proposed
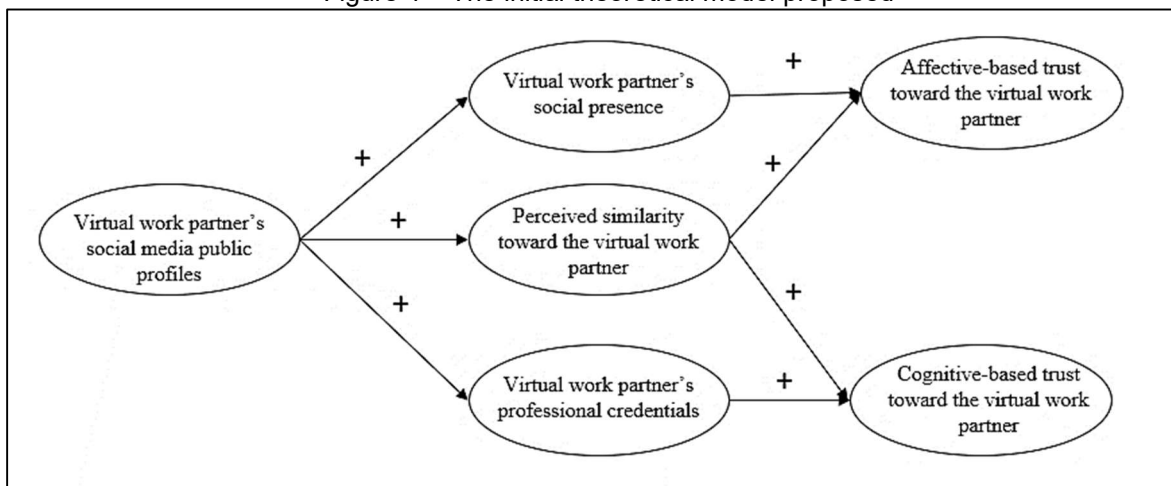
Source: Watanuki and Moraes (2019b, p.4).

This initial model has proposed that the information disclosed in public profiles of social networking sites by the trustee can provide signals or second-hand knowledge that trustors can utilize to make trust judgments regarding the trustee. More specifically, the information disclosed in public profiles of social networking sites has the capability, from a theoretical perspective, of providing the trustors with

positive inferences regarding the trustee´s social presence, perceived similarity, and professional credentials. These inferences are then responsible for augmenting the affective and cognitive trust judgments from the trustor toward the trustee.

The initial model was further refined in Paper #4 with a specific focus on the trustee´s information disclosure and impression formation behaviours displayed in social networking sites. Supported by the trust development models identified in the SLR of Paper #2, the potential effect of information disclosed in public profiles from social networking sites on the initial formation of trust in new virtual work partners was operationalized in a set of twelve hypothesis that were evaluated via a between-subjects experiment with undergraduate students. Each hypothesis is represented in Figure 5 by an arrow connecting two constructs and the numeric values in bold represent the path coefficients for the hypothesis that have found empirical support.

Figure 5 - Path coefficients and their statistical significance (* $\rho<0.05$, ** $\rho<0.01$, *** $\rho<0.001$)
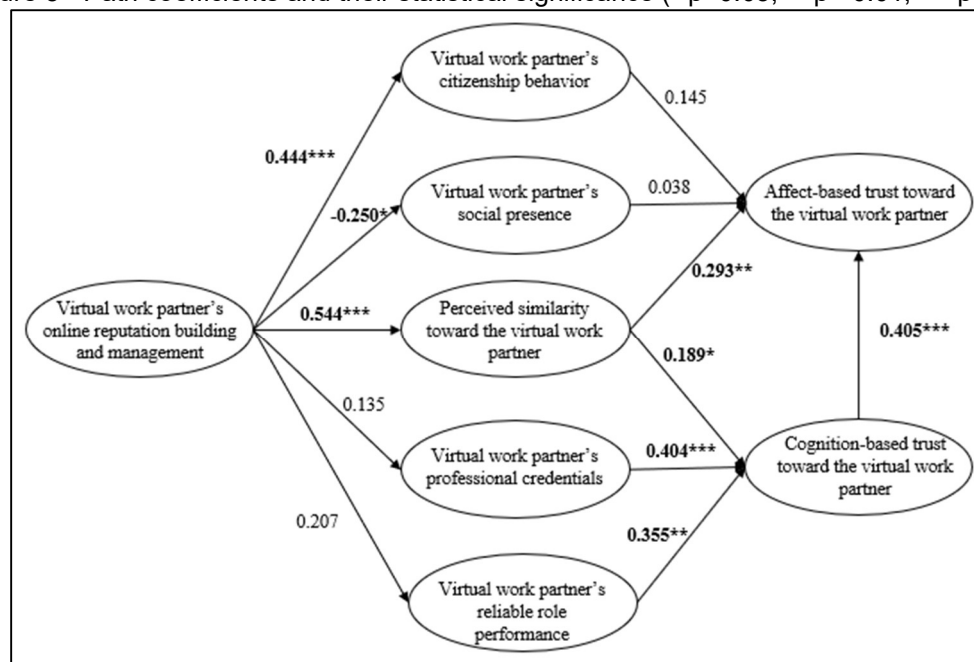
Source: Watanuki and Moraes (2019b, p.4).

The lack of empirical support for the remaining hypothesis was partially attributed to the low average age of the experiment participants, which motivated the expansion of the experiment toward a more experienced sample of professionals in Paper #5.

The third specific objective of the thesis was SO3 and aimed to assess the magnitude of the potential effect that information disclosed in public profiles from social networking sites can have on the initial formation of trust in new virtual work partners. The results of Paper #5 have addressed this specific objective by

suggesting that the virtual work partner´s online reputation building and management practices in social networking sites have a moderate effect on the explanation of the affect-based (R^2=45.0%) and cognitive-based (R^2=58.4%) trust beliefs toward the new virtual work partners, as shown in Figure 6 .

Figure 6 - Path coefficients and their statistical significance (* ρ<0.05, ** ρ <0.01, *** ρ <0.001)
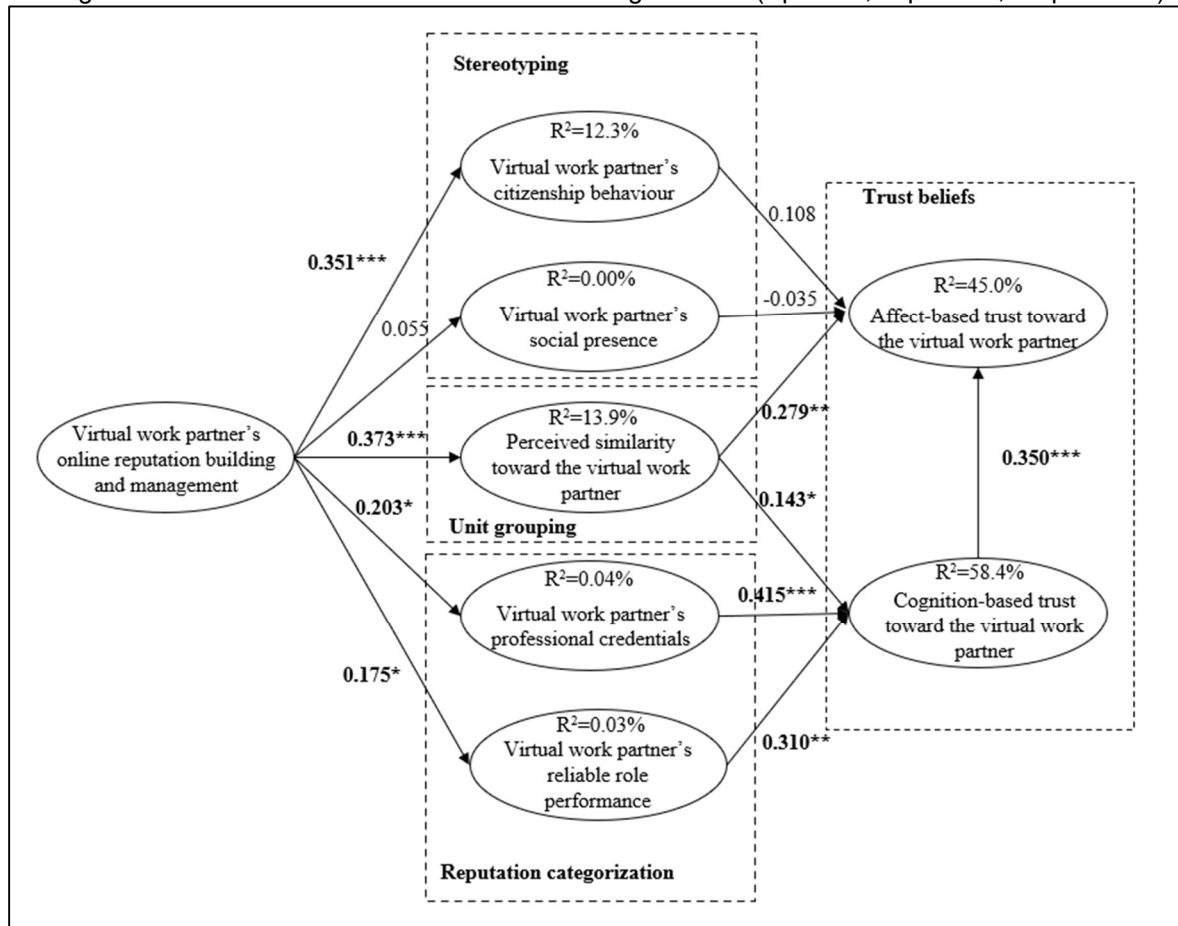
Source: Watanuki and Moraes (2021b, p.32).

Results from Paper #5 have also suggested that the online reputation building and management practices have significant effects into the three types of categorization processes for initial trust formation: stereotyping, unit grouping, and reputation categorization; and the last two have been found to contribute to initial trust development toward the new virtual work partner, both from an affect and cognition-based perspectives.

Finally, the general objective of this thesis was to propose a framework for the effect of information disclosed via public profiles from social networking sites on the initial trust formation in new virtual work partners. Based on the combined findings of the five papers presented in Part II of this thesis and the addressing of the three

specific objectives SO1, SO2, and SO3; the Figure 7 shows the conceptual framework proposed.

Figure 7 - The conceptual framework proposed
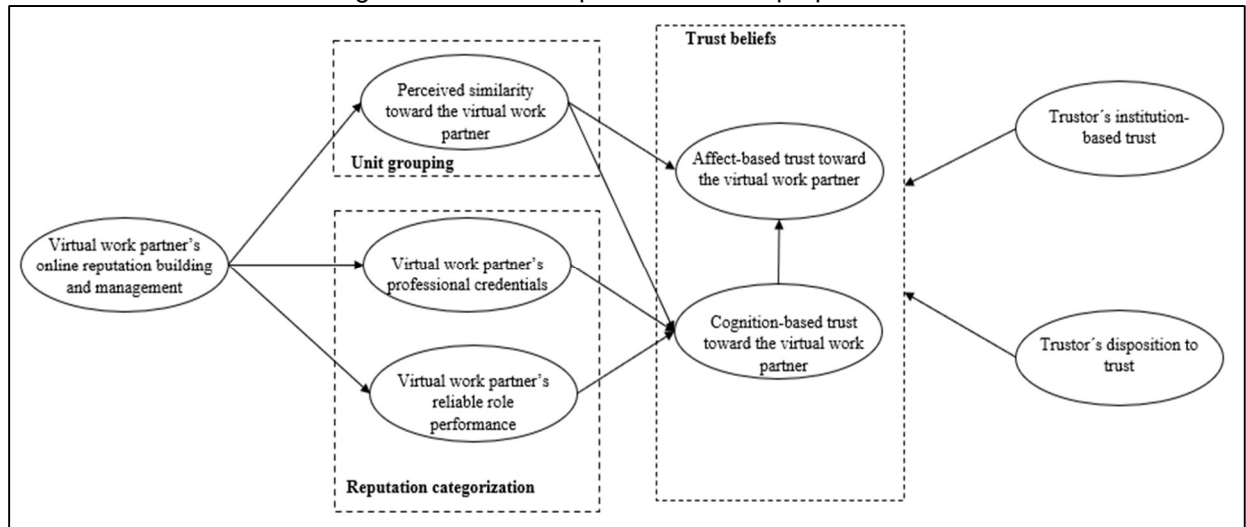
Source: Author´s own work.

This framework suggests that the initial trust formation in a new virtual work partner can be affected by the information this individual discloses via public profiles in social networking sites. This effect can be managed on the trustee´s side via his/her overall behaviour of self-disclosure of information in social networking sites that are aimed at impression formation and the proper presentation of identity.

Once such practices for online reputation building and management are established on the trustee´s side, a combination of unit grouping and reputation categorization processes on the trustor´s side can foster positive trust beliefs toward the trustee. Given the reliance on the trustee´s professional credentials and performance, the reputation categorization process has a direct effect on the cognitive dimension of trust beliefs. Conversely, the unit grouping process, due to its reliance on similarity perceptions toward the trustee, has a direct effect on both cognitive and affective dimensions of trust beliefs. Also, on the trustor´s side, his/her personal trust judgements toward people and organizations in general, i.e., his/her respective dispositional and institutional based trusts, also complement the trust beliefs toward the new virtual work partner.

5 CONCLUDING REMARKS

This research has approached the research question of whether the information a new virtual work partners disclose via public profiles in social networking sites affect the initial trust formation toward him/her, along with the elements that drive this cause-effect relationship on both the trustor´s and trustee´s side.

To address these questions a general objective was proposed to delineate a framework for the effect that information disclosed via public profiles from social networking sites can have on the initial trust formation in a new virtual work partner. This general objective was divided into three specific objectives: SO1, SO2, and SO3; and a multi-method approach combining a survey, a SLR, and an experiment was leveraged to address each of the specific objectives across five papers.

By combining the findings of each specific objective, this thesis has proposed a conceptual framework for the effect of information disclosed via public profiles from social networking sites on the initial trust formation in new virtual work partner.

Taken together, the thesis results suggest that the information a new work partner discloses via public profiles in social networking sites possess a moderate effect in the initial trust formation toward him/her. On the trustor´s side a combination of unit grouping and reputation categorization processes drive the development of trust beliefs toward the new work partner. On the trustee´s side, the presence of online reputation building and management practices in social networking sites contribute to initial trust development toward him/her, both from an affect and cognition-based perspectives.

The implications of these findings for theory and practice are outlined in the following sections, along with the main limitations and future opportunities of research.

5.1 CONTRIBUTIONS

The contributions from this study are as follows. From a theoretical perspective, this thesis has advanced the study of trust related issues in the IS domain in two aspects. First, it advances the IS literature in virtual team research by

providing further understanding on the impact that novel IS artefacts, such as social networking sites, have on trust formation. This was not only a research gap identified during an IS-centric literature review (Watanuki & Moraes, 2019a), but can also help IS researchers on the future exploration of specific IS features that can be used to facilitate trust formation between individuals (Söllner et al., 2016). By understanding how specific categories of personal information disclosed via IS artefacts impact the affective and cognitive trust beliefs of individuals, IS researchers can be more precisely guided on the exploration of new technologies or features with the sole purpose of fostering interpersonal trust. For instance, given that perceived similarity has been found to be capable of promoting both affect and cognitive-based trust beliefs between dispersed individuals, IS researchers pursuing the development of interpersonal trust between dispersed individuals can concentrate efforts in the investigation of technological features that enhance perceived similarity between users.

Second, this study also contributes with further understanding of how new behaviours at workplace associated with these novels IS artifacts impact the formation of interpersonal trust between new work partners. This contribution has been made via a review of the traditional trust development models utilized in IS research and by the proposition of a novel trust formation framework given the massive usage of social networking sites by the world population. The conceptual framework proposed in this study combines theoretical perspectives that the traditional two-stage literature on interpersonal trust development usually considers apart: the knowledge-based trust development model from McAllister (1995) and the initial trust formation model from McKnight et al. (1998). The justification for this novel approach lies in the ubiquity of social media in current society and in the fact that social networking sites can constitute an important source of second-hand knowledge to the trustor about the trustee´s behaviour (Cummings & Dennis, 2018; Kuo & Thompson, 2014; Shareef et al., 2020; Watanuki & Moraes, 2019b). The results of this study have suggested that the three categorization processes for initial trust formation proposed by McKnight et al. (1998) are positively affected by online reputation and management practices. The results also suggest that the same practices allow knowledge-based trust antecedents from McAllister (1995) model to come into effect even before first-hand knowledge about the trustee´s behaviour is known to the trustor. Taken together, the results suggest that, nowadays, the

traditional two-stage model for trust development (McKnight et al., 1998; McKnight, Choudhury et al., 2002; Meyerson et al., 1996; Robert et al., 2009) might be better represented by a continuum where trust can initially develop based on second-hand knowledge about the trustee´s behaviour, and over time be complemented by first-hand knowledge acquired via the interaction with the trustee. It is important to highlight that this initial trust already possess an affective-based component, an often-neglected dimension of interpersonal trust in virtual contexts, but critical for a more comprehensive understanding of the dynamics of interpersonal trust (Chen et al., 2011; Tsai & Hung, 2019; Zahedi & Song, 2008).

From a practical perspective, this study can guide remote workers to properly disclose information via their public profiles on social networking sites aiming at facilitating trust development toward them in virtual work contexts. This is a welcome support due to the increased adoption of virtual workplaces over the last few decades (Cheng, Fu et al. 2016; Cheng, Yin et al., 2016; Cummings & Dennis, 2018; Dulebohn & Hoch, 2017; Lowry et al. 2010, Zhang et al., 2007) and especially now that the social distancing measures adopted during COVID-19 pandemic have forced millions of professionals to experiment virtual collaboration for the first time (ILO, 2020; WHO, 2020). This trend toward virtual work is also expected to grow in the coming years, as some degree of virtual collaboration is expected to remain in areas where the work from home experience induced by the COVID-19 pandemic has succeeded (Caliguri et al., 2020).

Finally, this thesis has also a practical implication to society, in general, about the potential negative implications of personal information disclosed in public profiles of social networking sites. Given that the lack of online reputation building and management practices on the trustee´s side has been associated with lower levels of trust beliefs in the trustor´s side, individuals should start to be concerned about their information disclosure behaviours in social networking sites with the goal of facilitating future trustful virtual work relationships. Due to the increase trend toward virtual work, this could become, for instance, a desired skill that human resources recruiters could start looking for in professionals aiming at fulfilling positions that involve a large degree of virtuality in work relationships.

5.2 RESEARCH LIMITATIONS AND FUTURE STUDIES

It is important to note that the results and contributions discussed so far need to be considered together with the research limitations presented next, which also enables opportunities for future research.

First, this thesis did not find evidences regarding the effect of stereotyping on the affect-based trust toward the new virtual work partner, as predicted by the theoretical model. Despite of both effects being already reported in previous research (Bente et al., 2008; Gefen & Straub, 2004; McAllister, 1995; Lowry et al., 2010), in this thesis some novel approaches were attempted to assess this effect, which might help explain the inconclusive findings. First, differently from McAllister (1995), instead of assessing the effect of the citizenship behaviour on the affect-based trust beliefs based on actions that the trustee had developed toward the trustor in a real context; this study has tried to assess the same relationship by focusing on behaviours that the trustee had displayed on his/her public profile towards other individuals and not the trustor him/herself. The lack of statistical significance found for this relationship in this study might indicate that the effect of citizenship behaviour on affect-based trust beliefs might only be established when the target individual of the trustee´s citizenship behaviour is the trustor him/herself. Second, in regards to the hypothesized effect of social presence on the affect-based trust beliefs (Bente et al., 2008; Gefen & Straub, 2004; Lowry et al., 2010); the attempt of generating changes in the trustor´s perceptions of social presence by only varying the amount of trustee´s personal information being disclosed asynchronously on social networking sites might have not resulted in the intended differences in the trustor´s perceptions of interactivity and reciprocity required to cause a significant effect on the affect-based trust beliefs. In summary, this lack of evidence doesn´t necessarily indicate that this mechanism is not relevant for initial trust formation toward the new virtual work partner, but it might indicate that the proper stereotyping required for initial trust formation is difficult to convey based solely on public profiles of social networking sites. More exploratory research is suggested to clarify this, especially considering that a decrease in the level of social presence was the only negative outcome identified so far for the adoption of online reputation building and management practices in social networking sites. Alternative ways to generate and measure variance on trustor´s perceptions of trustee´s citizenship behaviour and social

presence based solely on the trustee´s overall behaviour of self-disclosure of information in social networking sites seem to be a particularly promising area to be explored.

Second, as detailed in the description of the sample of participants of the experiment, most of the participants of the experiment were male and relatively young. This might have introduced a potential bias in the final results and prevented more in-depth analysis regarding the effect of the control variables of age and gender into the hypothesized relationships. The expansion of the experiment to more diversified sample of participants, in terms of gender and age, might produce a better understanding about the potential generalization of the framework proposed in this thesis.

Third, although the focus of thesis was on the stage of initial formation of trust between new virtual work partners, and the fact that the trustee´s online reputation building and management practices have been found to positively contribute to the trustor´s affective and cognitive trust beliefs; an intriguing research question arises on whether these beliefs can be next materialized on concrete trusting actions between the work partners or even sustained in the long term as the work relationship between them evolve. In this sense, possible extensions of this work could include an experiment where participants, after evaluating the public profile of the future work partner, could be asked to execute a certain action that reflects their trust on the new work partner, such as sharing a financial incentive received as part of their participation on the experiment. To investigate the long-term effects of these initial trust beliefs, researchers could adopt a qualitative approach and develop a longitudinal study where real relationships between new work partners are monitored since before their inception until few months after the formal engagement starts.

Fourth, some criticism can be made to the decision of concentrating the motivation of the thesis on the eight journals suggested by the AIS Senior Scholar´s Basket of Journals; since these eight journals do not cover all published research in the IS domain. Although this approach excluded some IS journals, the list of eight journals utilized have demonstrated considerable diversity of topics, methodologies, and research institutions. Additionally, these eight journals are internationally recognized for their contribution in the IS domain and, therefore, their selection is consistent with the goal of this study. It is also important to highlight that the eight journals suggested by the AIS Senior Scholar´s Basket of Journals were only the

starting point of the literature review, which was further complemented with studies from different knowledge areas, such as information economics, psychology, and information science and management.

Lastly, another research limitation can be associated to the consistency of usage of concept definitions across the thesis artifact. Given that the author has opted for a paper-based thesis format, and that each paper reflects the author´s current knowledge and argumentation maturity at the time that the paper was initially elaborated; there might be small variations on the conceptual emphasis and perspectives adopted over time across the five papers. To mitigate potential misunderstandings that could arise from this discrete knowledge accumulation process, all contributions from the different papers were integrated in the part I of this thesis, in an attempt to provide a more uniform and logic discussion of the research results.

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ANNEX A – Best papers award certificate from the 17th International Conference on Information Systems and Technology Management

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BEST PAPERS AWARD

6490 - INITIAL TRUST FORMATION IN NEW VIRTUAL WORK PARTNERS: THE IMPACT OF ONLINE REPUTATION BUILDING AND MANAGEMENT PRACTICES IN SOCIAL NETWORKING SITES

Hugo Martinelli Watanuki,

Renato De Oliveira Moraes

Prof. Dr. Edson Luiz Riccio
CONFERENCE-CHAIR CONTECSI
SCHOOL OF ECONOMICS, BUSINESS AND ACCOUNTANCY
UNIVERSITY OF SÃO PAULO

PART II – APPENDED PAPERS

APPENDIX A - Paper #1: Team dispersion, emergent states, and performance in virtual IT service provisioning teams

Abstract

Today, virtual teams composed by dispersed team members relying on computer-supported collaborative work are common in the information technology (IT) service provisioning industry. Despite the increasing interest in virtual team research, there is a limited understanding of a multidimensional view of team dispersion and its effect on the performance of virtual teams via the team´s socioemotional states. The purpose of this paper is to investigate the influence of team distribution and variety of work practices on the performance of virtual IT service provisioning teams via the emergent states of trust and cohesiveness. To this aim, an input-process-output framework was adopted to develop a conceptual model and a survey with IT service provisioning professionals was conducted. The results suggest that a variety of work practices constitutes a barrier to the performance of virtual IT service provisioning teams; and that trust and cohesiveness are important mediators in this cause-effect relationship.

Keywords: Virtual Teams, IT Service Provisioning, Team Dispersion, Emergent States, Trust, Cohesiveness, Team Performance, Survey

1   INTRODUCTION

Computer-supported cooperative work among dispersed individuals in the form of virtual teams has been an organizational reality in the information technology (IT) service provisioning industry for almost two decades (Alfaro & Chadrasekaran, 2015; Balint, 2015; Espinosa, DeLone, & Lee, 2006; Popoli & Popoli, 2009; Sakthivel, 2005; Siakas & Siakas, 2008). Given the global and interorganizational collaboration aspect

of provisioning the services required to maintain day-to-day operations of a company's IT systems, this industry has increasingly leveraged temporary cross-functional virtual work teams whose performance is highly dependent on the relationships developed among the dispersed team members (Alfaro & Chadrasekaran, 2015; Heitlager, Helms, & Brikkemper, 2010; Watanuki & Moraes, 2016).

Despite this trend, researchers are still striving to comprehensively understand the factors that impact the performance of virtual teams (Brown, Prewett, & Grossenbacher, 2020; Clark, Manerwick, & Manerwick, 2019; De Jong, Gillespie, Williamson, & Gill, 2020; Eisenberg, Post, & DiTomaso, 2019; Prasad, DeRosa, & Beyerlein, 2017). Although virtual work can result in many potential benefits, such as increased productivity and flexibility, doubts regarding the performance of virtual teams are common in the literature because being virtual adds challenges to the already complex task of collaborating (Anh, Cruzes, & Conradi, 2012; Colazo & Fang, 2010; Dulebohn & Hoch, 2017). A considerable number of these challenges can be associated with the several discontinuities that these teams face, such as spatial, temporal, cultural, organizational or functional dispersion (Alfaro & Chadrasekaran, 2015; Anh et al., 2012; Brown et al., 2020; Colazo & Fang, 2010; Eisenberg et al., 2019; Espinosa et al., 2006; Espinosa, Nan, & Carmel, 2015; O'Leary & Cummings, 2007; Prasad et al., 2017) and their consequent implications for the socioemotional state of the team, such as trust and cohesiveness (Clark et al., 2019; De Jong et al., 2020; Paul, Drake, & Liang, 2016; Peñarroja, Orengo, Zornoza, & Hernández, 2013). Given the growing popularity of virtual teams in the IT service provisioning industry, this study is motivated by the need for a more comprehensive understanding of the effects of team dispersion on the performance of virtual teams via the team´s socioemotional states.

In an attempt to provide further distinction and understanding of the effect different dimensions of team dispersion might have over the virtual team performance, this study combines findings from previous research about team dispersion (Anh et al., 2012; Chudoba, Wynn, Lu, & Watson-Manheim, 2005; Espinosa et al., 2006; O'Leary & Cummings, 2007; Prasad et al., 2017) and adopts a two-dimensional view of team dispersion along the concepts of team distribution, which encompasses the highly correlated spatial, temporal and cultural dimensions of dispersion; and variety of

practices, which encompasses the highly correlated organizational and functional dimensions of dispersion.

In an attempt to provide further distinction and understanding of the effect that different socioemotional states of the virtual team might have on the team´s performance, this study investigates the mediating role of trust and cohesiveness in the relationship between team dispersion and virtual team performance.

The goal of the study is, therefore, twofold and aims at answering the following research questions: What is the effect that team distribution and variety of practices have on virtual team performance? What is the mediating role that emergent states of team trust and cohesiveness play in this relationship for virtual IT service provisioning teams?

To answer the research questions, a conceptual input-process-output framework was adopted relating team dispersion, emergent states, and team performance. Based on this conceptual framework, a proposed scheme was developed and assessed using data collected through a survey with IT service provisioning professionals. Partial least squares structural equation modelling (PLS-SEM) was leveraged for the data analysis.

This study contributes to this body of knowledge by exploring two gaps in the literature. First, to date, most published research on this topic has neglected the multidimensional aspect of dispersion and has approached the association between dispersion and virtual team performance mostly from a team geographical distribution perspective by focusing either on the spatial (Alnuaimi, Robert, & Maruping, 2010; Brown et al., 2020; Eisenberg et al., 2019; Prasad et al., 2017), temporal (Colazo & Fang, 2010; Espinosa et al., 2015) or cultural (Alfaro & Chadrasekaran, 2015; Garrison, Wakefield, Xu, & Kim, 2010) dispersion of the team. Therefore, some researchers call for more comprehensive studies accounting for additional dimensions of dispersion that have been neglected so far, especially those associated with a variety of work practices among team members that are caused by organizational and functional dispersion (Gilson et al., 2015; Jimenez, Boehe, Taras, & Caprar, 2017). The few reported studies approaching virtual team dispersion from an organizational or functional perspective are exploratory in nature and recommend future statistical validation of their findings (Anh et al., 2012; Espinosa et al., 2006).

Second, to the best of the authors´ knowledge, no previous work on virtual team research has tried to assess the relationship between team dispersion and IT service

provisioning performance by focusing on the mediating role played by the team´s socioemotional emergent states. Historically, the transient nature of the work performed by virtual IT service provisioning teams has led to the assumption that emergent socioemotional states of team members have little impact on team performance (Heitlager et al., 2010; Jarvenpaa, Knoll, & Leidner, 1998). However, recent research has reinforced the importance of emergent states of team trust and cohesiveness for explaining the performance of virtual teams (Clark et al., 2019; De Jong et al., 2020; Paul et al., 2016; Peñarroja et al., 2013). To date, most of these studies have been conducted in laboratory settings by using student samples, and they have made calls for future research to try to replicate and validate their findings in real-world business contexts.

Therefore, the main contributions of the study can be summarized as follows:

1. This study provides further understanding of the impact of two dimensions of dispersion, both geographical and organizational, on the performance of virtual teams using the latest developments in PLS-SEM.

2. This study extrapolates the student samples in laboratory settings and assesses the mediating role of trust and cohesiveness in the relationship between team dispersion and virtual team performance in the real business context of the IT service provisioning industry.

3. The proposed scheme has the potential to enable team leaders and managers of virtual IT service provisioning teams to make better decisions for the structuring and management of such teams.

The rest of this paper is organized as follows. A review of the related literature and the proposed theoretical framework is presented in the following section. Next, the study methodology is presented, followed by the data analysis and results. Finally, the study contributions, limitations, and implications for future research are presented in the conclusion section..

2   LITERATURE REVIEW

This section presents the basic theoretical framework utilized to obtain a proposed scheme of the relationships and the hypotheses.

2.1 THEORETICAL FRAMEWORK

Historically, efforts to better understand why specific teams perform better than others and how to stimulate the improvement of team performance have been made via the continuous interaction processes developed among team members when working on a specific task. The input, process, and output (IPO) framework proposed by Hackman and Morris (1975) captures the following: a) the initial conditions of the team, (b) the interaction processes, and (c) team performance. This model has become one of the most important research paradigms for the study of group functioning in collocated settings, and it provides a basic framework that researchers can use to identify factors that are critical to virtual team effectiveness (Dulebohn & Hoch, 2017; Espinosa et al., 2006; Garrison et al., 2010; Gilson et al., 2015).

In the context of virtual teams, the inputs of the IPO model represent the structural characteristics and composition of the virtual teams; the interaction processes are defined as the means or methods that the teams utilize to attain their goals, and the outputs represent the consequences of group functioning (Martins, Gilson, & Maynard, 2004). Ilgen, Hollenbeck, Johnson and Jundt (2005) further refined the concept of interaction processes and proposed renaming them to "mediators", including both processes and emergent states. The difference between team processes and emergent states is that whereas the first focuses on the interdependent acts of transforming inputs to outcomes, the second focuses on socioemotional states that rise out of team process interaction (Dulebonh & Hoch, 2017; Paul et al., 2016; Peñarroja et al., 2013).

In the present study, the input from the IPO model has been represented by team dispersion. Team trust and cohesiveness have represented emergent states, and the outcome variable has been represented by team performance. The extended IPO framework adopted is further discussed and illustrated in the following sections.

2.1.1 Inputs: Team distribution and variety of practices

The main input variable of interest for this study was team dispersion. Virtual team research has identified the following main dimensions for team dispersion (Anh et al., 2012; Chudoba et al., 2005; Espinosa et al., 2006; O'Leary & Cummings, 2007; Prasad et al., 2017):

- Spatial: the spatial differences between the workplaces of team members.
- Temporal: the time zone or work shift differences between the team members.
- Cultural: differences in the cultural background of team members, such as language, mental models, and cognition.
- Organizational: differences in organizational affiliation of team members.
- Functional: differences in the functional and process components of work activities.

These studies have also suggested that these dimensions frequently overlap: temporal and cultural dispersion are usually embedded in spatial dispersion, whereas organizational dispersion normally results in functional differences. Since these dimensions covary, it becomes difficult to draw firm conclusions about the effect of a specific dimension or to be sure that the observed effect is not caused by another dimension (Espinosa et al., 2006). One alternative to analyse the effect of multiple sources of dispersion without incurring major complexities is to group highly correlated dimensions. A principal component analysis was conducted by Chudoba et al. (2005) and its results have suggested that the five dispersion dimensions listed above can be grouped around two main concepts:

- Team distribution: the degree to which virtual teams are composed of individuals dispersed across different geographic regions, time zones and cultures.
- Variety of practices: the degree to which individuals experience a diversity of work practices, such as support technologies, terms and lead times, in their virtual team due to organizational and functional dispersion.

Supported by these findings, this study has approached team dispersion by using two main concepts: team distribution and variety of practices. The first concept encompasses the highly correlated spatial, temporal, and cultural dimensions of dispersion, whereas the second includes the organizational and functional dimensions of dispersion.

2.1.2   Emergent states: Trust and cohesiveness

A review of the literature has identified two main emergent states that influence virtual team performance. The first emergent state is trust, which can be basically

defined as the degree to which virtual team members are confident and willing to act based on the words, acts and decisions of other team members (De Jong et al., 2020; Kanawattanachai & Yoo, 2002). Trust, as a multidimensional construct, has a cognitive component based on rational human judgement of trusting evidence and an affective component that stems from affective bonds among individuals (Kanawattanachai & Yoo, 2002). Previous research has also noticed that trust established in virtual teams has some distinguishing characteristics. For instance, given the transient characteristics of virtual teams, the interpersonal relationships among team members are usually constrained, forcing team members to rely to a great extent on professional behaviours, such as responsibility, competence, and integrity, to develop trust (Paul et al, 2016). Thus, trust established in virtual teams is usually more fragile (Jarvenpaa et al., 1998) and is more dependent on cognitive mechanisms than affective mechanisms (Kanawattanachai & Yoo, 2002).

The second emergent state is team cohesiveness, which includes both team members' sense of belonging to the group and attraction to group tasks (Garrison et al., 2010; Paul et al., 2016; Sakthivel 2005; Warkentin & Beranek, 1999). As a whole, cohesiveness captures individuals within a group coming together as a perceived single entity with shared norms, values, and goals (Paul et al., 2016). When members believe that they are an integral part of the team, cohesion enables the group to remain intact and productive despite difficulties associated with virtual contexts (Garrison et al., 2010; Watanuki & Moraes, 2016).

2.1.3 Outputs: Quality of work and delivery speed

The research literature on virtual teams has suggested that team performance is often conceptualized along two key dimensions: process performance and product performance (Espinosa et al., 2006).

Process performance involves how well a task or project has been undertaken by the team. It can be measured by on-time/on-budget completion (Espinosa et al., 2006; Paul et al., 2016), time required for completion (Alfaro & Chandrasekaran, 2015; Colazo & Fang, 2010), and team member satisfaction (Espinosa et al., 2006; Fuller, Hardin, & Davison, 2006). Product performance involves the effectiveness of the product or service implemented by the team, and it is generally evaluated using measures such as absence of errors (Colazo & Fang, 2010), perceptions of quality

outcomes (Fuller et al., 2006; Paul et al., 2016), and functionality and user satisfaction about the system (Alfaro & Chandrasekaran, 2015; Espinosa et al., 2006).

Consistent with past research, this study has conceptualized virtual team performance as the process and product success evidenced by the perceptions of quality and delivery speed of the work executed by virtual teams. Due to their nature, it was expected that these two performance elements could be specifically critical for virtual IT service provisioning teams as well (Heitlager et al., 2010; Watanuki & Moraes, 2016).

2.2   PROPOSED SCHEME AND HYPOTHESES DEVELOPMENT

Consistent with prior research on virtual teams, the proposed scheme specified in this study consisted of a three-stage path model (Dulebohn & Hoch, 2017; Espinosa et al., 2006, 2015; Gilson et al., 2015; Paul et al., 2016). The proposed scheme is illustrated in Figure 1, and the development of the hypotheses is detailed next, supported by the authors listed in Table 1.

Figure 1 - The proposed scheme
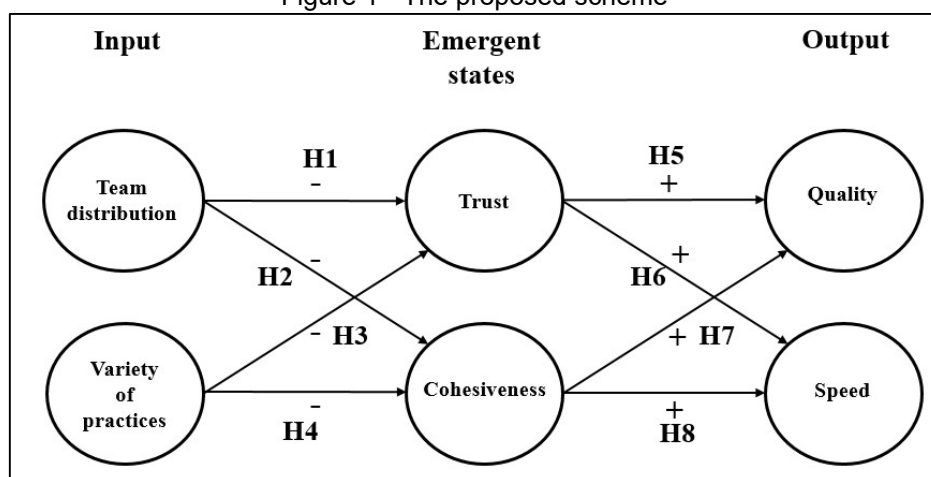
Table 1 - Synthesis of the literature review and the proposed hypotheses

Proposed relationship	Hypotheses	Publications
Effect of Team Distribution on Emergent States	Hypothesis 1	De Jong et al. (2020), Eisenberg et al. (2019), Espinosa et al. (2006, 2015), Garrison et al. (2010), Kanawattanachai and Yoo (2002), Paul et al. (2016), and Peñarroja et al. (2013)
	Hypothesis 2	Alfaro and Chandrasekaran (2015), Alnuaimi et al. (2010), Eisenberg et al. (2019), Espinosa et al. (2006, 2015), O'Leary and Cummings (2007), Paul et al. (2016), and Sakthivel (2005)
Effect of Variety of Practices on Emergent States	Hypothesis 3	Anh et al. (2012), Chudoba et al. (2005), and Espinosa et al. (2006)
	Hypothesis 4	Anh et al. (2012), Chudoba et al. (2005), and Espinosa et al. (2006)
Effect of Emergent States on Team Performance	Hypothesis 5	Clark et al. (2019), Garrison et al. (2010), Paul et al. (2016), and Siakas and Siakas (2008)
	Hypothesis 6	Clark et al. (2019), Garrison et al. (2010), Paul et al. (2016), and Siakas and Siakas (2008)
	Hypothesis 7	Alnuaimi et al. (2010), Garrison et al. (2010), Paul et al. (2016), Sakthivel (2005), and Warkentin and Beranek (1999)
	Hypothesis 8	Alnuaimi et al. (2010), Garrison et al. (2010), Paul et al. (2016), Sakthivel (2005), and Warkentin and Beranek (1999)

2.2.1 Effect of team distribution on emergent states

As presented below, the literature has suggested that team distribution can have a significant effect on emergent states, especially when the spatial dispersion of virtual team members is accompanied by both cultural and temporal dispersion.

Approaching trust first, an increased spatial distribution among team members can pose many challenges to trust development in virtual teams because it negatively affects many trust-building behaviours. For instance, previous research has reported that in spatially dispersed teams, communication tends to be more task-oriented, and the development of social relationships tends to suffer (Eisenberg et al., 2019; Kanawattanachai & Yoo, 2002; Peñarroja et al., 2013). Likewise, in spatially dispersed contexts, team members may not have the opportunity to gather sufficient information about their coworkers to determine whether their colleague is trustworthy (De Jong et al., 2020; Jarvenpaa et al., 1998; Peñarroja et al., 2013) or may face increased challenges to perceive responsibility, competence and integrity from remote team members (Paul et al., 2016). Such trust-building mechanisms tend to be even more absent with temporal dispersion as communication becomes increasingly asynchronous and mediated by technology (Espinosa et al., 2006, 2015). Last, cultural dispersion affects the perceptions of similarity and shared identity among team members, thus potentially leading to distrust among dissimilar groups or individuals (Garrison et al., 2010).

Hypothesis One: Team distribution has a negative influence on trust among virtual team members.

From the perspective of the spatial dimension, as dispersion increases, the higher dependence on electronic communication contributes to a decrease in social presence, leading to a reduction in emotional perceptions among team members (Alnuaimi et al., 2010; Eisenberg et al., 2019). As a consequence of the lower level of psychological proximity, team members become less likely to contribute to the team's effort (Alnuaimi et al., 2010; Paul et al., 2016).

Psychological proximity can be further challenged, as temporal dispersion occurs in congruence with spatial dispersion because temporal dispersion disrupts synchronous communication flows (Espinosa et al., 2006, 2015) and can increase the isolation of team members (O'Leary & Cummings, 2007). Similarly, from a cultural perspective, mutual identification becomes less pronounced when team members originate from distinct cultures and speak different languages. In this context, cultural dispersion can increase the frequency of internal conflicts and pose challenges for building relationships, as team members possess different perceptions and mental schemes, thus reducing group cohesiveness (Alfaro & Chandrasekaran, 2015; Espinosa et al., 2006; Sakthivel 2005).

Hypothesis Two: Team distribution has a negative influence on cohesiveness among virtual team members.

2.2.2   Effect of variety of practices on emergent states

Although less extensive than the literature that investigates the effects of team distribution on virtual team performance, the body of research that focuses on the effects of a variety of practices has provided some useful insights, particularly regarding emergent states.

Organizational dispersion in virtual teams, for instance, introduces problems in contractual obligations, competition, conflicting objectives, and diversified methods of work (Anh et al., 2012; Espinosa et al., 2006). Such divergent interests among the different organizations result in a greater tendency of conflicts within the team during activities, such as prioritization of team tasks, and can also hinder transparent and collective work (Chudoba et al., 2005). These elements challenge team members to rely on each other's words and acts.

Hypothesis Three: The variety of practices has a negative influence on trust among virtual team members.

The conflicting interests and competition caused by different organizational affiliations can reduce the shared understanding and inhibit the group's ability to develop a common identity (Espinosa et al., 2006). Similarly, conflicting interests and competition in the collaborative environment of virtual teams can reduce the sense of belonging among team members and their tasks (Anh et al., 2012; Chudoba et al., 2005; Espinosa et al., 2006). On the other hand, differences in work practices, functional goals, and norms can hinder the establishment of a mutual understanding and agreement on how work should be organized and controlled (Anh et al., 2012; Chudoba et al., 2005).

Hypothesis Four: The variety of practices has a negative influence on cohesiveness among virtual team members.

2.2.3   Effect of emergent states on team performance

Team trust and cohesiveness are essential elements of virtual team functioning, and the lack of these attributes can negatively affect the performance of virtual teams (Paul et al., 2016). When team members start trusting each other to execute their respective tasks, they dedicate more effort to completing their own tasks instead of monitoring the tasks of other team members (Garrison et al., 2010; Paul et al., 2016). Additionally, virtual team members that do not trust each other are less likely to share knowledge and information required for effective group outcomes (Garrison et al., 2010). Therefore, a high level of trust among team members is a key element allowing virtual teams to operate at a fast pace and to develop enhanced capabilities of problem solving and decision making (Clark et al., 2019; Siakas & Siakas, 2008).

Hypothesis Five: Trust has a positive influence on the quality of work delivered by the virtual team.

Hypothesis Six: Trust has a positive influence on the virtual team's delivery speed.

Management researchers have suggested that a connection exists between cohesion and the performance of virtual teams since highly cohesive teams tend to be more efficient and successful at problem solving than less cohesive teams (Garrison et al., 2010; Paul et al., 2016). Therefore, cohesiveness can positively influence the performance of virtual teams, notably those engaged in complex tasks

(Sakthivel, 2005). Previous research has also demonstrated that a lack of psychological proximity among team members can decrease their motivation to execute a group task, potentially deteriorating the performance of the virtual team (Alnuaimi et al., 2010). With high team cohesion, the team sees itself as a unit, and when this happens, team members work for the sake of the team and exhibit commitment to the task (Paul et al., 2016). Cohesiveness is an important aspect of virtual teams because the strength of relational links among virtual team members is associated with positive outcomes such as better decision-making and greater team member satisfaction (Warkentin & Beranek, 1999). Last, if members do not have a commitment to the group, then the distributed team may face coordination problems that are not easily addressed via communication technologies, and delays would be expected due to group conflict (Sakthivel, 2005).

Hypothesis Seven: Cohesiveness has a positive influence on the quality of work delivered by the virtual team.

Hypothesis Eight: Cohesiveness has a positive influence on the virtual team's delivery speed.

3 METHODOLOGY

This section presents the utilized methods and research techniques, describing the questionnaire design, the sample and the data collection process. The complete research process in a stepwise view is presented in Figure 2.

Figure 2 – Research process diagram
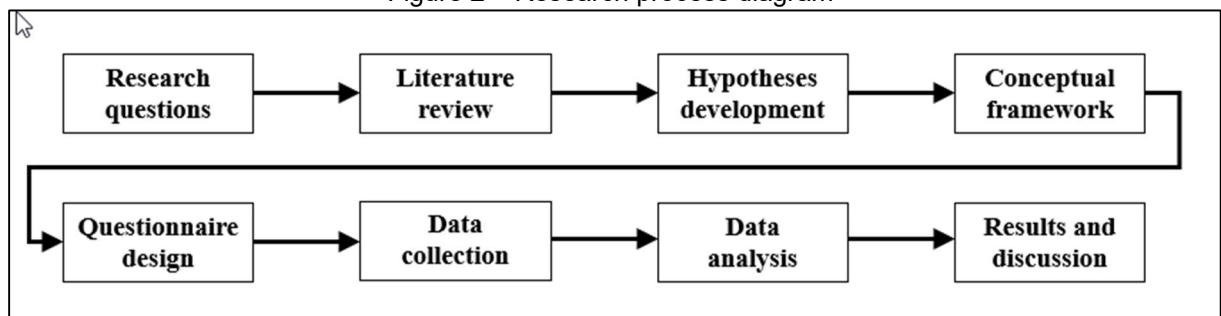
3.1 QUESTIONNAIRE DESIGN

An electronic questionnaire was posted on the Internet to collect the data. The questionnaire consisted of four main sections: an evaluation of the dispersion of the

virtual team, emergent states, virtual team performance, and a demographic profile of the respondent. The measurement scales utilized in these sections (Appendix A1) were developed based on an extensive literature review using the operational definitions developed, utilized and validated in previous studies (Chudoba et al., 2005; Dayan and Di Benedetto, 2010; Fuller et al., 2006; Kanawattanachai and Yoo, 2002; Warkentin and Beranek, 1999). All scales were originally available in English and were also translated to Portuguese for Brazilian respondents. Before the data collection, the questionnaire was reviewed by two experienced IT service provisioning professionals for language appropriateness and content validation. Constructs were measured based on the respondents' perceptions using a five-point Likert scale, ranging from 1 (lowest level) to 5 (highest level). The respondents were instructed to analyse the characteristics of their virtual teams as a whole. In the introduction of the questionnaire, a detailed description of a virtual IT service provisioning team was presented. The respondents had the option to end the questionnaire if the description did not match their current working conditions.

3.2   SAMPLE AND DATA COLLECTION

The data were collected as a part of a larger survey among IT service provisioning professionals who work in virtual teams. The targeted respondents of this study were identified from the database of a specialized IT human resources recruiting company in Brazil, which was hired by the researchers to help disseminate the electronic questionnaire among IT service provisioning professionals. The participants were invited to fill out the questionnaire via e-mail. Between November 2013 and February 2014, 345 responses were returned, and among these, 139 were considered valid for the analysis. According to Hair, Hult, Ringle and Sarstedt. (2014), this sample size fulfils the minimum requirements for conducting a PLS-SEM analysis with statistical power and significance at levels commonly utilized in quantitative research.

Most of the respondents were male (86%) and Brazilian (84%). There was also some representation from IT service provisioning professionals from India (7%) and the United States (6%). Half of the respondents had a bachelor's degree, and another 46% reported some form of graduate education. The average age of the respondents was 38 years old. The respondents also indicated that in 72% of the IT service provisioning teams analysed, the members had a good level of previous experience

with virtual contexts. This variable was collected because previous studies indicate that a team member´s experience with virtual work can significantly influence virtual team performance (Wang & Haggerty, 2011). Along with team member experience, the size of the virtual teams was also controlled (Eisenberg et al., 2019; Watanuki & Moraes, 2016).

4   RESULTS AND DISCUSSION

The experimental environment for the data analysis was primarily Microsoft Excel and SmartPLS2 software (Ringle, Wende, & Will, 2005) running on a personal computer with Windows 10 as the operating system. PLS-SEM was deployed to test the hypotheses, and the assessment process included a two-stage approach: first, the measurement model was assessed to control for constructs' measurement errors, and only then the values of the structural path coefficients were evaluated.

For the evaluation of the measurement model, the construct's reliability and validity were assessed. Table 2 presents the standardized outer loading values for the reflective indicators in the model.

Table 2 - Outer loadings

Construct Indicator	Cohesiveness	Trust	Quality	Speed
COHES1	0.838			
COHES2	0.835			
COHES3	0.870			
COHES4	0.801			
TRUST1		0.808		
TRUST2		0.792		
TRUST3		0.807		
TRUST4		0.751		
QUAL1			0.928	
QUAL2			0.944	
QUAL3			0.937	
SPEED1				0.861
SPEED2				0.892
SPEED3				0.896

Since all indicators presented outer loadings above 0.70; for each reflective variable, Cronbach's alpha (α), composite reliability (ρ_c), and average variance extracted (AVE) were calculated. For the two reliability measures, the utilized reliability criteria required values exceeding 0.70, and for the AVE, the convergent validity criteria required values exceeding 0.50 (Hair et al., 2014). The obtained results confirm the reliability and convergent validity of the reflexive constructs (Table 3).

Table 2 - Reliability and validity values

Construct	Cronbach's Alpha (α)	Composite Reliability (ρc)	AVE
Cohesiveness	0.857	0.903	0.700
Trust	0.800	0.869	0.624
Quality	0.930	0.955	0.877
Speed	0.860	0.914	0.780

The constructs' discriminant validity was assessed by using Fornell-Larcker analysis and the heterotrait-monotrait (HTMT) ratio of correlations. According to Table 4, the Fornell-Larcker criterion has been satisfied by all latent variables, as the root square of the AVE values for each construct on the main diagonal (highlighted in bold and italics) are higher than the correlations among the latent variables (Hair et al., 2014).

Table 4 – Fornell-Larcker analysis

Construct	Cohesiveness	Trust	Quality	Speed	Team distribution	Variety of practices
Cohesiveness	*0.837*					
Trust	0.664	*0.790*				
Quality	0.705	0.606	*0.936*			
Speed	0.537	0.486	0.701	*0.883*		
Team distribution	0.153	0.167	0.255	0.088	*Formative construct*	
Variety of practices	-0.285	-0.308	-0.088	-0.052	0.190	*Formative construct*

Table 5 presents the HTMT values for each pair of constructs in the measurement model. All latent variables satisfied the HTMT criteria, as all values were smaller than the 0.85 threshold value (Henseler, Ringle, & Sarstedt, 2015). These findings confirm the discriminant validity of the reflexive constructs.

Table 5 - HTMT analysis

Construct	Cohesiveness	Trust	Quality	Speed
Cohesiveness				
Trust	0.795			
Quality	0.787	0.699		
Speed	0.615	0.566	0.777	

For the two formative constructs, team distribution and variety of work practices, the variance inflation factor (VIF) of all indicators was below the threshold value of 5. All formative indicators presented statistical significance at a confidence level of 95% for their outer weights or presented outer loadings above the threshold value of 0.50. The only exception was one indicator from the team distribution construct whose outer loading was marginally below the threshold value (0.461). However, this indicator was maintained in the measurement model, as prior research provides support for its relevance (Chudoba et al., 2005). Taken together, these results confirm the absence of collinearity issues and the significance and relevance of the formative indicators (Hair et al., 2014).

After the measurement model was validated, the structural model was submitted to the bootstrapping sampling procedure (5,000 samples) to determine the t-values

associated with the statistical significance of the path coefficients of the model (Hair et al., 2014). The path coefficients (β), their statistical significance and the explained variance (R2) of the dependent variables are displayed in Figure 3. Regarding the control variables, virtual team size did not show any statistically significant effects, whereas team experience showed significant effects for all emergent states and virtual team performance outcomes.

Figure 3 - Path coefficients and the explained variance of the dependent variables (* p<0.05, ** p<0.01, *** p<0.001
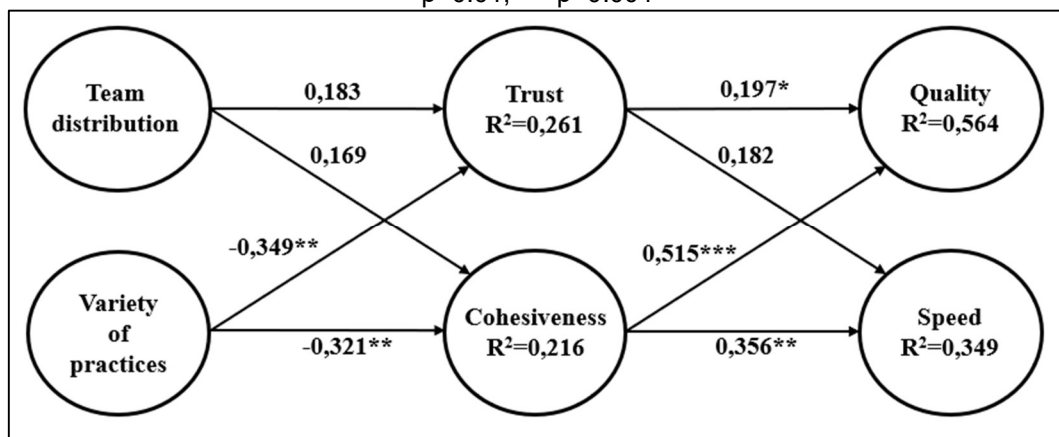
Hypotheses H1 and H2 predicted that virtual team distribution would have a negative effect on both trust and cohesiveness among team members. However, no statistical significance was found for either relationship between team distribution and trust (β=0.183, t=1.228, p>0.05) or between team distribution and cohesiveness (β=0.169, t=1.218, p>0.05). One possible explanation for this result could be the sample of participants, especially when considering the significant effects found for virtual teams' experience on emergent states and performance outcomes. According to the descriptive statistics of the sample utilized, 72% of the respondents declared that the level of previous experience in virtual settings demonstrated by the members of their respective virtual teams was moderate or high. In this case, as suggested by Wang and Haggerty (2011), a high level of previous experience could contribute to partially neutralizing the negative effects of team distribution. More exploratory research is required to understand this scenario, particularly by considering a less experienced sample of respondents.

Hypotheses H3 and H4 predicted that a greater variety of practices would have a negative effect on trust and cohesiveness among members of virtual teams. The variety of practices was negatively associated with both trust (β=-0.349, t=3.281, p<0.01) and cohesiveness (β=-0.321, t=3.354, p<0.01), supporting hypotheses H3

and H4. This result provides statistical evidence for qualitative findings from previous research that considered organizational and functional dispersions as an additional layer of complexity for the proper functioning of virtual teams (Anh et al., 2012; Espinosa et al., 2006). In the context of the sample of virtual teams analysed in this study, this result suggests that the challenges caused by the variety of practices can become too complex to be addressed even for virtual teams whose members are already experienced in virtual contexts.

Team trust did exhibit statistical significance regarding the quality of work ($\beta=0.197$, $t=2.426$, $p<0.05$) but did not exhibit statistical significance regarding the delivery speed ($\beta=0.182$, $t=1.708$, $p>0.05$); as a result, hypothesis H5 was supported, but H6 was not. Team cohesiveness was positively associated with the quality of work ($\beta=0.515$, $t=7.293$, $p<0.001$) and with the delivery speed ($\beta=0.356$, $t=3.543$, $p<0.01$). Therefore, both hypotheses H7 and H8 were supported.

The theoretical model also assumed that emergent states act as mediators. To check this assumption, an additional test, as suggested by Nitzl, Roldán and Carrión (2016), was conducted to verify that team distribution and variety of practices had a direct significant effect on team performance, which would imply that there is partial or no mediation in the model. According to these authors, the absence of mediation is supported if the indirect effect is not significant and the direct effect is significant, whereas partial mediation emerges if both effects are significant. The assessments of the direct and indirect paths from the model are presented in Table 6.

Table 6 - Mediation analysis

Relationship	Indirect Effect ($p < 0.05$)	Direct Effect ($p < 0.05$)	Mediation Type
Team distribution -> Trust -> Quality	Non-significant	Non-significant	No effect
Team distribution -> Trust -> Speed	Non-significant	Non-significant	No effect
Team distribution -> Cohesiveness -> Quality	Non-significant	Non-significant	No effect
Team distribution -> Cohesiveness -> Speed	Non-significant	Non-significant	No effect
Variety of practices -> Trust -> Quality	Significant	Non-significant	Full mediation
Variety of practices -> Trust -> Speed	Non-significant	Non-significant	No effect
Variety of practices -> Cohesiveness -> Quality	Significant	Non-significant	Full mediation
Variety of practices -> Cohesiveness -> Speed	Significant	Non-significant	Full mediation

The results revealed that both trust and cohesiveness have been shown to fully mediate the relationship between a variety of work practices and team performance. The only exception was the relationship between trust and delivery speed, which was nonsignificant. This result was intriguing since it does not corroborate numerous

previous studies that associated trust with the increased performance of virtual teams (De Jong et al., 2020; Garrison et al., 2010; Martins et al., 2004; Paul et al., 2016; Siakas & Siakas, 2008). Two reasons might explain this finding. First, these previous studies have mostly assessed team performance at a global level and not by using separate performance dimensions, such as delivery speed and quality of work, that are important for IT service provisioning teams. Therefore, it might be the case that previous studies did not report such findings due to a lack of granularity in their performance measurements. Second, the reason why trust did not have a direct effect on delivery speed but did have a direct effect on quality of work might be explained by a spiral dynamic between team trust and cohesiveness. According to Paul et al. (2016), in cases where highly dispersed virtual teams have to work on a collaborative task demanding high synchronicity and interdependence among team members, trust and cohesiveness tend to have reciprocal effects. In this scenario, the increased dependency among team members leads the team to coalesce around the specific task, and this coalescing process can result in a high level of team cohesiveness. The higher the cohesiveness, the easier it will be for team members to be willing to depend on their team mate´s action, resulting in increased trust. In the present study, this suspicion was reinforced given the strong correlation value reported between trust and cohesiveness during the statistical analyses (r=0.664). To further explore this suspicion, a new model with a recursive effect between team trust and cohesiveness can be developed.

5 CONCLUSION

The results of this study suggest that the variety of work practices has a negative effect on team performance, whereas trust and cohesiveness have emerged as important mediators in this relationship. Since the concept of a variety of practices encompasses both the organizational and functional dimensions of team dispersion, these results indicate that, at least from an emergent state perspective, organizational and functional dispersion are more challenging to address and more detrimental to virtual team performance than other dimensions of dispersion, such as team distribution. This finding is interesting since, historically, the literature regarding virtual teams has focused on challenges associated with team distribution and illustrates the importance of adopting a multidimensional perspective for a more in-

depth understanding of how team dispersion can affect virtual team performance. For IT service provisioning organizations overall, this finding highlights the risks of increased organizational dispersion even when special care is taken, such as building teams with IT professionals experienced in virtual contexts.

Another contribution is related to the confirmation of the mediating effect that emergent states of trust and cohesiveness have on the relationship between a variety of work practices and virtual team performance in IT service provisioning. This finding highlights the importance of socioemotional states for virtual team performance even when teams are highly transient in nature, such as the case of IT service provisioning teams.

Finally, although the original research objectives were met, a potential bias was introduced in the results due to the utilization of a nonprobabilistic sample. As noted, a predominance of respondents reported that their virtual team members already possessed considerable experience in virtual contexts, which may represent the main limitation of this study. This might have contributed to the fact that the hypothesized negative effect of team distribution on trust and cohesiveness could not be validated in this study. To overcome this limitation, future studies could target a multigroup analysis by comparing the results of this study against a less experienced sample of respondents. This could provide confirmation of whether team member experience is capable of neutralizing the negative effect of team distribution on emergent states.

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Appendix A1. Measurement scales used

Construct	Items
Team dispersion (adapted from Chudoba et al., 2005)	We collaborated with people in different time zones. We worked with people via Internet-based conferencing applications. We collaborated with people who spoke different native languages or dialects. We collaborated with people who we had never met face-to-face.
Variety of practices (adapted from Chudoba et al., 2005)	We worked on collaborative activities that had changing team members. We worked with teams that had different ways to track their work. We worked with people who used different collaboration technologies.
Trust (adapted from Kanawattanachai and Yoo, 2002)	Most of our teammates approached his/her job with professionalism and dedication. We saw no reason to doubt our teammates' competence and preparation for the job. We could rely on other teammates not to make our job more difficult by careless work. Most of our teammates could be relied upon to do what they said they would do.
Cohesiveness (adapted from Warkentin and Beranek, 1999)	Were team members committed to the goals and objectives of the team? Did members have a strong sense of belonging to the team? Did team members recognize and respect individual differences and contributions? Were team members open and frank in expressing their ideas and feelings?
Quality of work (adapted from Fuller et al., 2006)	The work produced by our team was of high quality. The activity/task outcome produced by our team was excellent. The deliverables of our team were outstanding.
Delivery speed (adapted from Dayan and Di Benedetto, 2010)	This activity/task was completed in less time than considered normal and customary for our industry. This activity/task was completed on or ahead of the original schedule. Stakeholders were pleased with the time it took us to conclude the activity/task.

APPENDIX B - PAPER #2: The issue of trust in virtual team research: A systematic review of information systems literature

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Authors:	Hugo M. Watanuki and Renato O. Moraes
Status:	Published
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Abstract

The issue of trust development amongst members of virtual teams is gaining increasing attention from information systems (IS) scholars. Although the origin of research on trust lies outside the IS domain, its importance for IS research is growing with the advancement of technology in organizational settings. The objective of this study is twofold: to evaluate the relative importance of the issue of trust development in virtual team research from the perspective of main IS journals, and to consolidate the contributions made by IS researchers to this topic. To this aim, a systematic review of the literature has been conducted, supported by bibliometric and social network analysis (SNA). The results highlight the importance of the issue of trust development in virtual team research within the IS domain. A review of trust concepts and research paradigms leveraged by IS researchers have been presented along with opportunities for future research.

Keywords: Trust, Virtual Teams, Information Systems, Systematic Literature Review, Social Network Analysis.

1   INTRODUCTION

Trust is widely recognized as fundamental for human affairs and social interaction (Brown, Poole & Rodgers, 2004; Söllner, Benbasat, Gefen, Leimeister, & Pavlou, 2016), and, therefore, has gained attention of researchers from different disciplines over the years, such as psychology (Frost, Stimpson, & Maughan, 1978), sociology (Lewis & Weigert, 1985), and management (Meyerson, Weick, & Kramer, 1996). From the perspective of organizational studies, mutual trust between individuals or

teams at the workplace has been described as a key element for effective collaboration (McAllister, 1995; Mayer, Davis, & Schoorman, 1995).

The importance of scientific debates about trust continues to increase with the advancement of usage of information and communication technologies (ICT) for collaboration at the workplaces. This is justified as the social change represented by the usage of virtual collaboration or virtual teams at the workplace has introduced, probably, the most challenging barrier for trust development in the history of human society so far: the lack of physical proximity between individuals (Altschuller & Benbunan-Fich, 2013; Sarker, Ahuja, Sarker, & Kirkeby, 2011; Powell, Piccoli & Ives, 2004; Jarvenpaa, Shaw, & Staples, 2004; Dubé & Robey, 2009; Lowry, Zhang, Zhou, & Fu, 2010; Söllner et al., 2016). Interestingly, this context has created an apparent paradox: whereas trust is fundamental for effective virtual collaboration, the constrained social transactions between virtual work partners can make virtual collaboration an extremely challenging activity (Brown et al., 2004; Cheng, Fu, & Drukenmiller, 2016; Dubé & Robey, 2009; Kanawattanachai & Yoo, 2002; Piccoli & Ives, 2003). This is an issue that can be studied via the lens of information systems (IS) research.

Traditionally, IS research extrapolates a focus primarily on the information technology (IT) artifact and involves the intersection of people, processes, technology, and organization to improve results at the individual, team, and organizational levels (Lowry et al., 2010). As practical examples, Gao et al. (20111) indicate that IS researchers can adopt a behavioural and psychology focus when studying interaction between people and IT; or a collaboration and communication focus when investigating issues related to collaboration via IT and virtual team performance.

Being virtual teams already a major IS research field, and trust an emergent and important topic for the IS domain (Altschuller & Benbunan-Fich, 2013; Söllner et. al, 2016), the following research questions arise: Has the latent importance of trust for virtual team research been reflected in the IS literature? If so, what knowledge about this issue has been accumulated and what knowledge still needs to be acquired from the perspective of the IS domain?

For a better understanding of these questions, this study conducts a systematic review of IS literature supported by bibliometric and social network analysis (SNA) techniques. The specific goals of the review are:

- to evaluate the relative importance of the issue of trust development in virtual team research from the perspective of main IS journals;

- to consolidate the contributions made by IS researchers to the investigation of this issue; and summarize the knowledge acquired so far, as well as the opportunities for future research.

This paper is structured in five sections. The description of the research steps is covered in section 2. The section 3 contains the main results; and in the sections 4 and 5, respectively, the discussions and conclusions of the research are presented.

2   RESEARCH METHODOLOGY

In contrast to the usual process of literature review, systematic reviews can be used to consolidate and evaluate the available evidence concerning specific research topics. This goal can be achieved with relatively reduced bias by following a precise and strict sequence of methodological steps that relies on a well-defined protocol. The protocol presents the topic being investigated in a very specific and focused structured question, as well as instructions for the selection, analysis, and summarization of relevant papers. By using a trustworthy, rigorous, and auditable methodology, systematic reviews can, therefore, provide a fair evaluation of a research topic and increase the likelihood of detecting effects that individual smaller studies are unable to detect (Kitchenham, 2004; Steinmacher, Chaves, & Gerosa, 2013).

The systematic literature review presented in this study was supported by bibliometric and SNA techniques. According to Gumpenberger and Gorraiz (2012), bibliometrics is a discipline of the library and information sciences, being developed to measure and monitor scientific production. The bibliometric analysis has broad applications in several areas of study with the purpose of increasing the performance of scientific production by evaluating their metadata such as authorship, research sources, themes, geographical origins, citations, and co-citations (Small, 2003). SNA can be utilized on top of the bibliometric metadata, such as publication authors and cited references, to establish relationships among entities and depict patterns and implications from these relationships (Watanuki, Nadae, Carvalho, & Moraes, 2014). According to Sarker et al. (2011), the SNA perspective enables the researcher to study individual entities within their larger structural configuration context, and its

strength lies in the connection built between the attributional and structural aspects of the entity, instead of simply focusing on the entity itself in isolation.

To conduct this study, a search in the main collection of ISI Web of Science was made in June of 2017 by entering the following search terms: virtual team(s), dispersed team(s), distributed team(s), global team(s), and international team(s); which correspond to common terms utilized for indexing virtual team publications at electronic databases (Caya, Mortensen, & Pinsonneault, 2013; Schiller & Mandviwalla, 2007; Watanuki et al., 2014). The word trust was not included as a search term itself, as the authors wanted to let the topic emerge naturally from the sample of publications, and, therefore, be able to compare its relative importance against other important topics to virtual team research. This primary search resulted in 1,269 artifacts published by journals from diversified areas of knowledge.

In an attempt to narrow the focus of this initial sample into the IS domain, a subsequent filter was applied to only consider articles published by the Association for Information Systems (AIS) Senior Scholar´s Basket of Journals (Association for Information Systems, 2011). The AIS represents the main international professional association focused on research, teaching, practice, and study of information systems; and its College of Senior Scholars considers the following eight journals as top outlet in the IS field, in alphabetical order:

- European Journal of Information Systems
- Information Systems Journal
- Information Systems Research
- Journal of the Association for Information Systems
- Journal of Information Technology
- Journal of Management Information Systems
- Journal of Strategic Information Systems
- Management Information Systems Quarterly

Although the decision to apply this filter has potentially excluded journals from multidisciplinary or specialty areas, it is consistent with the focus of this study, which is to assess the importance of trust in virtual team research within the IS domain. It is important to highlight that there are other journals that have published articles relevant to the study of virtual teams; however, since they typically do not publish IS-

centric research, and are thus not included in the AIS Senior Scholar´s Basket of Journals, they were not considered in this study.

Based on these criteria, 112 articles were found and represent the initial sample of this study. To support the first step of the bibliometric analysis, the metadata of this sample of articles, such as title, abstract, authors, keywords, among others were exported from the ISI Web of Science database to a plain text file. From the plain text file, a Microsoft Access database file containing all the metadata was generated by using the Sitkis software (Schildt, 2002).

Once the metadata was properly stored in a database file, SNA techniques available in Sitkis (Schildt, 2002) and UCINET (Borgatti, Everett, & Freeman, 2002) software's were utilized to perform various analysis from both a qualitative and quantitative perspectives. From a qualitative standpoint, two graphical network diagrams were built representing, respectively, the relationships amongst keywords and cited references from the sample of articles. From a quantitative perspective, the normalized centrality degree (C_i) value of the entities composing the network diagrams were calculated. The Ci value of a particular entity within a network can be calculated according to the formula proposed by Wasserman and Faust (1994) and presented in eq. 1.

$$C_i = \left. \sum_{j=1}^{n} L_{ij} \middle/ (N-1) \right. \qquad (1)$$

where N is the number of entities within the network, and Lij is the number of connections between the entities i and j. Lij=0 if there is no connection between the entities.

The C_i value was selected as the key numerical attribute to support the SNA as it evaluates the number of connections a specific entity in the network shares with other entities, and, therefore, provides evidences of that specific entity's prominence within the network. In practical terms, the higher the C_i value of a specific entity, the higher its relative importance within the network (Sarker et al., 2011; Watanuki et al. 2014).

3 RESULTS

This section presents the results obtained after the analysis of the metadata from the sample of articles. It starts with the presentation of results that highlight the raise of trust as an important topic in virtual team research within the IS domain, followed by an analysis of the trust-related publications contained within the sample of articles.

3.1   THE IMPORTANCE OF TRUST IN VIRTUAL TEAM RESEARCH

The first analysis of the metadata grouped the keywords from the articles of the sample in pair of occurrences (i.e., keyword co-occurrence analysis). The goal of this analysis was to display the connections between keywords based on the frequency that two keywords were listed together by the articles of the sample. By analyzing the connections between the keywords along with the magnitude of these connections, it is possible to conduct a visual assessment of the main topics covered by the sample of articles (Watanuki et al., 2014). As a result of this analysis, a graphical network diagram with four groups of keywords was elaborated (Figure 1).

Figure 1 - The keyword co-occurrence network

Note: The blue squares represent the keywords from the articles, and the thickness of the lines connecting the blue squares represents the magnitude of the connection between the two keywords, based on its frequency of occurrence. Due to the large amount of data this type of analysis usually involves, and in order provide a clearer view of the relationships within the network, a filter was applied in this graphical network to only display the keywords from articles of the sample that possessed more than five citations in ISI Web of Science on the date of the metadata extraction. The cutoff value of five citations was determined after starting the analysis with no citation cutoff value and increasing the citation cutoff value by one unit until it became visually practical to group the keywords in a graphical diagram.

To build this graphical network diagram, the keywords were manually grouped based on their semantical and conceptual similarity. For instance, the keywords group performance, team performance, and performance were grouped together as they all share semantical similarity and refer to the basic idea of performance in virtual teams. Second, the keywords were grouped by using the Input, Process, and Output

(IPO) framework as a high order conceptual similarity structure. The IPO framework was originally proposed by Hackman and Morris (1975) to explain the functioning of collocated teams and was further leveraged for the study of virtual teams (Martins, Gilson, & Maynard, 2004; Powell et al., 2004). The IPO framework establishes three key elements for the functioning of work groups: a) the initial conditions of the team, which influence the manner these teams operate and execute their tasks; (b) the interaction processes, defined as the means or methods that the teams utilize to attain their goals; and (c) the team outcomes, representing the consequences of the group functioning. Consistent with previous virtual team's work, the interaction processes can be split into two main categories: task processes, which occur as team members work together to accomplish a group task; and socio-emotional processes, which refer to the relationship building processes that foster team effectiveness (Powell et al., 2004).

Therefore, keywords representing the structural characteristics and composition of the virtual teams, such as diversity, group size, and design, were grouped together under the Input´s high order conceptual group. The keywords representing task processes, such as communication and coordination were grouped under the Task processes high order conceptual group; and keywords, such as trust and understanding conflict were grouped under the Socio-emotional processes high order conceptual group. Finally, the keywords representing the outcomes of the group functioning, such as decision-making, collaboration, and knowledge sharing were grouped under the Output´s high order conceptual group.

By visually assessing the graphical diagram displayed in Figure 1 from the perspective of the trust keyword, and based on the thickness of the lines connecting to this keyword; it is possible to identify the following stronger ties, by decreasing order of the magnitude of the tie: communication and trust; trust and performance; trust and collaboration; and, time and trust.

To complement the visual assessment of the diagram, and to help evaluate the relative importance of the keywords, the C_i values from each keyword in the network were calculated, and the first ten keywords with highest C_i values are displayed in Table 1.

Table 1 - Normalized centrality degree from the keywords

Keyword	Normalized centrality degree (C_i)
Performance	17.676
Communication	15.548
Collaboration	13.912
Trust	13.339
Knowledge	10.720
Organizations	9.165
Time	8.347
Model	8.020
Information technology	7.938
Management	7.856

Amongst the ten keywords with highest C_i values, the keyword trust appears in fifth position (C_i=13.339); or equivalently, the trust keyword establishes approximately 13% of all its possible connections with other keywords in the network. It is interesting to notice that the four keywords with higher C_i values than the trust keyword are the ones with whom the trust keyword shares the strongest ties in Figure 1. Also, trust is the only keyword from the high order conceptual group Socio-emotional processes listed amongst the ten keywords with highest C_i values.

Taken together, the results obtained from the qualitative and quantitative analysis of the keyword co-occurrence network highlight the main topics of virtual team research in the IS domain; in which the issue of trust appears to be the major socio-emotional concern from IS researchers.

3.2   THE TRUST-RELATED STUDIES WITHIN VIRTUAL TEAM RESEARCH …

Based on these preliminary results, the sample of 112 articles were then carefully evaluated and only the articles that included trust in their research topic were maintained for further analysis. This analysis resulted in a final sample of 13 articles, or approximately 12% of the initial sample. At this step, it was noticed that the article from Jarvenpaa and colleagues published by the Journal of Management Information Systems (Jarvenpaa, Knoll & Leidner, 1998), and that was previously known by one of the authors, had not been included in the final sample of articles. After a careful investigation, it has been noticed that the reason for the missing article was the fact that its publishing journal only indexed their articles in ISI Web of Science whose publication year dated 1999 onwards. Except for this occurrence, no other journals considered on this study have seemed to adopt similar approach. Given the

importance of this missing article (a search in Google Scholar reveals that it has more than 2,300 citations as of March, 2019), the authors have decided to manually include it in the study, thus resulting in a final sample of 14 articles that were published between the years of 1998 and 2016 (Table 2).

Table2 - Final sample of articles selected for in depth evaluation

Publishing journal	Number of Articles Selected	Articles
European Journal of Information Systems	1	Altschuller and Benbunan-Fich (2013)
Information Systems Journal	4	Campbell, Fletcher and Greenhill (2009), Dubé and Robey (2009), Lowry et al. (2010), Dennis, Robert Jr, Curtis, Kowalczyk, and Hasty (2012)
Information Systems Research	1	Jarvenpaa et al. (2004)
Journal of the Association for Information Systems	1	Avgerou (2013)
Journal of Management Information Systems	5	Jarvenpaa et al. (1998), Brown et al. (2004), Zahedi and Song (2008), Sarker et al. (2011), Cheng et al. (2016)
Journal of Strategic Information Systems	1	Kanawattanachai and Yoo (2002)
Management Information Systems Quarterly	1	Piccoli and Ives (2003)
Total	14	1998-2017 (second quarter)

The careful reading of the 14 articles suggests that they can be grouped into three main research groups, according to their focus on the issue of trust in virtual teams (Table 3):

- Antecedents of trust in virtual settings;
- Nature of the trust development process in virtual settings; and,
- Effects of trust in virtual team outcomes.

Table 3 - Distribution of articles by thematic focus

Focal topic	Number of Articles	Articles
Antecedents of trust	9	Jarvenpaa et al. (1998), Piccoli and Ives (2003), Brown et al. (2004), Dube and Robey (2009), Lowry et al. (2010), Dennis et al. (2012), Altschuller and Benbunan-Fich (2013), Avgerou (2013), Cheng et al. (2016)
Trust development process	2	Kanawattanachai and Yoo (2002), Zahedi and Song (2008)
Trust effects in team outcomes	3	Jarvenpaa et al. (2004), Campbell et al. (2009), Sarker et al. (2011)

Examples of trust antecedents or factors being discussed by the articles belonging to the first group are:

- Behavioural attitudes and control factors: studies discussing the effect of positive attitudes from virtual team members for the building of team trust (Jarvenpaa et al., 1998; Dubé & Robey, 2009); or the negative effect of behaviour control practices in the trust levels of virtual teams (Piccoli & Ives, 2003).

- Individual personality traits factors: studies exploring the individuals personality traits that facilitate the development of trust, such as an individual's disposition to trust (Brown et al., 2004; Avgerou, 2013). Dennis et al. (2012), for instance, have re-assessed the research findings from Piccoli and Ives (2003) and concluded that the disposition to trust may affect how individuals perceive the effect of behaviour control practices on trust development; in the sense that behaviour control induces individuals to focus on the behaviours their disposition to trust expects rather than the behaviours that actually occur.

- Social factors: studies investigating the social aspects of virtual teams and their impact on trust development in virtual settings. Amongst the social elements investigated are the cultural diversity and social presence of team members (Lowry et al., 2010), electronic portrayal and self-disclosure of individuals (Altschuller & Benbunan-Fich, 2013), and facilitation intervention techniques such as collaboration engineering (Cheng et al., 2016).

This first group of articles seems to support the magnitude of the connection identified between the keywords trust and communication in the keyword co-occurrence network. This is justified by the fact that the antecedents of trust being approached by these articles, such as an individual's behavioural attitudes, personality traits, and social presence have either a dependency or an impact in the communication processes between individuals in virtual settings (Brown et al., 2004; Jarvenpaa et al., 1998; Lowry et al., 2010).

In the second group, the studies try to approach how the trust development process evolves over time, by focusing on the understanding of the dynamic nature of trust (Kanawattanachai & Yoo, 2002; Zahedi & Song, 2008). Similarly, the identification of this second group of articles supports the finding of a strong connection between the keywords trust and time in the keyword co-occurrence network.

In the third group, although there seems to be a general agreement that trust is important for enabling collaboration and superior performance of virtual teams; some researchers have found opportunities for further refinement of this common

understanding. Jarvenpaa et al. (2004), for instance, have proposed and empirically validated that the effect of trust in virtual team outcomes is dependent on the condition and scenario of the team, i.e., trust seems to affect virtual teams differently in different situations. These authors have concluded that, at the early stages of a virtual team existence, trust may have direct impact in member´s perceptual outcomes; whereas in later stages of a virtual team existence, trust may act as a moderator by facilitating the transformation of task processes in team outcomes.

A similar perspective is proposed by Sarker et al. (2011) by leveraging alternative methodological approaches, such as SNA, to evaluate the impact of trust in the performance of virtual teams. These authors have proposed that trust mediate the relationship between communication and performance of virtual teams, and justify their alternative methodological choices based on the argument that the concept of trust is inherently relational instead of attributes of individuals.

Lastly, there is one interesting article challenging the traditional assumption that the presence of trust and cohesion are always desirable states in virtual groups. The study of Campbell and colleagues demonstrate how conflict between positions of power in online communities can generate positive outcomes by helping align values and ideals of their members (Campbell et al., 2009).

The finding of this third group of articles also supports the magnitude of the connections identified, respectively, between the keywords trust and performance and trust and collaboration, in the keyword co-occurrence network.

3.3   … AND THEIR THEORETICAL FOUNDATIONS

In an attempt to identify the main theoretical basis of the final sample of articles, a co-citation analysis was conducted based on the cited references of the articles. The goal of this analysis was to display the connections between the cited references based on the frequency that two references were cited together by the articles of the sample. By analyzing the connections between the cited references along with the magnitude of these connections, it is possible to conduct a visual assessment of the key references cited by the sample of articles (Watanuki et al., 2014). As a result of this analysis, nine cited references have emerged, with stronger connections in the area highlighted in red dashes in Figure 2.

Figure 2 - The co-citation network.

Note: The blue squares represent the cited references from the sample of articles, and the thickness of the lines connecting the blue squares represent the magnitude of the connection between the two cited references, based on its frequency of occurrence. In order provide a clearer view of the relationships within the network, a filter was applied in this graphical network to only display the cited references from articles of the sample that possessed more than five citations in ISI Web of Science on the date of the metadata extraction. The cutoff value of five citations was determined after starting the analysis with no citation cutoff value and increasing the citation cutoff value by one unit until it became practical to visualize the main cited references in a graphical diagram.

To complement the visual assessment of the diagram, and to help evaluate the relative importance of the cited references, the Ci values from each cited reference in the network were calculated, and are displayed in Table 4.

Table 4 - Normalized centrality degree from the cited references

Cited reference	Normalized centrality degree (C_i)
McKnight et al. (1998)	65.625
Jarvenpaa et al. (1998)	64.063
Jarvenpaa and Leidner (1999)	64.063
Mayer (1995)	62.500
Piccoli and Ives (2003)	45.313
Jarvenpaa et al. (2004)	42.188
Meyerson et al. (1996)	40.625
Maznevski and Chudoba (2000)	32.813
McAllister (1995)	32.813

According to Table 4, four cited references have established at least 62% of their respective possible connections in the co-citation network (i.e., C_i greater than 62): McKnight et al. (1998), Jarvenpaa et al. (1998), Jarvenpaa and Leidner (1999), and Mayer et al. (1995).

Although the visual assessment of the co-citation network combined with the assessment of the C_i values of the cited references have converged to these four cited references, the careful reading of all nine cited references suggests that they can also be categorized into two main groups, according to their thematic origin:

Propositions of formal trust development models in traditional collocated organizational settings (McAllister, 1995; Mayer et al., 1995; Meyerson et al., 1996, McKnight et al., 1998);

Studies leveraging the formal trust development models from collocated settings to evaluate their dynamics and/or behaviour under specific conditions in virtual settings (Jarvenpaa et al., 1998, 2004; Jarvenpaa and Leidner, 1999; Maznevski and Chudoba, 2000, Piccoli and Ives, 2003).

These results suggest that the research models utilized for studying trust development in virtual teams have been leveraged from base models proposed by organizational studies published in the second half of the 1990s. This interdependence is highlighted in Table 5 when the final sample of 14 articles is categorized based on the respective trust development model that was leveraged by each article.

Table 5 - Trust development models leveraged by the final sample of articles

Article	Base trust development model leveraged				
	Mayer (1995)	McAllister (1995)	Meyerson et al. (1996)	McKnight et al. (1998)	None/ Other
Jarvenpaa et al. (1998)	X		X		
Kanawattanachai and Yoo (2002)		X			
Piccoli and Ives (2003)	X				
Brown et al. (2004)	X			X	
Jarvenpaa et al. (2004)				X	
Zahedi and Song (2008)	X			X	
Campbell et al. (2009)					X
Dube and Robey (2009)					X
Lowry et al. (2010)		X			
Sarker et al. (2011)	X				
Denis et al. (2012)	X				
Altschuller and Benbunan-Fich (2013)		X		X	
Avgerou (2013)				X	
Cheng et al. (2016)					X

Note: Campbell et al. (2009) assessed if the absence of trust in online financial communities has a critical effect on the team functioning, therefore, no formal trust model was used.
Note: Dubé & Robey (2009) have used a qualitative exploratory approach to map paradoxes in virtual teams and have not defined a formal trust model a priori.

Taken together, these results indicate that the trust development models proposed by Mayer et al. (1995) and McKnight et al. (1998) are the most common models leveraged by IS researchers when investigating trust-related issues in virtual teams.

4   DISCUSSION

Based on the results presented above, this section provides an overview of main definitions of trust, its main research paradigms, and opportunities for future studies from the perspective of virtual team research in the IS domain.

4.1   TRUST DEFINITION AND TYPOLOGY

The ubiquity of trust in the everyday life of human society has resulted in a concept of complex definition, with different typologies according to the perspective or approach adopted by the researcher.

Jarvenpaa et al. (1998), in a first approach to the concept of trust, suggest that trust can be analyzed from a social or a rational perspective. In the social perspective, the moral duties or obligations of a particular social group play a prominent role, and trust is established because it is the morally appropriate attitude in the group. This would be the perspective to be adopted, for example, to analyze the confidence developed between close members of the same family, such as children, parents, and grandparents. In the rational perspective, the focus is the calculation of self-interest. In this case, the perception that increased trust reduces the costs of maintaining a relationship - since the respective parties need to develop fewer defensive attitudes against the opportunistic behaviour of the other - encourages individuals to take risks. This would be the perspective to be used, for example, in the case of an investigation exploring the development of trust between work partners. Being the focus of this study the context of virtual collaboration in the organizational environment, the proper perspective to be adopted onwards is the rationalist.

According to the IS-centric literature reviewed, three types of trust seem to be important for studying virtual teams:

- Dispositional trust: specific to each individual and associated with their respective personal traits. It is independent of any context and related to the belief of each individual in human nature, i.e., a natural tendency to trust other people (Mayer et al., 1995; McKnight et al., 1998).

- Interpersonal trust: developed from the relationship between two or more individuals and based on the expectation that verbal and written statements of one of the parties can be fully entrusted by the other party (Mayer et al., 1995; McAllister, 1995; McKnight et al., 1998; Meyerson et al., 1998).

- Structural or institution-based trust: it is dependent on a context and on an impersonal system or institution, whose perceived properties can inspire confidence in individuals (McKnight et al., 1998).

As it can be inferred from the taxonomy above, the phenomenon of trust usually involves two parts: one that trusts (i.e., trustor) and the other that is entrusted (i.e., trustee), the latter being a person, inanimate system or situation. Therefore, the establishment of trust depends not only on the attributes of the trustor (i.e., dispositional trust), but also on the attributes of the trustee (Avgerou, 2013; Mayer et al., 1995; McKnight et al., 1998).

Based on these arguments, the basic definition of trust is proposed by Mayer et al. (1995:712) as: "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party". By focusing on the interpersonal trust, McAllister (1995:25) proposes another popular definition of trust as: "the extent to which a person is confident in, and willing to act on the basis of, the words, actions, and decisions of another."

4.2   THE MAIN RESEARCH PARADIGMS

The formal models originally designed to explain the development of trust in traditional collocated organizational contexts still represent an important theoretical foundation for studying trust development in virtual contexts, under various different perspectives. The main base models leveraged by IS researchers so far are the ones proposed by McAllister (1995), Mayer et al. (1995), McKnight et al. (1998), and Meyerson et al. (1998).

The basic model from McAllister (1995) suggests that interpersonal trust is composed by two fundamental dimensions: the affective and the cognitive trust. Affective trust is based on the reciprocal emotional bonds of solicitude and protection between the parties; whereas the cognitive trust is based on the beliefs of competence and responsibility between the parties. Comparatively, cognitive trust tends to be more superficial than affective trust, which is characterized by greater investment of time and emotional ties between the parties. Affective trust relies, for instance, on frequent interaction between the parties, under which personal and social information is exchanged. Based on its defining characteristics, McAllister´s model seems to be particularly useful in investigations focusing the emotional perceptions and feelings from individuals involved in trust development in virtual settings, such as emotional

bonds and care (Kanawattanachai & Yoo, 2002), perceived similarity (Lowry et al., 2010), and social presence (Altschuller & Benbunan-Fich, 2013).

The recursive model from Mayer et al. (1995) explicitly considers both the trustor and trustee attributes to explain the development of interpersonal trust over time during a relationship between two individuals. According to these authors, whereas trustor´s attributes – mainly reflected in their disposition to trust – are assumed be stable during the relationship; the attributes of the trustee, or at least how the trustor cognitively processes these attributes, can change over time as the relationship evolves, in terms of three dimensions: competence, benevolence, and integrity. Competence refers to the trustor´s perception about the abilities, proficiencies, and knowledge of the trustee. Benevolence refers to the trustor´s degree of belief that the trustee is well-intentioned in relation to the trustor. Integrity corresponds to the trustor´s perception that the trustee will adhere to a set of rules or principles established or accepted by the trustor. Given its distinctive characteristics, the model from Mayer and colleagues seems to be particularly useful for virtual team research exploring the development of trust over time with a focus on how individuals cognitively process factors influencing trust development, such as control behaviour (Piccoli & Ives, 2003; Dennis et al., 2012) and communication patterns (Sarker et al., 2011).

Supported by Mayer and colleagues' findings and by using a holistic approach; McKnight et al. (1998) have focused on how trustor´s and trustee´s attributes interact along with institutional-based trust and cognitive processes to shape trustor´s perceptions of competence, benevolence, and integrity at the beginning of a relationship. Their model has specifically focused the process of initial formation of trust between two individuals in an organizational setting: a condition that was particularly useful to understand how trust would develop under virtual settings, in which individuals are frequently new to each other. Therefore, the model from McKnight and colleagues has found applicability at numerous virtual team works, especially studies approaching trust development at early stages of a relationship (Jarvenpaa et a., 2004; Brown et al., 2004; Altschuller & Benbunan-Fich, 2013) or studies incorporating institutional-based trust elements (Avgerou, 2013; Zahedi & Song, 2008).

Finally, Meyerson et al. (1998) propose that in temporary teams where individuals do not have time to develop trust via a gradual or cumulative process; instead of an

affective or cognitive construct, trust becomes a depersonalized form of action. Their main argument is that, under high time pressure, individuals give less emphasis on feelings and information processing, and give more emphasis on action. As a consequence, individuals act as if trust is present and become able to work on interdependent tasks with strangers. Meyerson et al. (1998) have referred to this phenomenon as swift trust, and their model has been particularly useful for studying temporary virtual teams (Jarvenpaa et al., 1998).

4.3   OPPORTUNITIES FOR FUTURE RESEARCH

After the systematic review of the IS literature on virtual team research, few opportunities for future research have been noticed.

First, the trust-related issues in virtual team research seem to represent an important and permanent opportunity for research in the IS domain. This has been highlighted not only by the results of the bibliometric analysis and SNA – where the trust keyword has appeared tightly connected with keywords representing popular topics in virtual team research, such as performance, communication, and collaboration – but also by the continuous flow of articles being published by main IS journals in the last two decades. This finding corroborates Söllner and colleagues' assertation that "trust is one of the popular and well-cited areas of research in the IS literature, especially during the last 20 years" (Söllner et al., 2016:1).

Second, from a research focus perspective, exploring additional antecedents for trust development in virtual teams seems to be a fertile area of research in the IS domain. As it has been noticed on the sample of articles considered in this study, the majority of them – 9 out of 14 articles, or approximately 64% of the final sample – have focused on investigating how trust development can be influenced by a multitude of behavioural, personality, and social factors. The list of factors potentially influencing trust development in virtual teams should continue to grow as organizations and technology are continuously evolving and affecting the way individuals interact at the workplace.

Interestingly, despite this study constitutes an IS-centric literature review, amongst the sample of articles reviewed, only two publications (Zahedi & Song, 2008; Altschuller & Benbunan-fich, 2013) have focused on investigating how IT artifacts and its features can impact trust development in virtual teams. By considering that

most trust development models emphasize the importance of information about the trustee for the building of trust, and that IT artifacts have largely been enhanced from the perspective of information exchange in the last decades, this calls for additional research exploring how IT artifacts can facilitate trust development in virtual settings. This recommendation is consistent with Lowry´s and colleague´s general view about the aims of IS research: explore ways to improve artifacts both from technological and organizational perspectives (Lowry et al., 2010).

Third, from a research paradigm perspective, with the exception of the work from Jarvenpaa et al. (1998), no other article from the final sample has tried to develop a formal model for trust development in virtual settings. Most of the papers reviewed in this study have relied upon trust models developed for traditional collocated settings during the second half of the 1990´s. Even the trust development model for virtual settings proposed by Jarvenpaa et al. (1998) is largely derived from a combination of the models proposed by Mayer et al. (1995) and Meyerson et al. (1996). As time goes by and technologies shape new behaviours in society, one should question whether the legacy trust development models from the 90´s are still largely valid to be used in virtual settings or, otherwise, efforts should be made to establish new research paradigms specifically suited for virtual settings. This seems to be, for instance, the approach adopted recently by Cheng et al. (2016): instead of relying on the traditional trust development models, these authors suggest that, in virtual teams, trust can be dynamically assessed via a specific set of conflicting priorities from individuals.

5   CONCLUDING REMARKS

"Few would disagree that trust is one of the key behavioural themes of interest to organizational and information systems (IS) scholars today" (Sarker et al., 2011:274). The assertation above from Sarker and colleagues is in line with the conclusions of this study. Based on a systematic IS-centric literature review on virtual team research, trust has emerged as the most frequent socio-emotional process being discussed by main IS journals.

The careful evaluation of the sample of articles utilized in this study, expanded to their main bibliographical references, has allowed the identification of formal definitions for the trust concept, the most common trust theoretical models leveraged

by virtual team researchers, as well as, opportunities for future research in the IS domain.

Despite its narrow focus, this study aimed at contributing not only to IS researchers, but to academics in general. From a practical perspective, this study provides researchers with a structured methodology for the execution of a systematic literature review. The methodology presented in this paper can support the mapping of knowledge available in a certain thematic area or discipline of science, as well as the identification of trends, gaps and opportunities for future research with reduced bias. From an IS perspective, this study can be used by IS researchers as a repository of information to support and drive future trust-related investigations in virtual team research.

As the main limitation of this study, some criticism can be made to the decision of concentrating the systematic literature review on the eight journals suggested by the AIS Senior Scholar´s Basket of Journals; since these eight journals do not cover all published research in the IS domain. Although this approach excluded some IS journals, the list of eight journals utilized in this study have demonstrated considerable diversity of topics, methodologies, and research institutions. Additionally, these eight journals are internationally recognized for their contribution in the IS domain and, therefore, their selection is consistent with the goal of this study.

Another limitation is associated to the fact that, for some specific journals such as Journal of Management Information Systems, ISI Web of Science only provides the metadata from their publications after a certain year. Therefore, it is possible that, in specific cases, older publications may have not been included in the sample of articles reviewed in this study. To mitigate this risk, the authors have made every effort to identify any important article that was potentially missing, and to the best of their knowledge, no publications have been left behind.

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APPENDIX C - PAPER #3: Exploring the influence of social media information on interpersonal trust in new virtual work partners

Abstract

This short communication proposes an exploratory investigation regarding the impact of social media information on interpersonal trust in new virtual work partners. The suggested approach assesses this potential impact via a combination of theories from informational economic studies and virtual team research. An initial theoretical model is also proposed.

Keywords: interpersonal trust; social media; virtual work

1 INTRODUCTION

Consider the following scenario in a typical workplace environment: Individual A has been assigned to work with an unknown individual B, with whom interactions will occur exclusively via Information and Communication Technology (ICT) tools. Because the two individuals will not have the opportunity to meet face to face, individual A decides to review individual's B public profiles on social media platforms, such as Facebook, LinkedIn, and Twitter, to know more about the future work partner. Can the information individual A acquire from individual's B public profiles in social media platforms facilitate initial trust development toward individual B? If so, what elements drive this process?

This short communication paper explores these questions. In formal terms, the objective is to propose an exploratory investigation regarding the impact of social media information on interpersonal trust in new virtual work partners. The motivation for this work lies in the possibility of leveraging personal information publicly available on social media platforms to produce positive outcomes in the virtual workplace.

Recent research has shown that the practice of scrutinizing social media profiles to obtain information about individuals has become commonplace among not only friends and family members but also among professionals or even strangers (Baier, 2019; Stiff, 2019). This practice is facilitated by the significant usage of social media platforms by the world's population; as of the second quarter of 2019, Statista (2019) shows that more than 2.4 billion people hold an active account in Facebook. Each person's public profile represents a rich source of personal information readily available to any individual around the globe. Whether this information can be useful to facilitate relationship building between new virtual work partners is still mostly unknown (Kuo & Thompson, 2014); however, this area deserves focused attention as researchers suggest that the majority of active professionals are already working with some form of virtual collaboration (Acharya, 2019; Duleboh & Hoch, 2017; Ruiller et al., 2019).

From this perspective, one important issue that can be approached is the development of interpersonal trust at the early stages of forming a new virtual relationship (Kuo & Thompson, 2014; Tsai & Hung, 2019).

Although initial trust is fundamental for effective virtual collaboration because it encourages members to collectively perform transactions and mitigate risk when they interact with each other (Jarvenpaa et al., 1998; Kuo & Thompson, 2014; Tsai & Hung, 2019), the development of interpersonal trust in virtual contexts can be constrained by the lack of physical proximity among individuals (Bente et al., 2008; Jarvenpaa et al., 1998; Kanawattanachai & Yoo, 2002; Kuo & Thompson, 2014; Söllner et al., 2016; Tsai & Hung, 2019). Therefore, recent research has emphasized the need to understand what contributes to the initial baseline levels of trust among virtual teammates with no history of collaboration (Kuo & Thompson, 2014; Tsai & Hung, 2019).

One possible approach to investigate this issue is to focus on the impressions and perceptions individuals form when they are first exposed to publicly available personal information from the new virtual teammate. This is now a common possibility in consideration of the increasing popularity of social media platforms, from which virtual work partners can obtain detailed information about each other, such as personal background, character traits, hobbies, and interests (Cao et al., 2012; Neeley & Leonardi, 2018; Tsay-Vogel et al., 2018).

According to Söllner et al. (2016), most Information Systems (IS) research on trust has been divided into clusters of studies that focus on trust (i) within virtual teams, (ii) buyer–seller-style relationships in e-commerce, and (iii) among users of online social networks. Several studies have extensively addressed trust-related phenomena between virtual work partners (Bente et al., 2008; Jarvenpaa et al., 1998; Kanawattanachai & Yoo, 2002) or between social media users (Chen et al., 2019; Lu et al., 2010; Neeley & Leonardi, 2018). IS studies attempting to explore the overlap between clusters I and iii in formal organizational settings are more scarce; especially those in which the focus is on the early stage formation of a new virtual relationship. To the best of the author's knowledge, the only study that has explored this specific context is the work of Kuo and Thompson (2014). This study proposed a rudimentary model of initial trust between new virtual work partners based on the social tie information made available by social media platforms. However, their research has not detected significant evidence that this particular information affects trust perceptions between virtual work partners before initial contact has been made. Therefore, ample opportunities exist for a better understanding of the type of social media content that contributes to initial trust development.

This short communication suggests that IS researchers can be more successful in addressing this knowledge gap in trust-related research by using a more comprehensive theoretical framework. To this aim, a combination of theories from virtual team research and information economic studies is leveraged in this study.

2 THEORETICAL BACKGROUND

This chapter explores the potential inter-effects between the concepts of interpersonal trust and social media technologies in the context of new virtual relationships in the workplace.

2.1 TRUST IN NEW VIRTUAL WORK PARTNERS

Trends like globalization, coupled with advances of ICT tools in recent decades, have pushed companies to move away from a collaboration model based on human resources located within the same physical location. Increasingly, companies have encouraged their employees to collaborate via ICT with virtual partners without their

visual proximity (Chen et al., 2019; Kanawattanachai & Yoo, 2002; Tsay-Vogel et al., 2018), with whom they share no previous work history (Kuo & Thompson, 2014).

When two virtual work partners need to maintain a collaborative relationship, interpersonal trust between them is essential (Jarvenpaa et al., 1998; Kuo & Thompson, 2014). Interpersonal trust is defined by McAllister (1995, p. 25) as "the extent to which a person is confident in, and willing to act on the basis of, the words, actions, and decisions of another". Therefore, in a dyadic relationship, trust involves two specific parties: a trusting party (trustor) and a party to be trusted (trustee).

Interpersonal trust on the trustor side typically develops via a combination of two processes: constructive interactions with the trustee and the assessment of trustee's interpersonal cues that indicate trustworthiness. Whereas the first process tends to contribute to the affective foundations of interpersonal trust, the latter supports its cognitive foundations. Therefore, interpersonal trust is frequently approached as a multidimensional concept (Bente et al., 2008; Gefen & Straub, 2004; Kanawattanachai & Yoo, 2002; McAllister, 1995).

Although important, interpersonal trust between new virtual work partners can be difficult to establish given the constrained context of a virtual relationship. Elements that facilitate trust building during face-to-face interactions, such as social dialogs and opportunities to monitor each other's behaviour, may not be present for virtual work partners (Jarvenpaa et al., 1998; Kanawattanachai & Yoo, 2002; Kuo & Thompson, 2014).

Previous research has suggested that an important prerequisite for the development of interpersonal trust is the trustor's ability to gather information that disconfirms fears that the trustee is not trustworthy (Jarvenpaa et al., 1998; Lewis & Weigert, 1985; Neeley & Leonardi, 2018). In this sense, public profiles on social media platforms represent an interesting source of additional information for trustors to assess trustees' characteristics (Kuo & Thompson, 2014).

2.2   THE EFFECT OF SOCIAL MEDIA PLATFORMS

Social media platforms can be conceptualized as an IS artefact consisting of three components: the technological, supporting social interactions; the informational, consisting of user generated digital content; and the social, involving communication and collaboration among people (Spagnoletti et al., 2015; Wakefield & Wakefield,

2016). Popular examples of social media technologies are Facebook, LinkedIn, and Twitter (Jahng & Littau, 2016; Tsay & Hung, 2019; Wakefield & Wakefield, 2016).

Social media platforms provide individuals with the possibility to exchange information in various forms, comprising not only the user-generated digital content (Lim & Van der Heide, 2014; Spagnoletti et al., 2015) but also the perception of social interaction (Jahng & Littau, 2016; Wakefield & Wakefield, 2016) which can potentially influence interpersonal trust in real-life relationships (Kuo & Thompson, 2014). This is justified by the informational cues provided by social media platforms that can be interpreted as signals, as described by the signaling theory from informational economics studies (Chen et al., 2019). According to this theory, inequalities in access to information between two parties tend to make the exchange of goods and services between them difficult. Under these conditions, signals that reveal relevant and meaningful information purposefully emanating from one party to the other party can reduce uncertainty and shape a positive behaviour toward the other party (Chen et al., 2019; Connelly et al., 2011; Spence, 1973).

This study suggests that a similar mechanism is applicable to promote trust in a new virtual work partner based on the exploration of his/her public profiles in social media platforms. In this case, positive signals such as identity, presence, reputation, and relationships emanate from the trustee's social media public profiles (Kietzmann et al., 2011), potentially influencing the trustor's perceptions of trustworthiness.

Such a diversified set of signals must require an equally diversified set of theories to account for their effects on interpersonal trust. Although previous research (Schiller & Mandviwalla, 2007) has suggested that virtual collaboration can be approached from different theoretical perspectives in the IS domain, the same study has shown that three theories have been most frequently leveraged to explain social aspects of virtual teams: social presence theory, social information processing theory, and social identity or deindividuation theory. Given the focus of this study on the social aspects of a new virtual relationship, these are the three theories that were selected for further analysis.

First, social presence theory (SPT) (Schiller & Mandviwalla, 2007; Short et al., 1976) suggests that the awareness of other social participants' interactions (i.e., social presence) can be augmented in communication via ICT tools as more channels become available for the expression of nonverbal cues. A high degree of social presence is important for the development of trust because the trustor's perception of

human interactions with the trustee is a precondition for trust (de Vries, 2006), especially its affective dimension (Bente et al., 2008; Gefen & Straub, 2004; McAllister, 1995). Despite the limited presence of actual human contact in virtual workplace environments, research has suggested that signals of social presence can be embedded in technology artefacts, such as websites, as well as via images and biographical information that convey sense of personal and sensitive human contact (Bente et al., 2008; de Vries, 2006; Gefen & Straub, 2004; Jahng & Littau, 2016). This is in agreement with the informational component of social media technologies, the focus of which is on user-created content, such as personal profiles, text, photographs, and video streams (Spagnoletti et al., 2015; Wakefield & Wakefield, 2016).

Second, social information processing theory (SIPT) (Schiller & Mandviwalla, 2007; Walther, 1992) proposes that, when communicating solely via ICT tools in which nonverbal cues are not available, individuals adapt and use available information to form impressions and evaluate others. Therefore, SIPT suggests that, in virtual environments, people tend to rely on peripheral social information, such as language, written attitude, and self-disclosure to form impressions about others (Jahng & Littau, 2016; Lim & Van der Heide, 2014; Walther, 1992). In this sense, social media technologies provide its users with generous identity signals to disclose information about other individuals (Spagnoletti et al., 2015; Wakefield & Wakefield, 2016). How these signals affect different dimensions of interpersonal trust depends on whether they make salient aspects of personal identity or social identity (Tanis & Postmes, 2005). For instance, with regard to personal identity, research has suggested that personal identity signals, such as the availability of an individual's work history information on a social media profile, can function as a set of cues that allow others to better evaluate this individual's professional credentials (Jahng & Littau, 2016; Lim & Van der Heide, 2014), which, in turn, can help to foster a cognition-based component of trust towards him/her (Bente et al., 2008; Kanawattanachai & Yoo, 2002; McAllister, 1995).

With regard to social identity, according to the social identity or deindividuation (SIDE) theory (Schiller & Mandviwalla, 2007; Spears & Lea, 1992), in contexts where individuating cues about others are limited, individuals categorize themselves as part of social groups based on the information made available by other sources. Therefore, when a trustee's signals of shared social identity with the trustor are

available in a social media profile, such as common interests, experiences, values, and demographic traits, these signals may accentuate the perception of similarity between them, enhancing the trustor's feelings of attraction and identification toward the trustee (de Vries, 2006; Tanis & Postmes, 2005). These are elements that can help foster both affective and cognition-based components of trust (Lu et al., 2010; Kanawattanachai & Yoo, 2002; McAllister, 1995).

The proposed relationships described above are illustrated in Figure 1.

Figure 1 - The theoretical model proposed
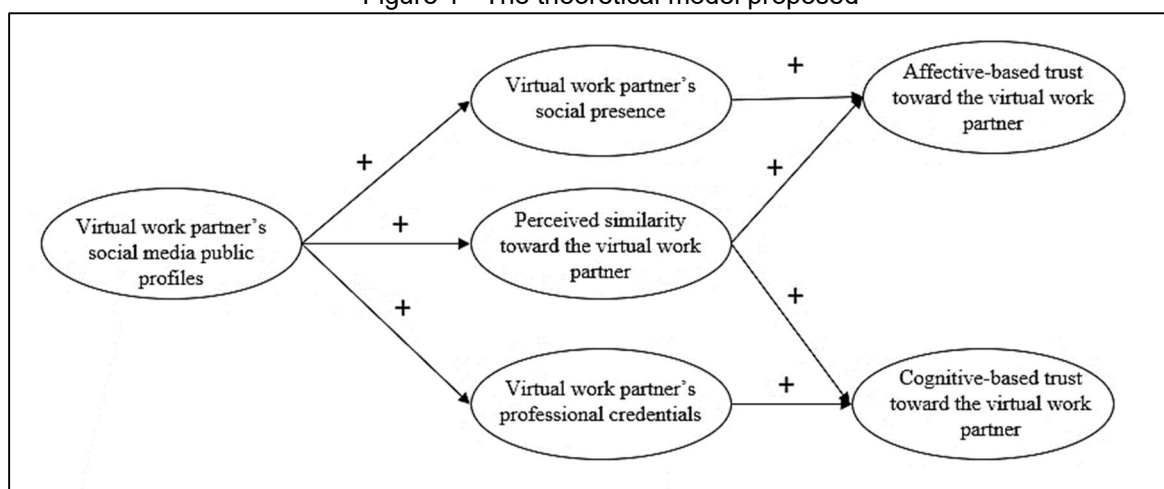
3 CONCLUDING REMARKS

This short communication paper proposes an exploratory investigation regarding the impact of social media information on interpersonal trust in virtual work partners. By considering a wider theoretical framework in comparison with previous studies, an initial set of relationships have been proposed.

The theoretical model presented suggests that social media information can provide important signals that contribute to the initial development of interpersonal trust in new virtual work partners. As a result of their defining characteristics and constituent elements, social media technologies can help increase an individual's perception of a virtual work partner's social presence, perceived similarity, and professional credentials, leading to increased affective and cognitive-based trust toward the new virtual work partner.

From a theoretical standpoint, it is expected that the alternative approach proposed by this short communication will help to increase the chances of IS researchers to address previous inconclusive findings regarding the impact of social media

information on the development of interpersonal trust in new virtual work partners (Kuo & Thompson, 2014). Furthermore, this study can promote a better understanding of the type of social media content that contributes to initial trust development. From a practical perspective, this study can provide practitioners with an increased perception about the importance of disclosing quality information in their public social media profiles as well as managing online reputation for improved future virtual work relationships.

Given the exploratory nature of the theoretical model presented, its further development is encouraged via the inclusion of potential moderating and control variables.

One potentially important moderating variable is the concept of propensity to trust or the general willingness that an individual possesses to trust others (Mayer et al., 1995). According to Kuo and Thompson (2014), in the absence of information about the trustee, trustors have little or no basis on which to assess the trustee's trustworthiness. In such situations, trustors with increased propensity to trust are expected to engage in trusting behaviours because they are especially inclined to trust other individuals.

Another potential control variable to be considered in this model is an individual's gender. According to recent research from Sun et al. (2018), due to the inherited differences in social behaviour between females and males, the trust-building mechanism in social media contexts varies across gender. Specifically, males may give more emphasis on competence-based factors to build trust whereas females may rely more on emotional or affective factors.

Discussions regarding the empirical validation of the theoretical model presented here are also necessary and constitute an important opportunity for future research. One viable alternative may be conducting surveys among business professionals. In this case, and in line with previous research (Kuo & Thompson, 2014), a hypothetical scenario can be presented to survey participants in which they are asked to evaluate the perceived trustworthiness of a potential new virtual work partner. The survey participants can then be exposed to fictious social media public profiles with different levels of personal information quality and volume (i.e., different signal levels), and have their perceived trustworthiness levels assessed.

Finally, a word of caution is required regarding the practice of exploring personal information from public social media profiles; social network users tend to be

concerned about their privacy (Tsay-Vogel et al., 2018; Wilson et al., 2014). Social media users are generally willingly to share their identities; however, they are also concerned about the usage of their information by unknown others (Acharya, 2019; Kietzmann et al., 2011). To circumvent privacy concerns, social media users can sometimes develop identity strategies, such as creating virtual identities that differ from their real identities or abandon their social media accounts (Wilson et al., 2014). These are challenges that need to be considered in future development of this research.

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APPENDIX D - PAPER #4: Initial trust formation in new virtual work partners: The impact of online reputation building and management practices in social networking sites

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Abstract

Due to the increased usage of social media by the general population, social networking sites can change the way new virtual work partners meet each other for the first time, since secondhand knowledge about each of them is usually available a priori from their respective public profiles in social networking sites. Whether this scenario can have an influence on the initial formation of trust between them is still mostly an open question. The personal opinions and character judgements one individual has for the other based on their overall behaviour of self-disclosure of information in social networking sites, i.e., their respective online reputations, seem to be an important element in this context. The objective of this study is to evaluate the impact of online reputation building and management practices in social networking sites on initial trust development in new virtual work partners. In order to achieve this aim, a theoretical model was developed and an experiment with undergraduate students was conducted for its initial empirical assessment. Results suggest that online reputation building and management practices have strong effects into stereotyping and unit grouping perceptions toward the new virtual work partner, however no evidences were found regarding the effect of online reputation building and management practices into the reputation categorization of the new virtual work partner. Unit grouping and reputation categorization have been found to contribute to initial trust development toward the new virtual work partner, both from an affect and cognition-based perspectives.

Keywords: Trust, Virtual Work, Social Networking Sites, Reputation Building and Management, Experiment.

1 INTRODUCTION

Information System (IS) literature on interpersonal trust usually distinguishes two different stages for trust development between individuals engaging in a new virtual work relationship: before and after the behaviour of the person to be trusted – the trustee – is known to the person who trusts – the trustor (McKnight, Cummings, Choudhury, & Kacmar, 2002; Robert, Dennis & Hung, 2009). Before the trustee´s behaviour is known to the trustor, interpersonal trust is usually referred to as swift trust, a fragile type of trust mostly grounded on trustor´s personality traits and cognitive categorization processes (Meyerson, Weick, & Kramer, 1996; Jarvenpaa, Knoll & Leidner, 1998; McKnight, Cummings, & Chervany, 1998; McKnight et al., 2002; Robert et al., 2009; Kuo & Thompson, 2014). After the trustee´s behaviour is known to the trustor, interpersonal trust is usually referenced as knowledge-based trust and is heavily grounded on the perceptions and judgements made by the trustor in regards to the behaviour displayed by the trustee (McKnight et al., 1998; 2002; Robert et al., 2009). The interdependence between these two types of trust is that once swift trust is stablished, it can help foster knowledge-based trust (Robert et al., 2009). Therefore, swift trust is desired, not only because it allows new virtual work partners to engage and collaborate quickly (Meyerson, Weick & Kramer, 1996; Jarvenpaa et al., 1998; McKnight et al., 1998; 2002; Kuo & Thompson, 2014), but also because it can have a positive influence for the development of knowledge-based trust in subsequent stages of the virtual relationship (Jarvenpaa, Shaw & Staples, 2004).

Ten years ago, when this two-stage theoretical model was initially proposed, it made sense to consider interpersonal trust formation in virtual contexts as a process composed by two distinctive stages, since firsthand knowledge about the trustee´s behaviour would usually only become available to the trustor after the virtual relationship had started (Robert et al., 2009). However, nowadays, a specific IT artifact seems to be capable of blurring the frontiers between the two stages: the social networking sites.

The ubiquitous presence of social media technologies, especially social networking sites, in everyone´s life has provided trustors with access to a considerable amount of personal information about almost any potential trustee around the globe (Kuo & Thompson, 2014; Cummings & Dennis, 2018). In that sense, social networking sites

have changed the way virtual work partners meet for the first time: it is now relatively common for new virtual work partners to scrutinize each other´s public profiles on social networking sites, like Facebook and LinkedIn, before the formal engagement starts (Cummings & Dennis, 2018).

The overall impact that this behaviour can have on the initial formation of trust between new virtual work partners is still mostly unknown. The few reported studies that have attempted to explore this issue so far have either focused at very specific features of public profiles from social networking sites, such as shared connections between the trustor and the trustee (Kuo & Thompson, 2014); or investigated the impact of public profiles from social networking sites on pre-stages of the trust formation phenomena, such as impression formation toward individuals (Cummings & Dennis, 2018). This leads to the following research question: Can the behaviours individuals display via their public profiles in social networking sites facilitate initial trust formation toward them in an eventual future virtual work relationship? If so, can this effect be managed by the owner of the public profile?

One way to approach this is to consider that public profiles in social networking sites can provide secondhand knowledge or signals that trustors can leverage to make trust decisions and facilitate initial trust development toward the trustee, as long as this last individual purposefully displays the expected cues in his/her public profile. To this aim, trustees can leverage a set of practices for self-disclosure of information and impression management using their public profiles for the goal of building and managing their online reputation (Ryan, Cruickshank, Hall & Lawson, 2018).

Thus, the objective of this study is to evaluate the impact of online reputation building and management practices in social networking sites on initial trust development in new virtual work partners. In order to achieve this aim, a theoretical model is proposed and an experiment is leveraged for its empirical assessment.

The main contribution expected from this study is the further development of the original two-stage paradigm of trust formation proposed by previous researchers (McKnight et al., (1998; Robert et al., 2009). It is expected that, by allowing the trustor to acquire secondhand knowledge about the trustee´s behaviour in early stages of a virtual relationship, public profiles from social networking sites can blur the frontiers between swift trust and knowledge-based trust.

The remainder of this paper is organized in four sections. In section two, the literature is reviewed to hypothesize a series of relationships between online reputation

building and management practices and the development of initial trust. Section three contains a methodological discussion to empirically validate the hypothesis. Finally, section four presents the results of this study, followed by its concluding remarks in section five..

2 THEORETICAL BACKGROUND

The next sections review pertinent research in order to explore the potential impact of online reputation building and management practices on interpersonal trust in new work partners.

2.1 THE CONCEPTUALIZATION OF TRUST

Before a discussion on trust formation can happen, it is important to define what trust is, given its many perspectives and definitions available in the IS literature (Watanuki; Moraes, 2019). This study leverages McAllister´s (1995) definition of interpersonal trust as the extent to which the trustor is confident in, and willing to act on the basis of, the words, actions, and decisions of the trustee. This conceptualization of trust is also referenced as trust belief by some authors, as it is grounded in individual beliefs about peer reliability, dependability and reciprocal interpersonal concern and care (McAllister, 1995; McKnight et al., 1998; Kanawattanachai & Yoo, 2002; Chowdhury, 2005; Robert et al., 2009).

The basic model from McAllister (1995) suggests that trust beliefs are composed by two fundamental dimensions: affect and cognition-based. The affect-based trust beliefs involve emotional elements such as reciprocal interpersonal care and concern; whereas the cognition-based trust beliefs refer to the calculative and rational characteristics displayed by the trustee (Altschuller & Benbunan-Fich, 2013). Based on its two-dimensional defining characteristics, McAllister´s model seems to be particularly useful in investigations that considers the emotional aspects from individuals involved in trust development in virtual settings, such as emotional bonds and care (Kanawattanachai & Yoo, 2002), perceived similarity (Lowry, Zhang, Zhou, & Fu, 2010), and social presence (Altschuller & Benbunan-Fich, 2013).

Past research has suggested that the cognitive component of interpersonal trust can be facilitated via elements that help make the behaviour of other individuals

predictable such as social similarity, reliable role performance and professional credentials (McAllister, 1995; Kanawattanachai & Yoo, 2002; Lowry et al., 2010).

In McAllister´s model, social similarity is defined as the cultural and ethical similarity between the trustor and the trustee (McAllister, 1995; Lowry et al., 2010), whereas professional credentials refer to the preparedness of the trustee for the role as perceived by the trustor; and it can be reflected by the trustee´s educational level and institutions, training, professional association memberships, professional certifications, and relevant experience (McAllister, 1995, Kanawattanachai & Yoo, 2002; Lowry et al., 2010). Lastly, if the trustee exhibits reliability in performing complex roles – i.e., reliable role performance; then it is also likely that the trustor will develop a high level of trust toward the trustee (Chowdhury, 2005).

The affective dimension of trust is grounded on the altruistic motives of the relationship between the trustor and the trustee. It can be facilitated via elements that demonstrate the willingness of the trustee to provide help and assistance conducive to effective organizational functioning without being directly rewarded, a concept known as citizenship behaviour (McAllister, 1995). If the trustee exhibits a high level of citizenship behaviour toward the trustor and if both of them socially interact frequently, it is highly likely that the trustor would develop trust toward the trustee (Chowdhury, 2005).

2.2   INITIAL TRUST FORMATION IN NEW VIRTUAL WORK RELATIONSHIPS

The investigation of initial trust formation in new virtual work relationships in IS literature has its roots on the seminal works of Meyerson et al. (1996) and McKnight et al. (1998). Both researchers have dedicated efforts to understand the results of previous organizational studies that had unexpectedly identified high levels of trust in new organizational relationships or temporary groups. This unexpected finding, later explained by Meyerson et al. (1996) via the concept of swift trust, was originally considered paradoxical since the general understanding at the time was that interpersonal trust could only develop over time.

Meyerson et al. (1996) and McKnight et al. (1998) have proposed that during the beginning of a relationship, since the behaviour of the trustee is mostly or completely unknown to the trustor, a combination of cognitive processes on the trustor side, as well as his/her personality traits and institutional based elements would drive the

initial trust development process. Given that initial trust between individuals is usually not based on any kind of experience with, or firsthand knowledge about the trustee; the trustor´s disposition to trust, institutional judgments, and categorization processes based on secondhand knowledge about the trustee are the main elements that enable the trustor to develop trust toward the yet unknown trustee (Meyerson et al., 1996; McKnight et al., 1998).

An individual´s disposition to trust is defined as dispositional trust and represents an element specific to each trustor. It is associated with the trustor´s personal traits and mostly related to his/her beliefs in the human nature, i.e., a natural tendency to trust other people (Mayer, Davis & Schoorman, 1995; McKnight et al., 1998, 2002; Brown, Poole & Rodgers, 2004). The institution-based trust is dependent on a context and on an impersonal system or institution, whose perceived properties can inspire confidence in individuals (McKnight et al., 1998, 2002).

As for the categorization processes, according to McKnight et al. (1998), they are mainly supported by secondhand knowledge about the trustee and can be of three types:

- Reputation categorization: involves the assignment of trustworthy attributes to the trustee;
- Unit grouping: refers to the classification of the trustee on the same category as oneself;
- Stereotyping: places the trustee into a general category of persons.

These three processes can be utilized together by the trustor and can enable high levels of trusting beliefs toward the trustee. Regarding reputation categorization, those with good reputations are categorized as trustworthy individuals because reputation may reflect professional competence. In this case, a person may be perceived as a competent individual because he or she is a member of a competent group (such as a professional group) or because of his/her past actions. Regarding unit grouping, because those individuals who are grouped together tend to share common goals and values, they tend to also be perceived in a positive perspective, therefore being more likely for one individual to form trusting believes toward another group member. Finally, stereotyping may be done on a broad level, such as gender, or on a more specific level, such as occupation group. By positive stereotyping one can quickly form positive trusting beliefs about the other by generalizing from the favorable category into which the person was placed (McKnight et al., 1998).

The importance of Meyerson´s et al. (1996) and McKnight´s el at. (1998) work for the investigation of trust issues on virtual contexts relies on the fact that these authors have explored trust formation in a context that is usually common place for virtual relationships: brand new and temporary relationships. These authors have stablished the foundations upon which several virtual team researchers have investigated initial trust formation between virtual work partners (Jarvenpaa et al. 1998, 2004; Robert et al., 2009; Kuo & Thompson, 2014; Cummings & Dennis, 2018).

2.3   REPUTATION BUILDING AND MANAGEMENT PRACTICES IN SOCIAL NETWORKING SITES

Social media technologies can be conceptualized as an IS artefact consisting of three components: the technological itself, supporting social interactions; the informational, consisting of user generated digital content; and the social, involving communication and collaboration among people (Spagnoletti, Resca, Sæbø, 2015; Wakefield & Wakefield, 2015).

Within this broad concept, a specific sub-category can be identified: the social networking sites. They correspond to specific types of social media platforms and Internet sites with common attributes such as user profile, user access to digital content, a user list of relational ties, and user ability to view and traverse relational ties (Wakefield & Wakefield, 2016; Kapoor et al., 2018, Ryan et al., 2018). Popular examples of social networking sites are Facebook, Linkedin, and Twitter (Tsai & Hung, 2019; Wakefield & Wakefield, 2016; Jahng & Littau, 2016).

Social networking sites provide strangers with the possibility to exchange information in various forms, comprising not only the user-generated digital content (Spagnoletti et al., 2015; Lim & Van der Heide, 2014), but also the perception of social interaction (Wakefield & Wakefield, 2016; Jahng & Littau, 2016) which can potentially influence future virtual relationships between them (Kuo & Thompson, 2014). This is justified by the informational cues provided by social networking sites that can be interpreted as signals, as described by the signaling theory from informational economics studies (Chen, Lu, Wang & Pan, 2019). According to this theory, inequalities in access to information between two parties tend to make the exchange of goods and services between them difficult. Under these conditions, signals that reveal relevant and meaningful information purposefully emanating from one party to the other party can

reduce uncertainty and shape a positive behaviour from this last one toward the first party (Chen et al., 2019, Spence, 1973; Connelly, Certo & Ireland, 2011).

The present study suggests that a similar mechanism can promote positive stereotyping, unit grouping and reputation categorization toward a new virtual work partner based on the exploration of his/her public profiles in social networking sites. In this case, positive signals such as identity, presence, reputation, and relationships can emanate from the trustee's social media public profiles (Kietzmann, Hermkens & McCarthy, 2011), potentially influencing the trustor's perceptions of trustworthiness.

However, this doesn´t seem to constitute a trivial accomplishment as improper disclosure of personal information in social media can also result in potentially negative signals (Xie & Kang, 2015; Ryan et al., 2018; Shareef et al., 2020). In this sense, a key behaviour that can help promote positive signals is online reputation building and management.

According to Ryan et al. (2018), social media users build and manage their reputations online by taking into account general understandings of the functionality of the main platforms (i.e., using specific platforms for the sharing of specific types of information), managing their online connections (i.e., carefully managing what content is available to whom), and practicing censorship, particularly in respect of sensitive topics. These practices, therefore, refer to an individual´s overall behaviour of self-disclosure of information in social networking sites, aiming at impression formation and the proper presentation of identity.

Still according to Ryan et al. (2018), individuals can successfully build and manage their online reputations by managing the way in which their private and professional lives blur and by undertaking some level of self-censorship. This include deploying a number of tactics associated to online reputation protection, such as: using one platform for the private identity and another for the public identity; adhering to rules or guidelines to determine connecting practices on different platforms; undertaking varying levels of self-censorship across one or more platforms; avoid publishing content that is excessively personal or intimate in nature or content that is viewed as bragging or "showing off", or even offensive content. Table 1 summarizes key tactics suggested by Ryan et al. (2018) that individuals can leverage in social networking sites for building and managing their online reputation.

Table 1 – Tactics for protecting online reputation in social networking sites

Reputation building and management practice	Tactics deployed in social networking sites
Managing the blur between professional and private lives online	– Maintenance of private account and professional account separately – Intimate information restricted to private account – Careful presentation of credentials in professional account – Concern of private account content leaking into professional account – Decision to connect with others are made based on the platform (i.e., professional account for connecting with professional contacts, private account for family and friends) – Direct invites in the private account to the professional account in case the requestor is not familiar
Managing online connections	– Provide replies and comments in posts to expand network and correct misunderstandings – Provide likes and comments to show support or to acknowledge achievements or life events of others – Tag individuals to make sure that information is viewed – Forcibly connect with people to acquire interesting content or to create an alignment with a knowledgeable person. – Hide posts from connections that are not appreciated instead of deleting them
Practicing censorship	– Refrain from sharing information that conveys controversial views or is contrary to social etiquette – Avoid sharing overly personal or intimate information, information that is too controversial or unimportant or uninteresting information – Avoid interacting with contedious topics, inflammatory debates and fight with strangers – Deleting comments that may generate negative images or may have spelling or grammatical errors

Source: Ryan et al. (2018)

2.4   RESEARCH MODEL AND HYPOTHESIS DEVELOPMENT

Based on the discussion presented so far, Figure 1 summarizes the proposed research model regarding the impact of online reputation building and management practices in social networking sites on initial trust development in new virtual work partners.

Figure 1 – The theoretical model
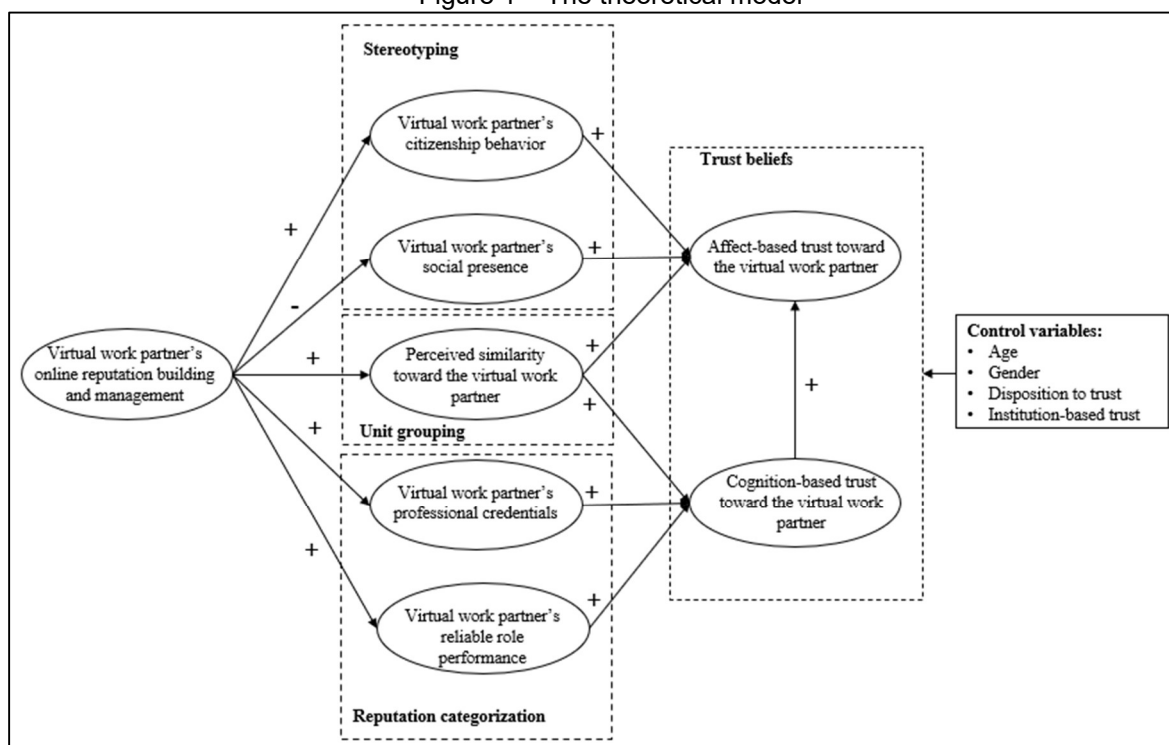
2.4.1 The effect of reputation building and management on categorization processes

This section explores the impact of online reputation building and management practices (Ryan et al., 2018) on the categorization processes for initial formation of trust, as proposed by McKnight et al. (1998).

Social information processing theory (SIPT) (Walther, 1992; Schiller & Mandviwalla, 2007) proposes that, when communicating solely via ICT (Information and Communication Technology) tools in which nonverbal cues are not available, individuals adapt and use available information to form impressions and evaluate others. Therefore, SIPT suggests that, in virtual environments, people tend to rely on peripheral social information, such as language, written attitude, and self-disclosure to form impressions about others (Jahng & Littau, 2016; Lim & Van der Heide, 2014; Walther, 1992). In this sense, social networking sites provide its users with generous identity signals to disclose information about other individuals (Spagnoletti et al., 2015; Wakefield & Wakefield, 2016).

By managing private and public identities, the individuals that practice online reputation building and management will tend to adhere to social guidelines and emphasize in their public profiles their positive achievements and attitudes, such as

supporting initiatives for the well-being of the environment, campaigns to alleviate poverty, among others. Individuals practicing online reputation building and management possess an increased perception of what is ethically acceptable in social networking sites (Ryan et al., 2018), and by publishing only their positive achievements, they tend to increase the perception of citizenship behaviour, or positive stereotyping, toward them. Therefore:

H1a – An increased level of online reputation building and management practices has a positive effect on the virtual work partner's citizenship behaviour.

Social presence theory (SPT) (Short, Williams & Christie, 1976; Schiller & Mandviwalla, 2007) suggests that the awareness of other social participants' interactions (i.e., social presence) can be augmented in communication via ICT tools as more channels become available for the expression of nonverbal cues. Despite the limited presence of actual human contact in virtual workplace environments, research has suggested that signals of social presence can be embedded in technology artefacts, such as websites, as well as via images and biographical information that convey sense of personal and sensitive human contact (Gefen & Straub, 2004; de Vries, 2006; Bente, Rüggenberg, Krämer & Eschenburg, 2008; Jahng & Littau, 2016; Shareef et al., 2020,). This is in agreement with the informational component of social media technologies, whose focus is on user-created content, such as personal profiles, text, photographs, and video streams (Spagnoletti et al., 2015; Wakefield & Wakefield, 2016).

A higher level of online reputation building and management practices often implies limited disclosure of personal or too intimate information (Ryan et al., 2018). By reducing the amount of personal information online, individuals practicing online reputation building and management tend to also limit their amount of social presence, thus reducing the chances of positive stereotyping:

H1b – An increased level of online reputation building and management practices has a negative effect on the virtual work partner's social presence.

According to the social identity or deindividuation (SIDE) theory (Spears & Lea, 1992; Schiller & Mandviwalla, 2007), in contexts where individuating cues about others are limited, individuals categorize themselves as part of social groups based on the information made available by other sources. Therefore, when a trustee's signals of shared social identity with the trustor are available in a public profile, such as common interests, experiences, values, and demographic traits; these signals may

accentuate the perception of similarity between them, enhancing the trustor's feelings of attraction and identification toward the trustee (de Vries, 2006; Tanis & Postmes, 2005), i.e., the trustor´s perception of unit grouping toward the trustee (McKnight et al., 1998). By limiting the amount of personal information and avoiding polemic content, individuals practicing online reputation building and management face a smaller chance that conflicting point of views will be identified against them (Ryan et al., 2018). Also, past research has demonstrated that less information about the individual increases the likelihood of perceived similarity or unit grouping toward him/her (Norton, Frost & Ariely, 2007; Lowry et al., 2010). Therefore::

H1c – An increased level of online reputation building and management practices has a positive effect on the perceived similarity toward the virtual work partner.

With regard to identity, previous research has suggested that personal identity signals, such as the availability of an individual's work history information on his/her public profile in social networking sites, can function as a set of cues that allow others to better evaluate this individual's professional credentials (Jahng & Littau, 2016; Lim & Van der Heide, 2014). By managing private and professional profiles separately, individuals practicing online reputation building and management will provide facilitated access to their professional credentials (Ryan et al., 2018), thus promoting positive reputation categorization:

H1d – An increased level of online reputation building and management practices has a positive effect on the virtual work partner's professional credentials.

Also, by managing private and professional profiles separately, individuals practicing online reputation building and management will carefully tailor their professional profiles, providing stronger evidences of relevant work experience (Ryan et al., 2018), once again promoting positive reputation categorization. Thus:

H1e – An increased level of online reputation building and management practices has a positive effect on the virtual work partner's reliable role performance.

2.4.2 The effect of categorization processes on trust beliefs

This section explores the impact of categorization processes on trust beliefs, by forging the original trust belief model proposed by McAllister (1995) with the categorization processes proposed by McKnight et al. (1998), and also by adapting them to the context of a virtual relationship.

Altruistic behaviour or positive stereotyping can provide an attributional basis for affect-based trust. As being extra-role can be viewed as personally chosen and not being directly rewarded, altruistic behaviour is rarely attributed to negatively perceived self-interest (McAllister, 1995; Chowdhury, 2005). By displaying citizenship behaviour and, therefore, being positively stereotyped, there is increased likelihood that the trustor will develop interpersonal care and concern toward the trustee::

H2a – An increased level of citizenship behaviour has a positive effect on the affect-based trust beliefs toward the virtual work partner.

A high degree of social presence is important for the development of trust because the trustor's perception of human interactions with the trustee is a precondition for interpersonal trust (de Vries, 2006; Lowry et al., 2010; Shareef et al., 2020), especially its affective dimension (McAllister, 1995; Gefen & Straub, 2004; Bente et al., 2008). Because affect-based trust is grounded in a trustor's attribution concerning the motives for the trustee´s behaviour, it should be limited to contexts where there is sufficient social information to allow the making of confident attributions. Thus:

H2b – An increased level of social presence has a positive effect on the affect-based trust beliefs toward the virtual work partner.

According to Chen et al. (2019), people with similar interests may feel a closer bond with one another, which affect individual's perceptions of benevolence. Similar view is proposed by McKnight et al. (1998) from a unit grouping perspective. Therefore, similarity can lead to enhanced affective trust. This is because perceived personality similarity affects trustor's perceptions of the trustee's benevolence (Chen et al., 2019). Therefore:

H2c – An increased level of perceived similarity has a positive effect on the affect-based trust beliefs toward the virtual work partner.

Similarity arises from shared attributes such as demographic characteristics, background, experience, and interests (McAllister, 1995; Lowry et al., 2010; Chen et al., 2019). Individuals tend to trust others who are similar to them and have more confidence in a similar trustee. Hence, one group member will be more likely to form trusting beliefs toward another group member (McKnight et al., 1998). Prior empirical studies show that similarity between individuals positively influence trust development. For example, McAllister (1995) revealed that cultural or ethnical similarity between individuals affects cognition-based trust among managers and professionals in organizations. Therefore, similar interests or experiences may serve

as social-based cues that individuals use to reduce uncertainty and facilitate cognition-based trust building:

H2d – An increased level of perceived similarity has a positive effect on the cognition-based trust beliefs toward the virtual work partner.

Evidence that the trustee´s behaviour is consistent with norms and that the trustee follows through on commitments tend to be critical for the development of trust in the trustor side. In working relationships involving high interdependence, individual performance can have a determining impact on personal productivity, and evidence that individuals carry out role responsibilities reliably tend to enhance a trustor's assessments of a trustee's trustworthiness (McAllister, 1995). In short, if an individual possesses good professional reputation, one will tend to quickly develop trusting beliefs toward him/her (McKnight et al., 1998). Thus:

H2e – An increased role reliable performance has a positive effect on the cognition-based trust beliefs toward the virtual work partner.

Organizations, through formal role specifications, specify boundaries for trust relationships and professional credentials serve as clear signals of role preparedness. Educational institutions, professional associations, and credentialing agencies promote trust by providing evidences that its member or accredited individuals meet standards from a professional community. Professional standing or reputation can be maintained over time through continued membership and participation in relevant professional associations (McKnight et al., 1998). Therefore:

H2f – An increased level of professional credentials has a positive effect on the cognition-based trust beliefs toward the virtual work partner.

Chen et al. (2019) indicate that cognition-based trust is the foundation of affect-based trust because the latter is more likely to develop when an individual is perceived to be reliable. As cognitive reactions form the basis for affective reactions, cognition-based trust may influence affect-based trust. A higher level of cognition-based trust in the trustee will serve to reduce uncertainty and encourage the trustor to develop emotional attachments to the trustee, thus leading to affect-based trust. This leads to the following hypothesis:

H3 – An increased level of cognition-based trust beliefs has a positive effect on the affect-based trust beliefs toward the virtual work partner.

3 RESEARCH METHODOLOGY

In order to validate the hypothesized relationships, a between-subjects experiment was designed.

3.1   PARTICIPANTS

Data were collected using undergraduate students from a business course in a large, state University in Brazil during the month of May 2020. Participation was voluntary and no financial or grade incentives were provided to the students. The only prerequisite was for students to have an active Facebook or LinkedIn account, in order to ensure they were familiar with the goal of each social networking site (Kuon & Thompson, 2014). Also, the students were informed about the general goal of the study, but specific details such as different profiles being used were not disclosed to avoid potential bias.

In total, 88 students have participated on the study. According to the G*Power 3.1.9 software (Faul, Erdfelder, Buchner & Lang, 2009), this sample size allows for a statistical power of approximately 95%; when a significance level of 5% and a medium effect size (f2) of 0.15 are selected, as suggested by Hair et al. (2014). Most of the respondents were male (86%) and their average age was 22 years old. Majority of the respondents also reported that they had more than five years of experience in the usage of social networking sites (97%) and make use of them on a daily basis (78%).

3.2   TASK

A vignette was used to place participants in a scenario in which they would be interacting with a new virtual work partner. In this method, subjects are presented with written descriptions of realistic situations and then requested to provide responses on rating scales that measure the dependent variables of interest (Trevino, 1992). This method has been proven to effectively capture individual perceptions like trust (Robert et al., 2009; Kuo & Thompson, 2014) and, similar to Cummings and Dennis (2018), the use of vignettes was chosen to provide control by placing all subjects in the same scenario with the only change being the manipulation of the public profiles from social networking sites. The vignette utilized in this study

places participants in a fictious virtual partnership beginning work on a new collaborative task. Participants (trustors) were presented with the public profiles from social networking sites of a fictitious work partner (trustee) and asked to assess trust beliefs toward the new work partner.

The experiment utilized a between-subjects design with random assignment to each condition. The students were invited to participate on the experiment during the lecture of a business class. The students were instructed to go to a website hosting the questionnaire that self-guided them through the experiment.

The experiment started with participants completing an initial questionnaire to assess their demographics, habits of usage of social networking sites, their disposition to trust and institution-based trust (control variables). The website then randomly directed students to one of the two treatment vignettes (presence or absence of online reputation building and management practices) describing the nature of the collaborative task and the link to the public profiles of their fictitious virtual work partner in Facebook and LinkedIn, respectively. A second questionnaire was then used to evaluate the mediating and dependent variables of the theoretical model.

After the students have completed and submitted the second questionnaire, they were informed about the goal of the experiment on a subsequent lecture, and presented with a summary of the data analysis.

3.3   MEASURES

3.3.1   Independent variable

The manipulated independent variable is the work partner´s online reputation building and management practices.

The work partner´s reputation building and management practices were treated as a categorial variable: one fictitious public profile was constructed respectively on Facebook and LinkedIn based on the behaviour expected from an individual practicing online reputation building and management, as suggested by Ryan et al. (2018); whereas another fictitious public profile was constructed on the same social networking sites displaying the opposite behaviour. Table 2 depicts some of the divergent characteristics of the two fictious profiles. Facebook and LinkedIn were chosen as the targeted social networking sites for this study because they provide

the unique combination of being highly popular among overall population at the same time that they are capable of providing clear distinction between profiles practicing online reputation building and management or not (Ryan et al., 2018).

Table 2 – Characterization of the public profiles utilized in the vignette

Online reputation building and management practices	Presence of reputation building and management tactics	Absence of reputation building and management tactics
Managing the blur between professional and private lives online	− Maintenance of private account in Facebook and professional account in LinkedIn − Intimate information about personal health and family life or opinions related to politics or social issues restricted to private account − Careful tailoring of the presentation of professional credentials in LinkedIn − Concern of private account content leaking into professional account, by limiting public content available in Facebook account to demographics	− Maintenance of Facebook and LinkedIn accounts with no apparent distinction − Mixture of private and professional information being shared indistinctly in either accounts − Minimal presentation of professional credentials in LinkedIn − No overall concern of private content being mixed with professional content by granting full access to information of Facebook account
Managing online connections	− Provide likes and comments to posts in LinkedIn to expand network − Provide likes and comments to posts in Facebook to show support or to acknowledge achievements or life events of others − Tag individuals to make sure that information being posted is viewed	− Loose interaction with LinkedIn posts − Loose interaction with Facebook posts − Mainly just reposting with no further mentions to target individuals
Practicing censorship	− Avoid sharing overly personal or intimate information − Refrain from posting unimportant or uninteresting information − Avoid sharing information that could be interpreted as controversial or extremist point of view − Refrain from interacting with contentious debates or adopting behaviour that is contrary to social etiquette − Deleting comments that may generate negative images or may have spelling or grammatical errors	− Openly exposing personal issues such as romantic partnerships and parent´s illness − Excessively posting banal information such as what the individual is eating for every meal − No overall concerns of making a political statement or expressing a religious or sexual bias − Arguing with strangers in controversial or inflammatory debates − No overall concerns with controversial or provocative posts and typing issues

Source: Adapted from Ryan et al. (2018).

It is important to highlight that the information about the current employer of the new virtual work partner was totally fictitious in order to minimize potential effects of

institution-based trust. For similar reasons, no information was disclosed about the work partner´s connections on both social networking sites.

In order to minimize the effect of the work partner´s demographics and physical appearance, the same gender (male), hometown, education, and similar fictitious photos were chosen to provide similar judgements from participants in regards to age, race, and dress code.

3.3.2   Mediating variables

The mediating variables are: citizenship behaviour, social presence, perceived similarity, professional credentials, and reliable role performance.

Items to measure the mediating variables were carefully carved out from previous studies in order to increase reliability of the measures (McAllister, 1995; Jarvenpaa et al., 1998; Bente et al., 2008; Zellner-Bruhn, Maloney, & Bhappu, 2008). The mediating variables, their originally reported reliability values, and their respective items are displayed in Table 3.

Table 3 – Items to measure mediating variables

Construct	Cronbach´s α	Items
Citizenship behaviour (McAllister, 1995)	0.81	My partner takes time to listen to people's problems and worries. My partner assists people, even though it is not an obligation. My partner takes people´s needs and feelings into account when making decisions that affect them.
Social presence (Bente et al., 2008)	0.91	My partner remained a stranger to me. (reversed item) I felt I got to know my partner well. I experienced the interaction as impersonal. (reversed item)
Perceived similarity (Zellner-Bruhn et al., 2008)	0.88	My partner and I share similar ethic. My partner and I share similar habits. My partner and I share similar interaction styles. My partner and I share similar personalities. My partner and I share similar cultural backgrounds.
Professional credentials (Jarvenpaa et al., 1998)	0.90	I feel very confident about my partner´s skills. My partner has much knowledge about the work that needs to be done. My partner has specialized capabilities that can increase our performance. My partner seems well qualified. My partner seems very capable of performing his/her task. My partner seems to be successful in the activities (s)he undertakes.
Reliable role performance (McAllister, 1995)	0.77	My partner adequately completes his/her duties. My partner performs all tasks that are expected of him/her. My partner fulfills responsibilities specified in job description. My partner meets formal performance requirements of the job.

3.3.3   Dependent variables

The dependent variables are affect-based and cognition-based trust beliefs. Items to measure the dependent variables were taken from McAllister (1995). The originally reported reliability values for the dependent variables and their respective items are displayed in Table 4.

Table 4 – Items to measure the dependent variables

Construct	Cronbach´s α	Items
Affect-based trust (McAllister et al., 1995)	0.89	I feel we can have a sharing relationship where we can both freely share our ideas, feelings and hopes. I feel I can talk freely to this individual about the difficulties I am having and know that (s)he will want to listen. I feel that if I shared my problems with this person, I know (s)he would respond constructively and caringly. I fell that we will both make considerable emotional investments in our relationship.
Cognition-based trust (McAllister et al., 1995)	0.90	This person appears to approach his/her job with professionalism and dedication. Given this person´s track record, I see no reason to doubt his/her competence and preparation for the job. I can rely on this person to not make my job more difficult by careless work. I trust and respect him/her. Based on the information about this individual and his/her background, I would be more concerned and monitor his/her performance more closely. (reversed item)

3.3.4   Control variables

The participant's age and gender were added as control variables since prior research has shown that these demographics can impact perceptions of interpersonal trust (McAllister, 1995; Robert et al., 2009). Similarly, disposition to trust and institution-based trust were controlled as they have shown to impact initial trust development (McKnight et al., 1998). Lastly, duration and frequency of usage from both social networking sites were also controlled (Cumming & Dennis, 2018).

Items to assess the constructs of disposition to trust and institution-based trust were carefully carved out from previous studies in order to increase reliability of the measures (Jarvenpaa et al., 1998, McKnight et al., 2002; Robert et al., 2009, Cummings & Dennis, 2018). These two control variables, their originally reported reliability values, and their respective items are displayed in Table 5.

Table 5 – Items to measure the constructs utilized as control variables

Construct	Cronbach´s α	Items
Disposition to Trust (Jarvenpaa et al. 1998; Robert et al. 2009)	0.83	Most people are honest in describing their experience and abilities. Most people tell the truth about the limits of their knowledge. Most people can be counted on to do what they say they will do. Most people answer personal questions honestly.
Institution-based Trust (McKnight et al., 2002)	0.94	Social networking sites have enough safeguards to make me feel comfortable using them to get information about others. I feel assured that the technological structures of social networking sites adequately protect me from getting misleading information about others. I feel confident that the technology advances on social networking sites make them safe for me to acquire information about others. In general, social networking sites are now a robust and safe environment to get information about others.

3.4   MANIPULATION CHECKS

One question was utilized to assess the experimental manipulation. In this question, the participants were asked to indicate, by using a no/yes scale, if they have relied on the following items to assess their new work partner:

- Work partner´s public profiles on both Facebook and LinkedIn;

- Work partner´s comments and interactions with other users in Facebook and LinkedIn;

- Work partner´s publication and (re)posts in both Facebook and LinkedIn.

The participants were also allowed to enter assessment items not listed above into a text box.

4 RESULTS

Partial Least Squares (PLS) was used to test the theoretical model. The analysis was supported by the SmartPLS3 software (Ringle et al., 2015) and included assessment for the measurement and structural models (Henseler et al., 2016).

First, the measurement model's reliability and validity were assessed. Table 6 presents the standardized outer loading values for the reflective indicators in the model after the removal of one indicator from the cognition-based trust construct (CBT5) and two indicators from the social presence construct (SP1 and SP2). Following recommendations from Hair et al. (2014), these indicators were removed

because they presented outer loadings below the threshold of 0.70, and their removal contributed to an increase in construct reliability and validity.

Table 6 – Outer loadings

	Affect-based trust	Cognition-based trust	Citizensh. behaviour	Social presenc.	Perceiv. similar.	Profess. credent.	Reliable role performanc.
ABT1	0.811						
ABT2	0.782						
ABT3	0.847						
ABT4	0.725						
CBT1		0.768					
CBT2		0.837					
CBT3		0.860					
CBT4		0.756					
CB1			0.866				
CB2			0.873				
CB3			0.862				
SP3				1.000			
PS1					0.820		
PS2					0.744		
PS3					0.851		
PS4					0.842		
PS5					0.709		
PC1						0.752	
PC2						0.856	
PC3						0.821	
PC4						0.784	
PC5						0.872	
PC6						0.758	
RRP1							0.824
RRP2							0.879
RRP3							0.916
RRP4							0.865

For each reflective variable, Cronbach's alpha (α), composite reliability (ρ_c), Djikstra-Henseler's ρ (ρ_A), and average variance extracted (AVE) were calculated. For all three reliability measures, the utilized reliability criteria required values exceeding 0.70 (Henseler et al., 2016). For the AVE, the convergent validity criteria required values exceeding 0.50 (Hair et al., 2014). The obtained results confirm the reliability and convergent validity of the reflexive constructs (Table 7).

Table 7 - Reliability and validity values

Construct	Cronbach's alpha (α)	Composite reliability (ρ_c)	Djikstra-Henseler's ρ (ρ_A)	AVE
Affect-based trust	0.802	0.871	0.810	0.628
Cognition-based trust	0.819	0.881	0.821	0.650
Citizenship behaviour	0.837	0.901	0.849	0.752
Social presence	1.000	1.000	1.000	1.000
Perceived similarity	0.855	0.895	0.881	0.632
Professional credentials	0.894	0.919	0.901	0.654
Reliable role performance	0.894	0.926	0.894	0.759

The constructs' discriminant validity was assessed using the heterotrait-monotrait (HTMT) ratio of correlations, which represents the average of the correlations of indicators across constructs that measure different phenomena relative to the average of the correlations of indicators within the same construct. The most conservative criterion of discriminant validity using HTMT criteria requires values below the threshold of 0.85 (Henseler et al., 2015). Table 8 presents the HTMT values for each pair of constructs in the measurement model. All latent variables satisfied the HTMT criteria, as all values were significantly smaller than the 0.85 threshold value. This finding confirms the constructs' discriminant validity.

Table 8 - HTMT criterion analysis (p<0.001)

	Affect-based trust	Cog-based trust	Citiz. behav.	Social prese.	Perceiv. similar.	Profess. credent.	Rel. role perform.	Reput. build. mgmt.
Affect-based trust								
Cognition-based trust	0.734							
Citizenship behaviour	0.684	0.698						
Social presence	0.071	0.113	0.142					
Perceived similarity	0.640	0.444	0.765	0.143				
Professional credentials	0.331	0.781	0.464	0.092	0.297			
Reliable role performance	0.457	0.775	0.337	0.106	0.303	0.727		
Reputation building and management	0.363	0.163	0.479	0.250	0.568	0.138	0.218	

After the measurement model was validated, the structural model was submitted to the bootstrapping sampling procedure (5,000 samples) to determine the t-values associated with the statistical significance of the path coefficients of the model (Hair et al., 2014). The path coefficients (β) and their statistical significance are displayed in Figure 2.

Figure 2 - Path coefficients and their statistical significance (* ρ<0.05, ** ρ <0.01, *** ρ <0.001)
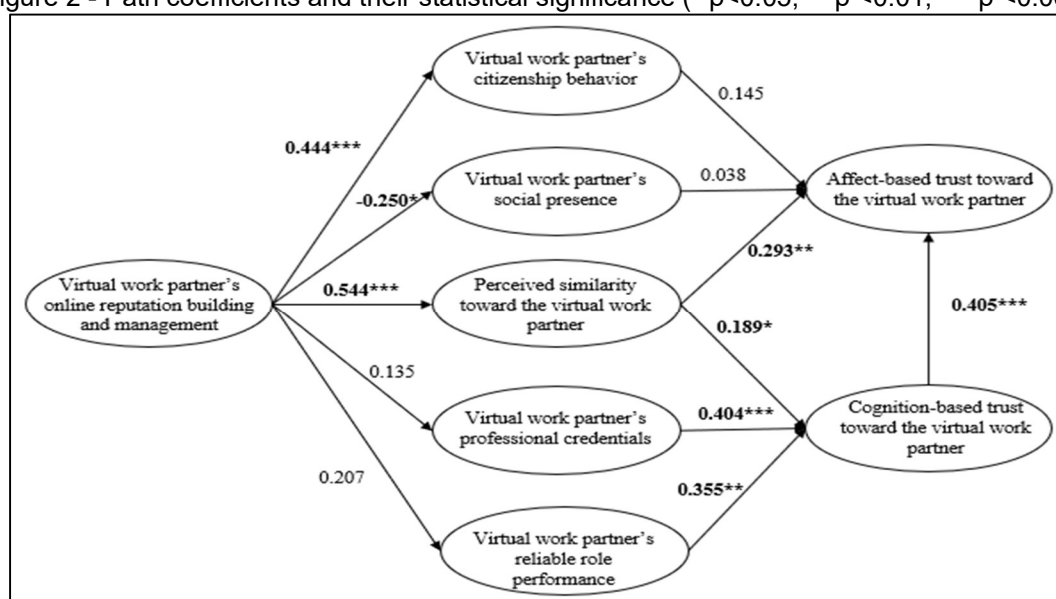
The results obtained from the structural model assessment were utilized for the evaluation of the hypotheses. Table 9 summarizes the results of the tests of the hypotheses.

Table 9 - Test of hypotheses

Hypothesis	Result
H1a – An increased level of online reputation building and management practices has a positive effect on the virtual work partner's citizenship behaviour.	Supported
H1b – An increased level of online reputation building and management practices has a negative effect on the virtual work partner's social presence.	Supported
H1c – An increased level of online reputation building and management practices has a positive effect on the perceived similarity toward the virtual work partner.	Supported
H1d – An increased level of online reputation building and management practices has a positive effect on the virtual work partner's professional credentials.	Not supported
H1e – An increased level of online reputation building and management practices has a positive effect on the virtual work partner's reliable role performance.	Not supported
H2a – An increased level of citizenship behaviour has a positive effect on the affect-based trust beliefs toward the virtual work partner.	Not supported
H2b – An increased level of social presence has a positive effect on the affect-based trust beliefs toward the virtual work partner.	Not supported
H2c - An increased level of perceived similarity has a positive effect on the affect-based trust beliefs toward the virtual work partner	Supported
H2d - An increased level of perceived similarity has a positive effect on the cognition-based trust beliefs toward the virtual work partner	Supported
H2e - An increased role reliable performance has a positive effect on the cognition-based trust beliefs toward the virtual work partner	Supported
H2f - An increased level of professional credentials has a positive effect on the cognition-based trust beliefs toward the virtual work partner	Supported
H3 – An increased level of cognition-based trust beliefs has a positive effect on the affect-based trust beliefs toward the virtual work partner.	Supported

The structural model explained 58.6% and 48.3% of the variance of the dependent variables of cognition-based and affect-based trust beliefs, respectively. As for the mediating variables, this model also explained 29.5% of the variance of perceived similarity, 19.7% of the citizenship behaviour, 6.2% of the social presence, 4.3% of the role reliable performance, and 1.8% of the professional credentials. According to Hair et al. (2014), these values indicate an explanatory power ranging from low (considering the R^2 values of the mediating variables) to moderate (considering the R2 values of the dependent variables).

The effect sizes (f^2) for each hypothesized relationship is provided in descending order in Table 10. The lowest effect sizes were obtained for the four hypothesized relationships that did not achieved statistical significance during the validation of the theoretical model, suggesting that the exogenous constructs of these hypothesized relationships do not have a substantial impact on their respective endogenous construct (Hair et al., 2014). All effect sizes greater than 0.15 were associated to relationships with statistical significance, as predicted by the statistical power of this sample size.

Table 10 – Effect sizes (f^2) for the hypothesized relationships

Hypothesized relationship	Effect size (f^2)
Reputation building and management practices → Perceived similarity	0.419
Reputation building and management practices → Citizenship behaviour	0.246
Professional credentials → Cognition-based trust beliefs	0.225
Cognition-based trust beliefs → Affect-based trust beliefs	0.209
Role reliable performance → Cognition-based trust beliefs	0.173
Perceived similarity → Affect-based trust beliefs	0.092
Perceived similarity → Cognition-based trust beliefs	0.079
Reputation building and management practices → Social presence	0.067
Reputation building and management practices → Reliable role performance	0.045
Reputation building and management practices → Professional credentials	0.019
Citizenship behaviour → Affect-based trust beliefs	0.018
Social presence → Affect-based trust beliefs.	0.003

As for control variables, no significant statistical differences were identified for gender, age, frequency or years of usage of social networking sites. Disposition to trust has shown a positive and significant statistical difference (diff=0.374, $\rho<0.05$) in regards to the effect of reputation building and management practices on perceived similarity. Institution-based trust has shown a positive and significant statistical difference for both the effect of reputation building and management practices on

professional credentials (diff=0.561, ρ<0.05) and the effect of reputation building and management practices on reliable performance (diff=0.466, ρ<0.05).

5   CONCLUDING REMARKS

The objective of this study is to evaluate the impact of online reputation building and management practices in social networking sites on initial trust development in new virtual work partners. In order to achieve this aim, a theoretical model was developed and an experiment was conducted for its subsequent empirical assessment.

From a stereotyping perspective, results suggest that online reputation building and management practices possess the dual effect of increasing the perceptions of citizenship behaviour towards the new virtual work partner, but also decreasing the perceptions of social presence toward this same individual. From a unit grouping perspective, online reputation building and management practices have also been confirmed as a strong contributor to perceived similarity toward a new virtual work partner.

Surprisingly, from a reputation categorization perspective, none of the hypothesized relationships between online reputation building and management practices and the virtual work partner´s professional credentials or reliable role performance have found empirical support. One possible explanation for this unexpected result could be the fact that the sample of respondents might not be used to rely on social networking sites for professional purposes. Given the relatively low average age of the participants, it is possible that most of them have not yet been exposed to a real work context, therefore, not giving importance to professional information displayed in social networking sites. Additional support for this suspicious is provided by the fact that participants scoring higher in institution-based trust indeed presented a statistically significant coefficient for these relationships. For further confirmation, a new experiment utilizing more experienced business professionals as participants is suggested.

From an initial trust formation perspective, all the hypothesized effects from perceived similarity, professional credentials, and reliable role performance on cognition-based trust beliefs have been supported (McAllister, 1995; McKnight et al., 1998); including the strong effect of cognition-based trusts belief on affect-based trust beliefs (Chen et al., 2019).

However, neither citizenship behaviour nor social presence have found support for their hypothesized effect on affect-based trust beliefs. Only perceived similarity has shown a significant effect on affect-based trust beliefs. This is an important finding, as it demonstrates that initial levels of affect-based trust can be fostered a priori even without firsthand knowledge about the new virtual work partner. To the best of the author´s knowledge, this is the first reported evidence suggesting that swift trust might have an affective component along the well-known cognitive component.

The potential contributions expected from this study are as follows. From a practical perspective, it is expected that this study will assist business professionals with general guidelines to practice online reputation building and management on social networking sites and alert them about the potential impact that their online information disclosure behaviours can have on eventual new virtual relationships at the workplace. From a theoretical perspective, this study helps enhance the understanding of the phenomenon of initial trust formation in new virtual relationships by suggesting that, nowadays, given the ubiquity of social networking sites, the two-stage paradigm for trust development originally proposed in the literature (McKnight et al., 1998; Robert et al., 2009) might be better represented by a continuum where trust can initially develop based on secondhand knowledge about the trustee´s behaviour displayed in social networking sites. More importantly, this initial trust can already possess an affective-based component

Main limitations identified so far in this study are mainly related to empirical decisions made by the authors. As detailed in the description of the sample of participants, most of the participants are male and relatively young. This might have introduced a potential bias into the final results and prevented more in-depth analysis regarding the effect of the control variables of age and gender into the hypothesized relationships. The frequent usage of reversed items to measure the construct of social presence has also not proven to be an appropriate methodological decision as respondents apparently became confused by the alternating logic of the measurement items. This has forced the authors to eliminate two out of the three original items proposed for the measurement of the social presence construct. Finally, the execution of the same experiment with a sample composed by more experienced business professionals may provide further and more reliable evidences in regards to the effect of online reputation building and management practices into

the reputation categorization phenomenon. These constitute opportunities for future research.

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APPENDIX E - PAPER #5: The impact of online reputation in social networking sites on the initial trust formation in new virtual work partners: An experiment during the covid-19 pandemic

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Abstract

Given the social distancing measures adopted as a result of the COVID-19 pandemic, the number of professionals working from home has greatly increased, requiring work partners to find alternative ways for building interpersonal trust at the outset of a new work relationship. The objective of this study is to evaluate the impact of online reputation building and management practices in social networking sites on the initial trust development in new virtual work partners. To achieve this aim, a theoretical model was developed and an experiment was conducted during the COVID-19 pandemic. The results suggest that the online reputation building and management practices in social networking sites have positive effects on initial trust formation. Categorization processes such as unit grouping and reputation categorization have been found to contribute to initial trust development toward a new virtual work partner, both from an affect and cognition-based perspectives..

Keywords: Trust, Virtual Work, Social Networking Sites, Online Reputation Building and Management, Experiment.

1   INTRODUCTION

By the end of 2019, when the first cases of COVID-19 began to be reported, few would imagine the impact that the later pandemic declared by World Health Organization (WHO, 2020) in early March 2020 would have in society and organizations overall. This impact soon became apparent as the social distancing measures started being adopted by countries around the world. In the behavioural sciences arena, the massive shift to a remote or virtual workforce has presented

researchers with the unique opportunity to explore individuals' adaptation to work effectively while in social isolation.

According to the International labour Organization (ILO, 2020), as of April 2020, 59 countries had implemented remote work strategies for non-essential employed staff, representing millions of professionals working from home for the first time. As the pandemic numbers continue to worsen in early 2021 with different variants of the virus being reported (WHO, 2021), a major concern from behavioural researchers is the individuals´ wellbeing and productivity, since they are now surrounded by uncertainty in many dimensions, such as the health risk itself, novelty of working from home, job instability, and financial insecurity (Caliguri, De Cieri, Minbaeva, Verbeke, & Zimmermanm, 2020). All of this can exacerbate an already traditional challenge for organizations: the issue of trust formation between new work partners (McAllister, 1995; McKnight, Cummings, & Chervany, 1998; Robert, Dennis, & Hung, 2009; Kuo & Thompson, 2014; Cummings & Dennis, 2018). Given that new collaborations and work teams will continue to be formed within and across organizations during the pandemic, one important research question arises: how can initial trust be fostered between individuals when they first engage in a virtual collaboration under conditions of extreme social distancing?

Since interpersonal trust in a dyadic organizational context can be approached as a socio-informational phenomenon (Lu, Kong, Ferrin, & Dirks, 2017), the answer to this question could be on the ubiquitous presence of social networking sites in today´s society, as their public profiles provide access to a considerable amount of personal information about almost any individual around the globe (Kuo & Thompson, 2014; Cummings & Dennis, 2018). Consequently, it is now relatively easy for new work partners to scrutinize each other´s public profiles on social networking sites, like Facebook and LinkedIn, before the formal engagement starts (Cummings & Dennis, 2018). The overall impact that this behaviour can have on the phenomenon of initial formation of trust between new virtual work partners is still mostly unknown (Kuo & Thompson, 2014; Watanuki & Moraes, 2019).

One way to approach this investigation is to consider that the public profiles in social networking sites can provide secondhand knowledge that new virtual work partners can leverage to make trust decisions and facilitate initial trust development toward each other, as long as they purposefully display the expected cues in their public profiles (Watanuki & Moraes, 2019). To this aim, individuals can leverage a set of

practices for self-disclosure of information and impression management for the goal of building and managing their online reputations (Ryan, Cruickshank, Hall, & Lawson, 2018).

Thus, the objective of this study is to evaluate the impact of online reputation building and management practices in social networking sites on initial trust development in new virtual work partners. In order to achieve this aim, a theoretical model was proposed and an experiment was conducted during the COVID-19 pandemic.

2 THEORETICAL BACKGROUND

This section reviews pertinent research in order to explore the potential impact of online reputation building and management practices on interpersonal trust in new work partners.

2.1   THE CONCEPT OF TRUST

This study leverages McAllister´s (1995) definition of interpersonal trust as the extent to which the trustor –i.e., the person who trusts – is confident in, and willing to act on the basis of, the words, actions, and decisions of the trustee – i.e., the person to be trusted. This conceptualization of trust is also referenced as trust belief by some authors, as it is grounded in individual beliefs about peer reliability, reciprocal concern, and care (McAllister, 1995; McKnight et al., 1998; Chowdhury, 2005; Robert et al., 2009; McEvily & Tortoriello, 2011); and is composed by two fundamental dimensions: affect and cognition-based.

Past research has suggested that the cognitive component of interpersonal trust can be facilitated via elements that help make the behaviour of other individuals predictable such as social similarity, reliable role performance, and professional credentials (McAllister, 1995; Lowry, Zhang, Zhou, & Fu, 2010).

In McAllister´s model, social similarity is defined as the cultural and ethnical similarity between the trustor and the trustee (McAllister, 1995; Lowry et al., 2010), whereas professional credentials refer to the preparedness of the trustee for the role as perceived by the trustor; and it can be reflected by the trustee´s educational level and institutions, training, professional certifications, and relevant experience (McAllister, 1995; Lowry et al., 2010). Lastly, if the trustee exhibits reliability in performing

complex roles – i.e., reliable role performance; then it is also likely that the trustor will cognitively develop a high level of trust toward the trustee (Chowdhury, 2005).

The affective dimension of interpersonal trust is grounded on the altruistic motives of the relationship between the trustor and the trustee (Chen, Saparito, & Belkin, 2011). It can be facilitated via elements that demonstrate the willingness of the trustee to provide help and assistance conducive to effective organizational functioning without being directly rewarded, a concept known as citizenship behaviour (McAllister, 1995). If the trustee exhibits a high level of citizenship behaviour toward the trustor and if both of them socially interact frequently, it is highly likely that the trustor would develop trust toward the trustee (Chowdhury, 2005).

The initial trust formation processes

Literature on trust traditionally distinguishes two different stages for the development of trust between individuals engaging in a new virtual work relationship: before and after the behaviour of the trustee is known to the trustor (Meyerson, Weick, & Kramer, 1996; McKnight et al., 1998; McKnight, Choudhury, & Kacmar, 2002; Robert et al., 2009).

Before the trustee´s behaviour is known to the trustor, interpersonal trust is usually referenced as swift trust, a fragile type of trust mostly grounded on trustor´s personality traits, institutional judgments, and cognitive categorization processes (Meyerson et al., 1996; Jarvenpaa, Knoll, & Leidner, 1998; McKnight et al., 1998; 2002; Robert et al., 2009; Kuo & Thompson, 2014).

After the trustee´s behaviour is known to the trustor, interpersonal trust is usually referenced as knowledge-based trust and is heavily grounded on the perceptions and judgements made by the trustor in regards to the behaviour displayed by the trustee (McKnight et al., 1998; 2002; Robert et al., 2009; Lu et al., 2017).

The interdependence between these two types of trust is that once swift trust is established, it can help foster knowledge-based trust (Robert et al., 2009). Therefore, swift trust is desired not only because it allows new virtual work partners to engage and collaborate quickly (Meyerson et al., 1996; Jarvenpaa et al., 1998; McKnight et al., 1998; 2002; Kuo & Thompson, 2014), but also because it can have a positive influence for the development of knowledge-based trust in subsequent stages of the virtual relationship (Jarvenpaa, Shaw, & Staples, 2004).

The present study focuses primarily on the first stage, as during the beginning of a new virtual work relationship the behaviour of the trustee is mostly or completely

unknown to the trustor. According to the initial trust formation model proposed by McKnight et al. (1998), in this stage of a new relationship, given that initial trust between individuals is usually not based on any kind of experience with, or firsthand knowledge about the trustee; the trustor´s disposition to trust, institutional judgments, and categorization processes based on secondhand knowledge about the trustee are the main elements that enable the trustor to develop trust toward the yet unknown trustee.

An individual´s disposition to trust is defined as dispositional trust and represents an element specific to each trustor. It is associated with the trustor´s personal traits and mostly related to his/her beliefs in the human nature, i.e., a natural tendency to trust other people (Mayer, Davis, & Schoorman, 1995; McKnight et al., 1998; 2002; Brown, Poole, & Rodgers, 2004; Patent & Searle, 2019). The institution-based trust is dependent on a context and on an impersonal system or institution, whose perceived properties can inspire confidence in individuals (McKnight et al., 1998; 2002).

As for the categorization processes, according to McKnight et al. (1998), they are mainly supported by secondhand knowledge about the trustee and can be of three types: reputation categorization, unit grouping, and stereotyping. These three processes can be leveraged together by the trustor to enable high levels of trusting beliefs toward the trustee.

Regarding reputation categorization, those with good reputations are categorized as trustworthy individuals because reputation may reflect professional competence. In this case, a person may be perceived as a competent individual because he or she is a member of a competent group or because of his/her past actions. As for unit grouping, because those individuals who are grouped together tend to share common goals and values, they tend to also be perceived in a positive perspective, therefore being more likely for one individual to form trusting believes toward another group member. Finally, stereotyping may be done on a broad level, such as gender, or on a more specific level, such as occupation group. By positive stereotyping one can quickly form positive trusting beliefs about the other by generalizing from the favorable category into which the person was placed (McKnight et al., 1998).

Online reputation building and management practices

Nowadays, a specific IT artifact seems to be capable of blurring the frontiers between the two stages of interpersonal trust development: the social networking sites. The social networking sites correspond to specific types of social media platforms and

Internet sites with common attributes such as user profile, user access to digital content, a user list of relational ties, and user ability to view and traverse relational ties (Wakefield & Wakefield, 2016; Ryan et al., 2018). Popular examples of social networking sites are Facebook, Linkedin, and Twitter (Wakefield & Wakefield, 2016; Jahng & Littau, 2016).

Social networking sites provide strangers with the possibility to exchange information in various forms, including the perception of the social interaction (Wakefield & Wakefield, 2016; Jahng & Littau, 2016) which can potentially influence future virtual relationships between them (Kuo & Thompson, 2014). The present study suggests that a similar mechanism can promote trustworthiness toward a new virtual work partner based on the exploration of his/her public profiles in social networking sites. In this case, positive signals such as identity, presence, reputation, and relationships can emanate from the trustee's public profiles (Kietzmann, Hermkens, McCarthy, & Silvestre, 2011), potentially influencing the trustor's perceptions of trustworthiness. In this sense, a key trustee´s behaviour that can help promote positive signals is the online reputation building and management.

According to Ryan et al. (2018), social media users build and manage their reputations online by taking into account:

- general understandings of the functionality of the main platforms by using specific platforms for the sharing of specific types of information;
- managing their online connections by carefully managing what content is available to whom, and;
- practicing censorship, particularly in respect of sensitive topics.

These practices refer to an individual´s overall behaviour of self-disclosure of information in social networking sites, aiming at impression formation and the proper presentation of identity. Table 1 summarizes key tactics suggested by Ryan et al. (2018) that individuals can leverage in social networking sites for building and managing their online reputation. The next item will explore the different ways that these practices can affect initial trust formation in a new virtual work partner from the perspective McKnight´s et al. (1998) categorization process types: stereotyping, unit grouping and reputation categorization.

Table 1 - Tactics for building and managing reputation in social networking sites

Reputation building and management practice	Tactics deployed in social networking sites
Managing the blur between professional and private lives online	Maintenance of private account and professional account separately
	Intimate information restricted to private account
	Careful presentation of credentials in professional account
	Concern of private account content leaking into professional account
	Decision to connect with others are made based on the platform (i.e., professional account for connecting with professional contacts, private account for family and friends)
	Direct invites in the private account to the professional account in case the requestor is not familiar
Managing online connections	Provide replies and comments in posts to expand network and correct misunderstandings
	Provide likes and comments to show support or to acknowledge achievements or life events of others
	Tag individuals to make sure that information is viewed
	Forcibly connect with people to acquire interesting content or to create an alignment with a knowledgeable person.
	Hide posts from connections that are not appreciated instead of deleting them
Practicing censorship	Refrain from sharing information that conveys controversial views or is contrary to social etiquette
	Avoid sharing overly personal or intimate information, information that is too controversial or unimportant or uninteresting information
	Avoid interacting with contentious topics, inflammatory debates and fight with strangers
	Deleting comments that may generate negative images or may have spelling or grammatical errors

Source: Ryan et al. (2018).

2.2   HYPOTHESES DEVELOPMENT

By managing private and public identities, the individuals that practice online reputation building and management tend to adhere to social guidelines and emphasize in their public profiles their positive achievements and attitudes. These individuals possess an increased perception of what is ethically acceptable in social networking sites (Ryan et al., 2018) and, by publishing only their positive achievements, they tend to increase the perception of citizenship behaviour, or positive stereotyping, toward them. Altruistic behaviour or positive stereotyping can provide an attributional basis for affect-based trust. As being extra-role can be viewed as personally chosen and not being directly rewarded, altruistic behaviour is rarely attributed to negatively perceived self-interest (McAllister, 1995; Chowdhury, 2005; Chen et al., 2011). By displaying citizenship behaviour and, therefore, being

positively stereotyped, there is an increased likelihood that the trustor will develop interpersonal care and concern toward the trustee. Therefore:

H1a – An increased level of online reputation building and management practices has a positive effect on the virtual work partner's citizenship behaviour.

H1b – An increased level of citizenship behaviour has a positive effect on the affect-based trust beliefs toward the virtual work partner.

Despite the limited presence of human contact in virtual workplace environments, research has suggested that the degree of awareness of the other person and interpersonal relationships during a virtual interaction - i.e., an individual´s social presence - can be embedded in technology artefacts; such as websites, as well as via images and biographical information that convey sense of personal and sensitive human contact (Bente, Rüggenberg, Krämer, & Eschenburg, 2008; Jahng & Littau, 2016; Shareef et al., 2020). However, a high level of online reputation building and management practices often implies limited disclosure of personal or too intimate information (Ryan et al., 2018). By reducing the amount of personal information online, individuals practicing online reputation building and management tend to also limit their amount of social presence, thus reducing the chances of positive stereotyping. A high degree of social presence is important for the development of trust because the trustor's perception of human interactions with the trustee is a precondition for interpersonal trust (Lowry et al., 2010; Shareef et al., 2020), especially its affective dimension (McAllister, 1995; Bente et al., 2008). Because affect-based trust is grounded in a trustor's attribution concerning the motives for the trustee´s behaviour, it should be limited to contexts where there is sufficient social information to allow the making of confident attributions. Thus:

H2a – An increased level of online reputation building and management practices has a negative effect on the virtual work partner's social presence.

H2b – An increased level of social presence has a positive effect on the affect-based trust beliefs toward the virtual work partner.

By limiting the amount of personal information and avoiding polemic content, individuals practicing online reputation building and management face a smaller chance that conflicting points of view are identified against them (Ryan et al., 2018). Also, past research has demonstrated that less information about the individual increases the likelihood of perceived similarity or unit grouping toward him/her (Lowry et al., 2010). According to Chen, Lu, Wang and Pan (2019), people with similar

interests may feel a closer bond with one another, which affect individual's perceptions of benevolence. Similar view is proposed by McKnight et al. (1998) from a unit grouping perspective. Therefore, similarity can lead to enhanced affective trust. This is because perceived personality similarity affects trustor's perceptions of the trustee's benevolence (Chen et al., 2019).

Similarity arises from shared attributes such as demographic characteristics, background, experience, and interests (McAllister, 1995; Lowry et al., 2010; Chen et al., 2019). Individuals tend to trust others who are similar to them and have more confidence in a similar trustee. Hence, one group member will be more likely to form trusting beliefs toward another group member (McKnight et al., 1998). Prior empirical studies show that similarity between individuals positively influence trust development. For example, McAllister (1995) revealed that cultural or ethnical similarity between individuals affects cognition-based trust among managers and professionals in organizations. Therefore, similar interests or experiences may serve as social-based cues that individuals use to reduce uncertainty and facilitate cognition-based trust building. Therefore:

H3a – An increased level of online reputation building and management practices has a positive effect on the perceived similarity toward the virtual work partner.

H3b – An increased level of perceived similarity has a positive effect on the affect-based trust beliefs toward the virtual work partner.

H3c – An increased level of perceived similarity has a positive effect on the cognition-based trust beliefs toward the virtual work partner.

Previous research has suggested that personal identity signals, such as the availability of an individual's work history information on his/her public profile in social networking sites, can function as a set of cues that allow others to better evaluate this individual's professional credentials (Jahng & Littau, 2016). By managing private and professional profiles separately, individuals practicing online reputation building and management will provide facilitated access to their professional credentials (Ryan et al., 2018), thus promoting positive reputation categorization. Organizations, through formal role specifications, specify boundaries for trust relationships, and professional credentials can represent signals of role preparedness. Educational institutions, professional associations, and credentialing agencies promote trust by providing evidences that their members or accredited individuals meet standards from a professional community. Professional standing or reputation can be

maintained over time through continued membership and participation in relevant professional associations (McKnight et al., 1998). Therefore:

H4a – An increased level of online reputation building and management practices has a positive effect on the virtual work partner's professional credentials.

H4b – An increased level of professional credentials has a positive effect on the cognition-based trust beliefs toward the virtual work partner.

Also, by managing private and professional profiles separately, individuals practicing online reputation building and management carefully tailor their professional profiles, providing stronger evidences of relevant work experience (Ryan et al., 2018), again promoting positive reputation categorization. Evidence that the trustee´s behaviour is consistent with norms and that the trustee follows through on commitments tend to be critical for the development of trust in the trustor side. In working relationships involving high interdependence, individual performance can have a determining impact on personal productivity, and evidence that individuals carry out role responsibilities reliably tend to enhance a trustor's assessments of a trustee's trustworthiness (McAllister, 1995; Chen et al., 2011). In short, if an individual possesses good professional reputation, one will tend to quickly develop trusting beliefs toward him/her (McKnight et al., 1998). Thus:

H5a – An increased level of online reputation building and management practices has a positive effect on the virtual work partner's reliable role performance.

H5b – An increased role reliable performance has a positive effect on the cognition-based trust beliefs toward the virtual work partner.

Chen et al. (2019) indicate that cognition-based trust is the foundation of affect-based trust because the latter is more likely to develop when an individual is perceived to be reliable. As cognitive reactions form the basis for affective reactions, cognition-based trust may influence affect-based trust. A higher level of cognition-based trust in the trustee serves to reduce uncertainty and encourage the trustor to develop emotional attachments to the trustee, thus leading to affect-based trust:

H6 – An increased level of cognition-based trust beliefs has a positive effect on the affect-based trust beliefs toward the virtual work partner

Based on the discussion presented so far, Figure 1 summarizes the proposed research model regarding the impact of online reputation building and management practices in social networking sites on initial trust development in new virtual work partners.

Figure 1 – The theoretical model
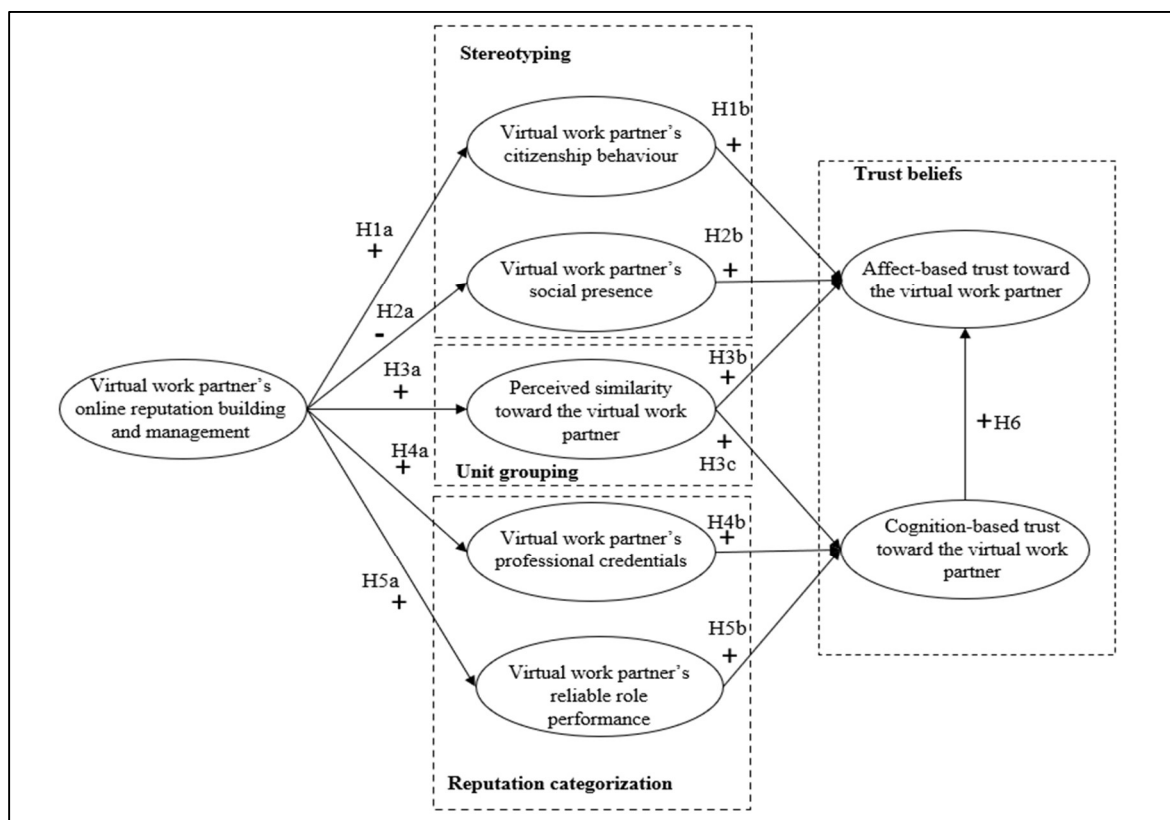
3 RESEARCH METHODOLOGY

In order to validate the hypothesized relationships, a between-subjects experiment was designed.

3.1 PARTICIPANTS

Data were collected using undergraduate and graduate students from a business management class in a large, state University in Brazil between May and October of 2020. At the time of the study, given the social distancing measures imposed in Brazilian Universities due to the COVID-19 pandemic, all students were attending the classes remotely. In total, 137 students have participated on the study. According to an assessment conducted by using the G*Power 3.1.9 software (Faul, Erdfelder, Buchner, & Lang, 2009), this sample size allows for a statistical power of approximately 95%; when a significance level of 5% and a medium effect size (f2) of 0.15 are selected, as suggested by Hair, Hult, Ringle and Sarstedt (2014). Most of the respondents were male (76%) and their average age was 26 years old. Majority

of the respondents also reported that they had more than two years of experience in the usage of social networking sites (99%) and make use of them on a daily or weekly basis (64%).

3.2   TASK

A vignette was used to place participants in a scenario in which they would be interacting with a new virtual work partner. The vignette utilized in this study placed participants in a fictitious virtual partnership beginning work on a new collaborative task. Participants were presented with the public profiles from social networking sites of a fictitious work partner and asked to assess trust beliefs toward the new work partner.

The experiment utilized a between-subjects design with random assignment to each condition. The students were invited to participate on the experiment during an online lecture and were instructed to go to a website hosting the questionnaire that self-guided them through the experiment.

The experiment started with participants completing an initial questionnaire to assess their demographics, habits of usage of social networking sites, and other control variables. The website then randomly directed students to one of the two treatment vignettes: presence or absence of online reputation building and management practices. Next, a description of the nature of the collaborative task was presented, along with the link to the public profiles of their fictitious virtual work partner in Facebook and LinkedIn, respectively. A second questionnaire was then used to evaluate the mediating and dependent variables of the theoretical model.

3.3   MEASURES

The manipulated independent variable is the work partner´s online reputation building and management practices. This variable was treated as a categorical variable: one fictitious public profile was constructed, respectively, on Facebook and LinkedIn based on the behaviour expected from an individual practicing online reputation building and management, as suggested by Ryan et al. (2018); whereas another fictitious public profile was constructed on the same social networking sites displaying the opposite behaviour.

Items to measure the mediating and dependent variables were carefully carved out from previous studies in order to increase the reliability of the measures (McAllister, 1995; Jarvenpaa et al., 1998; Bente et al., 2008; Zellmer-Bruhn, Maloney, Bhappu, & Salvador, 2008; McEvily & Tortoriello, 2011). The measurement scales are provided in Appendix E1. All scales were originally available in English and were translated to Portuguese for Brazilian respondents. A 5-point Likert scale was utilized to measure all latent constructs.

The participant's age and gender were added as control variables since prior research has shown that these demographics can impact the perceptions of interpersonal trust (McAllister, 1995; Robert et al., 2009). Similarly, disposition to trust and institution-based trust were controlled as they have been considered to impact initial trust development (McKnight et al., 1998). Years and frequency of usage of both social networking sites by the participants were also captured (Cumming & Dennis, 2018).

Lastly, one question was utilized to assess the experimental manipulation. In this question, the participants were asked to indicate, by using a no/yes scale, if they have relied on the following items to assess their new work partner:

- Work partner´s public profiles on both Facebook and LinkedIn;
- Work partner´s comments and interactions with other users in Facebook and LinkedIn;
- Work partner´s publication and (re)posts in both Facebook and LinkedIn.

4 RESULTS

Partial Least Squares (PLS) was used to assess the theoretical model. The analysis was supported by the SmartPLS2 software (Ringle, Wende, & Will, 2005) and included the assessment for the measurement and structural models (Henseler, Hubona, & Ray, 2016).

First, the measurement model's reliability and validity were assessed. Table 2 presents the standardized outer loading values for the reflective indicators in the model after the removal of one indicator from the cognition-based trust construct (CBT5) and one indicator from the social presence construct (SP3). Following recommendations from Hair et al. (2014), these indicators were removed because

they presented outer loadings below the threshold of 0.70, and their removal contributed to an increase in construct´s reliability and validity.

Table 2 - Outer loadings

|	Affect-based trust	Cognition-based trust	Citizensh. behaviour	Social presen.	Perceiv. similar.	Profess. credent.	Reliable role perform.
ABT1	0.822						
ABT2	0.811						
ABT3	0.845						
ABT4	0.773						
CBT1		0.811					
CBT2		0.877					
CBT3		0.866					
CBT4		0.812					
CB1			0.880				
CB2			0.901				
CB3			0.887				
SP1				0.787			
SP2				0.875			
PS1					0.850		
PS2					0.799		
PS3					0.809		
PS4					0.858		
PS5					0.760		
PC1						0.757	
PC2						0.848	
PC3						0.832	
PC4						0.825	
PC5						0.887	
PC6						0.832	
RRP1							0.867
RRP2							0.899
RRP3							0.935
RRP4							0.893

For each reflective variable, Cronbach's alpha (α), composite reliability (ρ_c), and average variance extracted (AVE) were calculated. For the two reliability measures, the utilized reliability criteria required values exceeding 0.70 (Henseler et al., 2016). For the AVE, the convergent validity criteria required values exceeding 0.50 (Hair et al., 2014). The obtained results confirmed the reliability and convergent validity of the reflexive constructs (Table 3), except for the Cronbach's alpha of social presence (α=0.562). Given that social presence was measured by only two indicators and Cronbach's alpha is sensitive to the number of items in the measurement scale (Hair et al., 2014), this result did not represent a concern, especially when considering that composite reliability value for social presence (ρ_c=0.818) was above 0.70.

Table 3 - Reliability and validity values

Construct	Cronbach's alpha (α)	Composite reliability (ρc)	AVE
Affect-based trust	0.829	0.886	0.661
Cognition-based trust	0.863	0.907	0.709
Citizenship behaviour	0.868	0.919	0.791
Social presence	0.562	0.818	0.693
Perceived similarity	0.876	0.909	0.666
Professional credentials	0.910	0.930	0.691
Reliable role performance	0.921	0.944	0.808

The constructs' discriminant validity was assessed using the heterotrait-monotrait (HTMT) ratio of correlations. All latent variables satisfied the HTMT criteria, as all values were significantly smaller than the 0.85 threshold value (Henseler et al., 2016). This finding confirmed the constructs' discriminant validity.

After the measurement model was validated, the structural model was submitted to the bootstrapping sampling procedure (5,000 samples) to determine the t-values associated with the statistical significance of the path coefficients of the model (Hair et al., 2014). The path coefficients (β) and their statistical significance are displayed in Figure 2.

Figure 2 - Path coefficients and their statistical significance (* $p<0.05$, ** $p<0.01$, *** $p<0.001$)
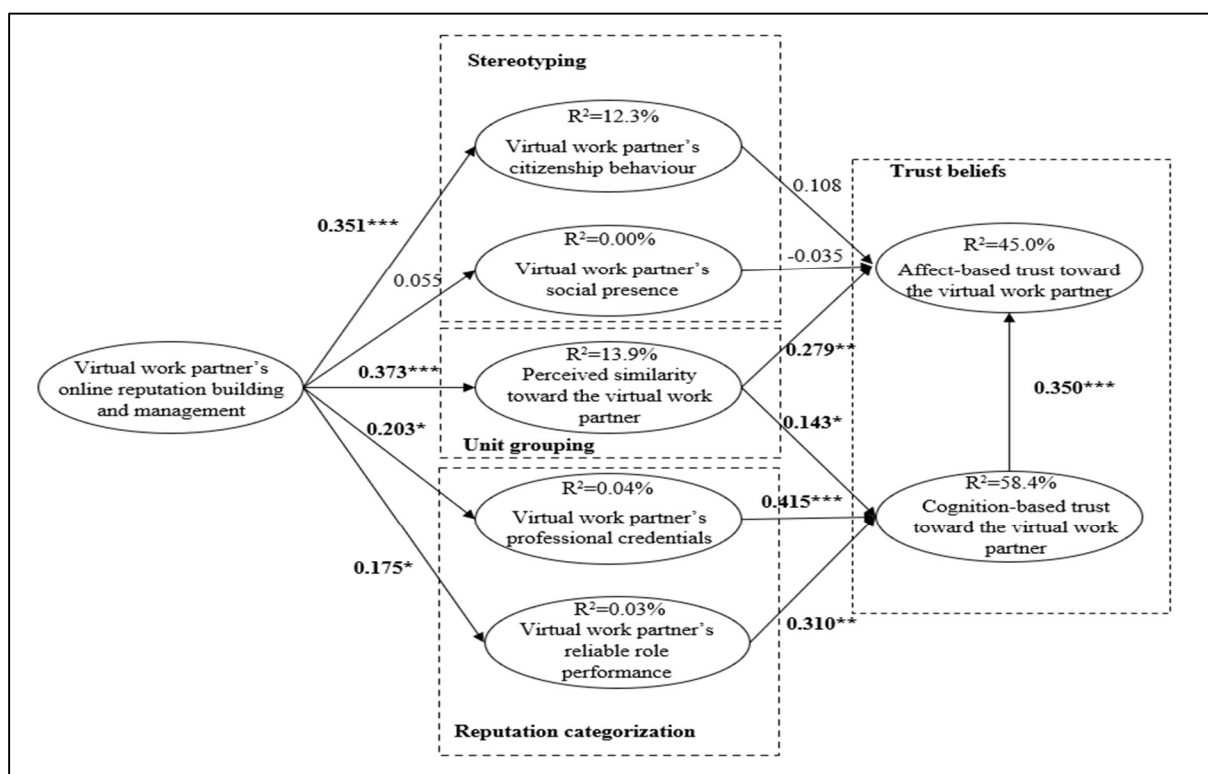
5   HYPOTHESES TESTING

The results obtained from the assessment of the structural model were utilized for the evaluation of the hypotheses. This section presents the results of the test of the hypotheses grouped by each categorization process type: stereotyping, unit grouping and reputation categorization.

From a stereotyping perspective, the results suggest that online reputation building and management practices possess the effect of increasing the perceptions of citizenship behaviour towards the new virtual work partner (β =0.351, ρ<0.001), thus supporting H1a. However, no statistical significance was found for the effect of online reputation building and management practices on social presence (β =0.055, ρ=0.562). According to H2a, it was expected that an increased level of online reputation building and management practices on the trustee´s side would diminish the perceptions of social presence toward this individual on the trustor´s side (Bente et al., 2008; Ryan et al., 2018). This is an interesting finding that could be associated to the challenges of measuring changes in perceptions of social presence by using a single communication media. So far, most research on social presence in virtual contexts has tried to assess changes in perceptions of social presence by comparing different communication media conditions, such as face to face versus computer mediated settings (Lowry et al., 2010) or synchronous versus asynchronous media (Bente et al., 2008). Instead, this study has tried to assess changes in perceptions of social presence by using the same communication media and manipulating the amount of personal information made available asynchronously in public profiles of social networking sites. It may be possible that in such scenarios of low interactivity and reciprocity between the individuals, the perceptions of social presence might not change significantly as a result of the availability of asynchronous information. Further research using alternative measurement models for social presence may be needed to validate this. If this suspicious hold true, this result would highlight the benefits of the online reputation building and management practices for the initial trust formation in new work partners as, so far, a decrease in the level of social presence has been hypothesized as the only potential negative outcome stemming from these practices.

Surprisingly, neither citizenship behaviour (β =0.108, ρ=0.310) nor social presence (β =-0.035, ρ=0.649) have found support for their hypothesized effects H1b and H2b on

affect-based trust beliefs. Despite of both effects being already reported in previous research (McAllister, 1995; Lowry et al., 2010), in this study some novel approaches were attempted to assess this effect, which might help explain the inconclusive findings. First, differently from McAllister (1995), instead of assessing the effect of the citizenship behaviour on the affect-based trust beliefs based on actions that the trustee had developed toward the trustor in a real context; this study has tried to assess the same relationship by focusing on behaviours that the trustee had displayed on his/her public profile towards other individuals and not the trustor him/herself. The lack of statistical significance found for this relationship in this study might indicate that the effect of citizenship behaviour on affect-based trust beliefs might only be established when the target individual of the trustee´s citizenship behaviour is the trustor him/herself. Second, in regards to the hypothesized effect of social presence on the affect-based trust beliefs; again, the attempt of generating changes in the trustor´s perceptions of social presence by only varying the amount of trustee´s personal information being disclosed asynchronously on social networking sites might have not resulted in the intended differences in the trustor´s perceptions of interactivity and reciprocity required to cause a significant effect on the affect-based trust beliefs.

From a unit grouping perspective, the online reputation building and management practices have been identified as an important contributor to the perceived similarity toward a new virtual work partner (β =0.373, ρ<0.05), confirming H3a. Perceived similarity has also shown a significant effect on both cognition-based (β =0.143, ρ<0.05) and affect-based (β =0.279, ρ<0.01) trust beliefs. This is an important finding, as it not only confirms H3b and H3c, but it also suggests that initial levels of affect-based trust can be fostered a priori even without firsthand knowledge about the new virtual work partner´s behaviour.

Similar results were found from a reputation categorization perspective: both hypothesized relationships H4a and H5a between online reputation building and management practices and the virtual work partner´s professional credentials (β =0.203, ρ<0.05) or reliable role performance (β =0.175, ρ<0.05) have found empirical support. The hypothesized effects from professional credentials (β =0.415, ρ<0.001) and reliable role performance (β =0.310, ρ<0.01) on cognition-based trust beliefs have also been supported; thus, confirming both H4b and H5b.

Lastly, the effect of cognition-based trusts belief on affect-based trust beliefs (β =0.350, ρ<0.001) has also been confirmed (H6). As for control variables, no significant statistical effects were identified for gender and age. Disposition to trust has shown a positive effect (β =0.135, ρ<0.05) on cognition-based trust, and Institution-based trust has shown a positive effect (β =0.167, ρ<0.05) on affect-based trust.

6 CONCLUDING REMARKS

The objective of this study is to evaluate the impact of online reputation building and management practices in social networking sites on initial trust development in new virtual work partners. In order to achieve this aim, a theoretical model was developed and an experiment was conducted for its empirical assessment during the COVID-19 pandemic.

Results suggest that the online reputation building and management practices have significant effects into the tree types of initial trust formation categorization processes: stereotyping, unit grouping, and reputation categorization. Unit grouping and reputation categorization have been found to contribute to initial trust development toward the new virtual work partner, both from an affect and cognition-based perspectives. However, no evidences were found regarding the effect of stereotyping on the affect-based trust toward the new virtual work partner.

This lack of evidence doesn´t necessarily indicate that this mechanism is not relevant for initial trust formation toward the new virtual work partner, but it might indicate that the proper stereotyping required for initial trust formation is difficult to convey based solely on public profiles of social networking sites. The absence of statistical significance for the relationships between stereotyping elements, such as trustee´s citizenship behaviour and social presence on the affect-based trust beliefs represents not only the major limitation of this study, but also the main opportunity for future research. Alternative ways to generate and measure variance on trustor´s perceptions of trustee´s citizenship behaviour and social presence based solely on the trustee´s overall behaviour of self-disclosure of information in social networking sites seem to be a particularly promising area to be explored.

The potential contributions expected from this study are as follows. From a practical perspective, it is expected that this study will assist remote workers to properly build

and manage their online reputation on social networking sites aiming at facilitating trust development under conditions of extreme social distancing. This is a welcome support for virtual workplaces not only during the COVID-19 pandemic itself but also afterwards, as some degree of virtual collaboration is expected to remain in areas where the work from home experience induced by the COVID-19 pandemic has succeeded (Caliguri et al., 2020).

From a theoretical perspective, this study helps to advance the understanding of the phenomenon of initial trust formation in new virtual relationships under conditions of extreme social distancing by proposing a novel theoretical perspective that has been allowed given the massive usage of social networking sites by the world population. The model proposed in this study combines theoretical frameworks that the traditional two-stage literature on interpersonal trust development usually considers apart: the knowledge-based trust development model from McAllister (1995) and the initial trust formation model from McKnight et al. (1998). The justification for this novel approach lies in the ubiquity of social media in current society and in the fact that social networking sites can constitute an important source of secondhand knowledge to the trustor about the trustee´s behaviour (Kuo & Thompson, 2014; Cummings & Dennis, 2018, Watanuki & Moraes, 2019). The results of this study have suggested that the three categorization processes for initial trust formation proposed by McKnight et al. (1998) are positively affected by online reputation and management practices. The results also suggest that the same practices allow knowledge-based trust antecedents from McAllister (1995) model to come into effect even before firsthand knowledge about the trustee´s behaviour is known to the trustor. Taken together, the results suggest that, nowadays, the traditional two-stage paradigm for trust development (Meyerson et al., 1996; McKnight et al., 1998; 2002; Robert et al., 2009) might be better represented by a continuum where trust can initially develop based on secondhand knowledge about the trustee´s behaviour, and over time be complemented by firsthand knowledge acquired via the interaction with the trustee. More importantly, this initial trust can already possess an affective-based component, an often-neglected dimension of interpersonal trust in virtual contexts, but critical for a more comprehensive understanding of the dynamics of interpersonal trust (Chen et al., 2011).

To conclude, it is important to highlight that, although the trend toward virtual collaboration has not started now; it has been greatly accelerated by the social

distancing measures adopted during the COVID-19 pandemic, and this trend is expected to remain in the 'new normal' of the post-COVID world (Caliguri et al., 2020). This study, therefore, represents an attempt to explore a unique opportunity presented by the COVID-19 pandemic and strengthen the quality of virtual work for the future.

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Appendix E1. Measurement scales used

Construct	Items
Citizenship behaviour (McAllister, 1995)	My partner takes time to listen to people's problems and worries.
	My partner assists people, even though it is not an obligation.
	My partner takes people´s needs and feelings into account when making decisions that affect them.
Social presence (Bente et al., 2008)	My partner remained a stranger to me. (reversed item)
	I felt I got to know my partner well.
	I experienced the interaction as impersonal. (reversed item)
Perceived similarity (Zellner-Bruhn et al., 2008)	My partner and I share similar ethic.
	My partner and I share similar habits.
	My partner and I share similar interaction styles.
	My partner and I share similar personalities.
	My partner and I share similar cultural backgrounds.
Professional credentials (Jarvenpaa et al., 1998)	I feel very confident about my partner´s skills.
	My partner has much knowledge about the work that needs to be done.
	My partner has specialized capabilities that can increase our performance.
	My partner seems well qualified.
	My partner seems very capable of performing his/her task.
	My partner seems to be successful in the activities (s)he undertakes.
Reliable role performance (McAllister, 1995)	My partner adequately completes his/her duties.
	My partner performs all tasks that are expected of him/her.
	My partner fulfills responsibilities specified in job description.
	My partner meets formal performance requirements of the job.
Affect-based trust beliefs (McAllister, 1995)	I feel we can have a sharing relationship where we can both freely share our ideas, feelings and hopes.
	I feel I can talk freely to this individual about the difficulties I am having and know that (s)he will want to listen.
	I feel that if I shared my problems with this person, I know (s)he would respond constructively and caringly.
	I fell that we will both make considerable emotional investments in our relationship.
Cognition-based trust beliefs (McAllister, 1995)	This person appears to approach his/her job with professionalism and dedication.
	Given this person´s track record, I see no reason to doubt his/her competence and preparation for the job.
	I can rely on this person to not make my job more difficult by careless work.
	I trust and respect him/her.
	Based on the information about this individual and his/her background, I would be more concerned and monitor his/her performance more closely. (reversed item)