

Communication Practitioners' Perceptions of Big Data and Automation: A Comparative Study between Europe and Latin America

Percepciones de los Profesionales de Comunicación sobre Big Data y Automatización: Un Estudio Comparativo entre Europa y Latinoamérica

Markus Wiesenber¹ | [ORCID ID](#)
markus.wiesenber@uni-leipzig.de

Leipzig University, Alemania
Ángeles Moreno² | [ORCID ID](#)
mariaangeles.moreno@urjc.es

Universidad Rey Juan Carlos, España

Recepción: 29/03/2020 Revisión: 10/05/2020 Aceptación: 16/06/2020 Publicación: 26/06/2020

<http://dx.doi.org/10.5783/RIRP-19-2020-03-29-48>

Abstract

The big data revolution has changed the way organisations operate. The implications have been phenomenal for public relations and communication management professionals who are trying to understand and manage the realm of big data and what it means for them. This study³ is an attempt to dive deeper into the discussion on how professionals are managing the world of big data. A large survey of European and Latin American countries reveals comparative findings on the knowledge and usage of big data and automation and demonstrates large gaps between the continents. Implications for theory and practice are finally drawn.

Keywords: Big data, automation, comparative cross-cultural research, public relations, strategic communication

Resumen

La revolución del big data ha cambiado el modo de trabajar de las organizaciones. Las implicaciones para los profesionales de relaciones públicas y gestión de comunicación, que

¹ Postdoctoral researcher at the Institute of Communication and Media Studies at Leipzig University and PR Consultant with Wiesenber¹ Communications. ORCID ID: <https://orcid.org/0000-0003-0765-0594>.

² Professor at the Communication Department at the University Rey Juan Carlos. ORCID ID: <http://orcid.org/0000-0002-0777-2957>.

³ This research has been organized by EUPRERA and EACD with the funding support of Prime Research (Cision) and Llorente & Cuenca.

están tratando de comprender y gestionar el ámbito del big data y lo que significa para ellos, han sido relevantes. Este estudio trata de profundizar en la discusión de cómo los profesionales están gestionando el mundo del big data. Una amplia encuesta en países europeos y latinoamericanos revela resultados comparativos sobre el conocimiento y el uso del big data y la automatización y pone de manifiesto grandes brechas entre los dos continentes. Se concluye con implicaciones de estos hallazgos para la teoría y la práctica.

Palabras claves: Big data, automatización, investigación comparativa intercultural, relaciones públicas, comunicación estratégica

Summary

1. Introduction
2. Literature Review
3. Methodology
4. Results
5. Discussion and conclusions
6. Limitations
7. Implications and Future Perspectives
8. Appendix
9. References

Sumario

1. Introducción
2. Revisión de literatura
3. Metodología
4. Resultados
5. Discusión y conclusiones
6. Limitaciones
7. Implicaciones y Perspectivas futuras
8. Apéndice
9. Referencias

1. INTRODUCTION

The amount of data and information available these days has grown exponentially in the last few decades, creating opportunities and challenges for organisations on a global scale. Managing this amount of data is part of a new reality for managers in all kind of organisations and departments. This is also true for practitioners in the field of communication like public relations and communication management. The analysis and interpretation of data is essential to make sense of stakeholders' attitudes and behaviour

about the organisations (listening) and to make sense of the communication departments goals and achievements (alignment).

Most of the published scientific articles that link big data to public relations and communication management are published with a strong marketing impetus (see for an overview Wiencierz & Röttger, 2017); however, there is still a knowledge gap from a perspective of comparative research beyond a European scope (Wiesenbergs et al., 2017). Insights from a Latin American perspective are rather rare in communication management and mostly concentrate on the professionalisation of public relations in Latin America in general or specifically on the field of social media (e.g., Molleda et al., 2017; Navarro et al., 2018). However, little is known about the status quo of the implementation and usage of big data in the communication sector in Latin America and the knowledge and skills of communication professionals in this region. Therefore, the main goal of this paper is to a) provide further research to cover the gap in strategic communication and communication management regarding big data and automation, b) to compare the practitioners' perceptions of big data and automation in two different regions, and c) to contribute to the critical debate about risks, challenges and difficulties involving the adoption of big data and automation for communication management practices.

2. LITERATURE REVIEW

2.1. Big Data Revolution

Big Data is at the heart of nearly every digital transformation. In fact, its size is usually the first dimension used to define the term (Gandomi & Haider, 2015). Considering the amount of data generated and consumed before, during and after the Corona-Crises, numerous questions for an organisation arise: What shall be done with the data? What is important about it and how can it best be managed? How can one make sense of the data and draw conclusions? Organisations are exploring how large-volume data can be usefully deployed to create and capture value for individuals, businesses, communities, and governments. Whether it is machine learning or web analytics to predict individual action, consumer choice, search behaviour, traffic patterns, or disease outbreaks, big data is becoming a tool that not only analyses patterns, but also provides the predictive likelihood of an event.

The term Big Data is used to describe, “the overwhelming volume of information produced by and about human activity, made possible by the growing ubiquity of mobile devices, tracking tools, always-on sensors, and cheap computing storage” (Lewis et al., 2013, p. 2). However, big data is mostly defined by its four “V”s: Volume, Velocity, Variety, and Value (Gandomi & Haider, 2015). The amount of data and its granular nature describes the *volume* of data. The speed with which an organisation receives data and needs to handle them in real-time outlines the *velocity* characteristic of big data. The unstructured, structured, and semi-structured data variety affects the data requirements and how organisations might summarise and analyse the data (*variety & value*). Therefore, we can assume the definition of Wiesenbergs et al. (2017, p. 96): “Big data denotes huge volumes and streams of different forms of data from diverse internal and external sources and their constant processing, which provide new insights”.

The intrinsic value of data helps organisations to derive meaning from the data, recognise patterns, and make informed assumptions in their decision-making. The terminology might change in the coming years but the need to strategize, collect, and analyse data will remain a top priority for organisations and their management (Wamba et al., 2017; Yaqoob et al., 2016). In its early stages, organisations focused primarily on the amount of data (volume) and how to manage the data streams. However, the question shifted from the size of data to its importance and the value derived from the data itself. At this stage, many organisations struggle with big data because it needs further analytical *tools, skills, structures* as well as *resources* (Fan et al., 2015). Applications like large-scale text analysis, such as automated content analysis, data mining, machine learning, topic modelling and sentiment analysis are still uneasy to make them accessible for certain fields (Arcila-Calderón et al., 2016). The next section approaches some of the big data challenges as well as the different kinds of data that one needs to be familiar with.

2.2. Big Data Challenges

Given the nature of big data, there are multiple challenges that organisations and professionals have to deal with. In a conceptual classification of big data challenges,

Sivarajah et al. (2017) define data challenges as the challenges related to the characteristics of the data itself, e.g. volume, velocity, variety, variability, veracity, visualisation, and value. The main challenges are faced while processing the data like data acquisition and warehousing, data mining and cleaning, data aggregation and analysis as well as modelling applications.

Furthermore, there are management challenges related to privacy, security, governance, data ownership, and lack of skills of understanding and analysing data (Camargo Fiorini et al., 2018).

The challenges of big data not only lie within its scale of complexity, but also within issues like heterogeneity, timeliness, and even privacy problems (Holtzhausen, 2016). These aspects heighten the challenges in creating value from the data. The huge volume of data is represented by heterogeneous and varied dimensions. In the same vein, the huge volumes of data also increase the complexity and the relationships within the data. The complexity and the disparate origins of the data often result in incomplete or flawed data. In order to avoid this, it is important to understand how structured and unstructured data work.

2.3. Structured and unstructured data

One of the biggest challenges when it comes to big data is the integration of structured and unstructured data. According to Taylor (2018), about 80% of data held by an organisation is unstructured data, comprised of information from customer calls, e-mails and social media feeds. Since data in communication management practice increases significantly in a digital format, there is a greater need to identify ways to link the data and transform data for analysis. Unstructured data continues to grow, and organisations have to find ways to automate and improve their ability to understand their business.

The problem that unstructured data presents is one of volume; most business interactions are of this kind, requiring a huge investment of resources to sift through and extract the necessary elements, as in a web-based search engine. Hence, it is key to find ways for meaning creation by using connections that demonstrate specific patterns. Analysing unstructured data requires analytical tools and newer approaches based on machine-based learning. Machine-learning approaches can help analyse complex large volumes of data,

both structured and unstructured, with multiple variables to make accurate predictions. The question is not whether the data should be unstructured or structured, but rather how to use its internal value in a meaningful way. The paper addresses the use of big data by communication professionals in Latin America and Europe by posing important questions around big data skills and knowledge, attention to the debate about big data, the communication professionals' familiarity with the concept of big data, and big data expertise among communication professionals.

2.4. Research gaps and research questions

As identified in the literature review, there is still a knowledge gap from a global perspective. Moreover, there are no comparative cross-cultural studies in diverse regions of the world that provide a wider view of the understanding and implementation of big data and automation practices in the professional field of communication management. This paper aims at comparing practitioners' perceptions with regard to big data and automation in Europe and Latin America in order to contribute to the knowledge and the critical debate about the adoption of these new practices for communication management. Objectives have been disposed through the following research questions:

RQ1. How do communication practitioners in both regions evaluate the importance of and their attention to big data?

RQ2. How do communication practitioners in both regions define big data?

RQ3. What are practitioners' skills and knowledge in both regions regarding big data and algorithms?

RQ4. To what extent are big data and automation already implemented in the communication industry in both regions?

RQ5. For which purposes do communication practitioners in communication departments in both regions use big data and automation?

RQ6. What challenges are perceived by practitioners in both regions in the implementation of big data and automation?

3. METHODOLOGY

The research study is based on a quantitative survey among communication practitioners in Europe and Latin America (Moreno et al., 2017; Zerfass et al., 2016). The questionnaire included a special section about big data and automation, which covered six questions derived from the literature review above. The online questionnaire was made available throughout March 2016 in Europe in English language, as well as in May and August 2016 in Latin America in Spanish and Portuguese language. In Europe, more than 100,000 personal invitations were sent to communication professionals working in all kinds of organisations in all 50 European countries via e-mail. In total, 3,287 respondents completed the questionnaire and 2,710 responses could be identified as communication professionals, which were used for the study at hand. Most respondents (28%) came from Northern Europe (Scandinavia and the British Isles), followed by Central Europe (19%), South-eastern Europe (18%), Western Europe (15%), Southern Europe (14%), and Eastern Europe (7%)⁴.

In a similar way, communication professionals in Latin America were surveyed between May and August in 2016. More than 20,000 communication professionals in Latin America were invited to participate in the online survey through datasets of national and regional professional associations. In total, 2,295 respondents started the survey and 914 respondents from 17 countries could be identified as communication professionals that filled out the complete survey. Most respondents (74%, n = 675) came from South America (Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Peru, Paraguay, Uruguay, and Venezuela), followed by Central America (16%, n = 143, Costa Rica, El Salvador, Guatemala, Honduras, Panama, and Dominican Republic), and North America (11%, n = 96, Mexico)⁵. Further details of the samples are depicted in table 9 (see appendix).

4. RESULTS

The following chapter demonstrates the findings of the comparative study in order to gain new insights in the field of big data and automation in communication management on a global scale.

⁴ The universe of 50 countries and geographic regions derived from the Columbia Encyclopedia (2020).

⁵ These geographic regions derived from the UNESCO (2020).

4.1. Big data perceptions, knowledge and skills (RQ1 – RQ3)

The literature review indicated that digitisation and therefore big data and its analysis have relevant implications for society in general and for communication management in particular. Notwithstanding, the comparative study reveals a large gap between the European and Latin American communication profession. When asked about the possibly most important issue in public relations and communication management within the next three years, 37.7% ($n = 345$) of the Latin American and only 23.4% ($n = 635$) of the European communication professionals selected “using big data and/or algorithms for communication” as one of the top three most important issues for communication management until 2019 (Cramer’s $V = .14$, $p \leq .001$). However, only every second communication professional (55.9%) follows the ongoing debate around big data: 44.4% in Europe and 21.5% in Latin America have *given attention*, and 14.9% in Europe and 21.4% in Latin America have *given close attention* (Cramer’s $V = .27$, $p \leq .001$). Professionals that report the strongest attention to the debate around big data are working as consultancies and/or for agencies ($M = 3.53$, $SD = 1.17$) and joint stock companies ($M = 3.41$, $SD = 1.17$), while practitioners working for private companies ($M = 3.31$, $SD = 1.23$) or non-profit organisations ($M = 3.25$, $SD = 1.20$) are less interested. PR professionals working in governmental organisations have given the least attention ($M = 3.03$, $SD = 1.30$). The differences between them are highly significant based on Scheffé post hoc test ($F(4,3424) = 17.73$, $p \leq .01$). The same is true for the differences between the hierarchies ($F(3,3333) = 16.31$, $p \leq .01$). Heads of communication and agency CEOs pay closer attention to the debate about big data ($M = 3.49$, $SD = 1.17$) compared to team or unit leaders ($M = 3.41$, $SD = 1.20$) and team members or consultants ($M = 3.15$, $SD = 1.28$). As Table 1 demonstrates, European communication professionals have paid closer attention to the debate about big data as their colleagues from Latin America.

Table 1. Attention to the debate about big data

| | Europe | Latin America | Overall |
|--|----------------|----------------|----------------|
| Attention to the debate about big data * | 3.43 (1.14) | 3.09 (1.43) | 3.35 (1.22) |

Note. Standard deviations appear in parentheses below means. $N = 3,505$ communication practitioners. Q: Please rate these statements based on your experience. 5-point Likert scale ranging from 1 = “I have not given attention at all to the debate about big data” to 5 = “I have given close attention to the debate about big data”. * Highly significant difference at the $p \leq .001$ level based on independent samples t-test, $t(3503) = 6.91$.

As already outlined in the literature review, the definition in this research project derived from the four V's ("mass quantities of stored data that provide new insights which were previously not available" = Volume; "a variety of multiple data types from internal and external sources" = Variety; "a fast stream of data (data in motion) and their constant processing" = Velocity; "high and low quality data from trusted and untrusted sources" = Veracity). In order to gain insight into the cognitive dimension of the professionals, this study used the big data definition and also four deflectors that are related to the topic but did not represent the concept of big data ("customized creation of content for different stakeholders", "interpretation of relevant data for strategic decision making", "all kinds of information which is available in real-time", "a multitude of information from social media"). Those polled were asked to choose all appropriate definitions of big data. Only 0.9% classified all eight items correctly (as either appropriate or wrong) and 5.8% classified seven out of eight correctly. This summed up to 6.7% who can be categorised as highly knowledgeable. In stark contrast, 11.1% mixed up almost everything and thus does not seem knowledgeable at all. However, the majority is somehow or moderately familiar with the concept of big data (see table 2).

Table 2. Familiarity with the concept of big data among communication professionals

| Familiarity with the concept of big data | Europe | Latin America | Overall |
|--|--------|---------------|---------|
| Not familiar at all* (less than 3 items correctly classified) | 7.4% | 22.1% | 11.1% |
| Less familiar (3 items correctly classified) | 15.8% | 9.0% | 14.1% |
| Somehow familiar (4 items correctly classified) | 23.6% | 15.4% | 21.6% |
| Moderately familiar (5 items correctly classified) | 30.7% | 36.9% | 32.3% |
| Familiar (6 items correctly classified) | 15.4% | 11.3% | 14.3% |
| Very familiar (more than 6 items correctly classified) | 7.1% | 5.4% | 6.7% |

Note. N = 3,624 communication practitioners. Q: "Big data" is characterised in various ways. Please pick all definitions which you believe are most appropriate. Big data refer to ... * Including "None of these" / "I don't know" (n = 86). Highly significant differences at the p ≤ .001 level based on Chi-square test, Cramer's V = .233.

The diffusion of the big data definition seems to be more successful in Europe compared to Latin America. Moreover, a hierarchical cluster analysis based on the respondents' attention to the debate about big data (Q1), and their knowledge about big data (Q2) yield a four-cluster solution without z-transformation (meaning Q2 tends to have a slightly bigger impact on cluster allocation). The largest cluster (49.2% of the respondents, $n = 1,723$) includes practitioners who are interested in the debate about big data and have a knowledge ranging from some knowledge to highly developed knowledge (if four or more items were classified correctly). The latter are labelled *experts*. The second largest cluster (21.0%, $n = 736$) also has reasonable knowledge about big data, but they have not paid much attention to the debate about the subject. Therefore, they were named *informed*. Practitioners from the third identified cluster (19.9%; $n = 699$) have paid (close) attention to the debate on big data but their knowledge is less or not at all developed – they only pretend to be experts in the field, as such, they are called *Bystanders*. The last identified cluster (9.9%; $n = 347$) can be described as *tenderfoots*. Those practitioners have neither paid attention to the debate nor developed a reasonable knowledge about big data. As demonstrated in Table 3, half of the European PR professionals can be categorised as experts while only one third of the Latin American practitioners are classified as experts.

Table 3. Big data expertise clusters among communication professionals

| | Europe | Latin America | Overall |
|-------------|--------|---------------|---------|
| Experts | 54.7% | 30.2% | 49.2% |
| Informed | 22.1% | 17.2% | 21.0% |
| Bystanders | 17.0% | 29.8% | 19.9% |
| Tenderfoots | 6.1% | 22.8% | 9.9% |

Note. $N = 3,505$ communication practitioners. Highly significant differences at the $p \leq .001$ level based on Chi-square test, Cramer's $V = .295$.

This strong gap between the professionals working in those continents not only stems from the difference between the regions when it comes to the need to develop technical knowledge ($r = .05$, $p \leq .001$), but also from technical skills ($r = .073$, $p \leq .001$) as well as the understanding of the use of algorithms ($r = .09$, $p \leq .001$) as reported in table 4. However, the strongest correlation exists between the expertise cluster and the overall social media skills based on the self-evaluation of twelve items ($r = .11$, $p \leq .001$).

Table 4. Skills and knowledge regarding big data and algorithms

| | Europe | Latin America | Cramer's V | t |
|---|----------------|----------------|------------|-------|
| I need to develop technical skills (program algorithms or websites; IT skills) * | 3.39 (1.24) | 4.08 (1.29) | - | 14.04 |
| Training offered/facilitated by organisation * | 11.4% | 23.0% | .14 | - |
| I need to develop technical knowledge (understanding software algorithms, analytical understanding of big data, statistical knowledge) ** | 3.55 (1.21) | 4.09 (1.24) | - | 11.52 |
| Training offered/facilitated by organisation ** | 9.4% | 21.2% | .16 | - |
| Understanding the use of algorithms (e.g. by social media platforms) *** | 2.62 (1.11) | 2.31 (1.56) | - | 7.16 |
| Social media skills (overall) **** | 3.37 (.98) | 3.00 (1.10) | | |

Note. Standard deviations appear in parentheses below means. * N = 3,435 communication practitioners. Q: Thinking of yourself, your current capabilities and your future development, which of the following skills and knowledge areas do you believe are in need of developing? 5-point Likert scale ranging from 1 = "No need to develop" to 5 = "Strong need to develop". ** N = 3,432. Same question and scale used. *** N = 3,604. Q: How would you rate your personal capabilities in the following areas? 5-point Likert scale ranging from 1 = "Very low" to 5 = "Very high". **** N = 3,428. How would you rate your personal capabilities in the following areas? 5-point Likert scale ranging from 1 = "Very low" to 5 = "Very high", overall value based on a battery of 12 items.

4.2. Big data analytics and the need of automation (RQ4 – RQ5)

In total, 19.1% of the respondents declared that their organisation has implemented big data activities in the communication field. In 15.1% of the cases, the departments or agencies planned to start such big data activities by the end of 2017, while 42.2% indicated that their department or agency is not conducting big data activities, and 7.7% stated that they do not know how their organisation handles the issue. Moreover, 20.5% report that their agency or department consults (internal) clients and colleagues in the field of big data.

Table 5. Big data activities in communication departments and agencies

| My communication department / agency ... | Europe % | Latin America % | Cramer's V |
|--|----------|-----------------|------------|
| has implemented such big data activities * | 21.2 | 17.5 | .04 |
| plans to start such big data activities until the end of 2017 * | 16.8 | 13.7 | .04 |
| is not conducting such big data activities | 45.0 | 44.0 | .01 |
| consults (internal) clients and colleagues in the field of big data ** | 23.6 | 16.8 | .07 |

Note. N = 3,419 communication practitioners. Q: “Big data” is mostly described as huge volumes and streams of different forms of data from diverse sources (external and internal) and their constant processing, which provide new insights. Taking into account this definition, my communication department/agency... * Significant at the $p \leq .05$ level. ** Highly significant at the $p \leq .001$ level.

The analysis revealed statistically significant differences for the current status of big data activities in the two regions (see Table 5). Moreover, there are clear differences regarding the implementation of big data activities between the types of organisations. While the majority of professionals working for non-profit organisations refuse the implementation of big data (54.2%, Cramer’s V = .09, $p \leq .001$), 23.3% of the practitioners working in joint stock companies and 22.4% of consultancies working independently or in agencies state that they have already implemented big data activities (Cramer’s V = .06, $p \leq .05$). The data also shows that a higher portion of private and governmental organisations had plans to jump on the bandwagon by the end of 2017. It is not surprising that consultancies and agencies are in the lead when it comes to consulting others in the field of big data. Much more interesting is the finding that 18.4% of communication departments consult internally about the topic (compared to 27.6% of the agencies; Cramer’s V = .11, $p \leq .001$).

In both regions, only a minority has already implemented big data activities as described above. However, as demonstrated in Table 6, big data analytics are mostly used to plan overall strategies (e.g. to use insights to guide future campaigns or for foresights). However, big data analytics is also frequently used to justify activities (e.g. by measuring results and demonstrating effectiveness). Analysing big data to guide day-to-day actions (e.g. targeting publics with specialised content) is also used more frequently in Latin America, compared to Europe.

Table 6. Big data analytics

| We analyse big data to ... | Europe | Latin America | Overall | t |
|-----------------------------|----------------|----------------|----------------|------|
| plan overall strategies ** | 3.52 (1.09) | 3.95 (1.11) | 3.62 (1.11) | 6.14 |
| justify activities * | 3.27 (1.17) | 3.45 (1.26) | 3.31 (1.20) | 2.28 |
| guide day-to-day actions ** | 2.99 (1.17) | 3.58 (1.22) | 3.12 (1.20) | 7.7 |

Note. N = 1,320 communication practitioners (including only respondents who have already implemented big data activities and/or consults clients and colleagues). Q: How does your department or agency use big data analytics? 5-point Likert scale ranging from 1 = “Never” to 5 = “Always”. * Significant differences at the $p \leq .05$ level. ** Highly significant differences at the $p \leq .001$ level.

Strongly connected to the topic of big data is the question of automation, as it is necessary at least for big data analytics (to make sense of big data). Table 7 presents an overview of the differences between the two regions regarding the importance and the implementation of algorithms in public relations. All results are strongly linked (correlated) with the implementation of big data activities as well as big data analytics.

Table 7. Importance and implementation of practices for automated communication

| | Europe | | Latin America | |
|---|-----------------------------|------------|-----------------------------|------------|
| | Importance <i>M (SD)</i> | Usage % | Importance <i>M (SD)</i> | Usage % |
| Adaptation to algorithms of online services like search engines or social media platforms | 4.03 (1.00) | 29.2 | 3.98 (0.99) | 37.5 |
| Algorithmic tools programmed to support decision-making | 3.83 (1.13) | 15.9 | 3.76 (1.05) | 28.0 |
| Algorithmic tools programmed for fully or semiautomatic content distribution * | 3.81 (1.04) | 23.6 | 3.93 (1.00) | 49.6 |
| Algorithmic tools programmed for fully or semiautomatic content adaptation | 3.30 (1.13) | 7.0 | 3.35 (1.10) | 20.6 |
| Algorithmic tools programmed for fully or semiautomatic content creation ** | 3.27 (1.23) | 12.4 | 3.64 (1.10) | 39.0 |

Note. $N \geq 3,111$ communication practitioners. Q: Search engines and social media platforms use algorithms to select and display content. Similar approaches might be used by organisations to automate their communication activities. What is already used by your department/agency? 5-point Likert scale ranging from 1 = "Not at all important" to 5 = "Extremely important". And what is already used by your department/agency?

* Highly significant differences at the $p \leq .01$ level based on independent samples t-test, $t(3167) = 2.84$. **

Highly significant differences at the $p \leq .001$ level based on independent samples t-test, $t(3205) = 7.73$.

4.2. Transformation of the field (RQ6)

The effects of big data on the PR field are seen quite contrary. While the European professionals is convinced that big data will change the communication profession ($M = 3.85$, $SD = 0.83$, $N = 2710$; 5-point Likert scale ranging from 1 = "will not change at all" to 5 = "will substantially change"), professionals in Latin America do not agree with this impression in general ($M = 2.31$, $SD = 1.29$, $N = 774$; highly significant differences at the $p \leq .001$ level based on independent samples t-test, $t(3482) = 39.53$).

The results reported so far demonstrate the importance of big data and automation for the communication profession on the one hand and a very diverse view on the other hand. However, the implementation of big data, its analytics as well as automation imply some intrinsic challenges and even risks especially for communication management that works for trust of the entity in the public sphere. Hence, the findings will end with the question about the major challenges when working with big data from the perspective of PR professionals working in Europe and Latin America (see table 8).

Table 8. Major challenges when working with big data

| Major challenges | Europe (%) | Latin America (%) | Cramer's V |
|---|------------|-------------------|------------|
| Lack of analytical skills (to make sense of big data) | 48.6 | 45.6 | .03 |
| Lack of time to study/analyse big data ** | 45.4 | 31.4 | .12 |
| Lack of technical skills (to handle big data) | 36.6 | 39.1 | .02 |
| Data quality * | 31.1 | 28.3 | .03 |
| Lack of software solutions fitting communication needs * | 25.5 | 29.4 | .04 |
| Lack of budget ** | 24.3 | 19.9 | .05 |
| Organisational barriers (e.g. a lack of cooperation between departments) | 22.8 | 24.4 | .02 |
| Data security and risk management ** | 22.1 | 28.3 | .06 |
| Lack of IT staff who can support | 15.8 | 13.8 | .02 |
| Ethical concerns ** | 14.1 | 9.2 | .06 |
| Legal restrictions ** | 13.6 | 6.6 | .10 |

Note. N = 3,601 communication practitioners. Q: In your opinion, what are the three (3) major challenges for the communication profession in general when working with big data? * Significant differences at the $p \leq .05$ level. ** Highly significant differences at the $p \leq .001$ level.

5. DISCUSSION AND CONCLUSIONS

This comparative study indicates a large gap between European knowledge and concerns regarding big data and automation in communication management and a more hands-on mentality in Latin America. However, the approach to dealing with such new technical innovations like big data, its analytics as well as automation are more sophisticated in Europe. While Latin American communication professionals try to implement these new technologies fast and look for solutions when problems come up afterwards, European practitioners are much more conservative regarding new technologies and have more concerns about it. These findings underline the need of comparative cross-cultural research

studies on new changes in the profession and especially on new technologies, as the path of adoptions can be very diverse.

The findings demonstrate the low importance and attention given to big data and automation in both regions. Especially in Latin America, the inter-correlations between attention and understanding of big data as well as individual social media skills demonstrate that the differences between these two regions is a question of individual competencies and personal interest in innovation. However, other studies comparing these two regions regarding innovation also explicitly refer to the level of innovation of the company as whole (see e.g., Raffo et al., 2008).

Nevertheless, those who have already implemented big data activities in Latin America use them to a higher extent, compared to Europe. This represents a significant difference between the two regions on an organisational level. Moreover, Latin American communication practitioners are also ahead in the usage of most of the practices for automated communication, underlining content distribution, adaptation and creation. These practices are highly linked to social media communication. Previous studies show a substantial take up of social media in Latin American countries by both organisations and consumers and a higher use of social media by the general population in Latin America compared to other regions like Europe (Navarro et al., 2018).

The main challenges that prevent the field of communication management from adopting the new practices are twofold. In general, in both regions, the lack of analytical, technical skills and time to educate are the main barriers to adapt to these changes. Comparing both regions, Latin American practitioners feel more confident than European professionals in understanding the use of algorithms from social media platforms and in general social media skills. On the contrary, they are behind their European colleagues in terms of technical skills and knowledge on data management.

Without a doubt, the deficit on skills and knowledge regarding big data and algorithms presented in both regions can be an important problem for the profession to the extent that other professionals go ahead as experts in communication management like marketers or even practitioners from the IT area. This lack of education is closely related to the problem

that software solutions do not match with communication needs. Only automation tools for content creation seem to have found a certain adaptation. Big data and automation have come to stay. If communication professionals do not understand its importance and do not have the skills to face new tools, solutions will keep being designed by other professions. This will create a vicious circle where communication departments, the experts in communication, are excluded of one of the most important revolutions within their sector. These results are congruent with the lack of accessibility in other fields as Journalism and Social Science (Arcila-Calderón et al., 2016).

6. LIMITATIONS

The study is exploratory in nature and provides an insight into the spreading of big data and automation in public relations from a comparative cross-cultural perspective. However, the author(s) understand that there are some limitations in the study that need to be addressed. One of the main limitations is that the total population of practitioners both in Europe and Latin America is unknown, along with the voluntary answer to the survey. The second limitation is that the study only provides panoramic differences between the two regions in 2016 and does not analyse the countries' specifics in-depth (e.g., developing, emerging, and developed countries). Further studies are required that dive deeper on the organisational level on the one hand, as well as studies specified in specific countries on the other hand. For instance, in the case of Latin America, the diversity of economic, political and social context could generate interesting results.

7. IMPLICATIONS AND FUTURE PERSPECTIVES

The author(s) undertook this comparative study to understand the world of big data and automation especially in regions other than North America and Europe. Hence, this study provides great implications for theory and practice alike.

Communication practitioners can use the results of the study to better understand the use of big data and automation and the implementation rate of big data activities and algorithmic tools. The results can also be used to understand the differences and similarities in the two regions regarding acceptance and implementation of such new tools, structures etc. in these regions. As questions have been very general, further insights into the activities

and tools they use and how they assess these tools in their own department/agency as well as in between departments are required. In addition, from a communication management perspective, it must be asked to what extend these activities and tools are already implemented in a sound management process.

Future research needs to explore the impacts and challenges of big data and automation in the professional field. It would be interesting to ask questions about how the communication profession might become more data-driven and to what extent this needs to be addressed profoundly for the field of communication management. Thus, scholars also need a comprehensive understanding to come to grips with algorithms and big data to gain deeper insights in the impact of big data and algorithms used by PR for inbound and outbound reasons, wherefore this study hopefully could be inspiring.

To conclude, two big challenges have been identified for the professional field: On the one hand, producing valuable insights for communication from structured and unstructured data seems challenging, and, on the other hand, educating communication practitioners poses challenges as well. The author(s) see this study as a starting point to a bigger discussion and research topic for the field of communication management not in a specific region, but on a global scale.

8. APPENDIX

Table 9. Sample overview

| | | Europe | Latin America |
|-------------|---------------------------|-----------------|---------------|
| Gender | Female | 58% (n = 1,574) | 67% (n = 609) |
| | Male | 42% (n = 1,136) | 33% (n = 305) |
| Experience | > 10 years | 60% (n = 1,622) | 49% (n = 413) |
| | 6 – 10 years | 23% (n = 620) | 26% (n = 220) |
| | < 6 years | 17% (n = 468) | 25% (n = 214) |
| Work for/as | joint stock company | 20% (n = 529) | 7% (n = 67) |
| | private company | 18% (n = 486) | 23% (n = 214) |
| | governmental organisation | 13% (n = 355) | 26% (n = 237) |
| | non-profit organisation | 12% (n = 323) | 12% (n = 96) |
| | consultancy/ freelance | 38% (n = 1,017) | 33% (n = 96) |

9. REFERENCES

- ARCILA-CALDERÓN, C., BARBOSA-CARO, E., & CABEZUELO-LORENZO, F. (2016). Técnicas big data: análisis de textos a gran escala para la investigación científica y periodística. *El profesional de la información*, 25(4), 623-631. DOI: <http://dx.doi.org/10.3145/epi.2016.jul.12>.
- CAMARGO FIORINI, P. DE, ROMAN PAIS SELES, B. M., CHIAPPETTA JABBOUR, C. J., BARBERIO MARIANO, E., & SOUSA JABBOUR, A. B. L. DE. (2018). Management theory and big data literature: From a review to a research agenda. *International Journal of Information Management*, 43, 112–129. DOI: <https://doi.org/10.1016/j.ijinfomgt.2018.07.005>.
- COLUMBIA ENCYCLOPEDIA (2020). Europe. Retrieved from Encyclopedia.com: <https://www.encyclopedia.com/environment/encyclopedias-almanacs-transcripts-and-maps/europe>.
- FAN, S., LAU, R. Y.K., & ZHAO, J. L. (2015). Demystifying Big Data Analytics for Business Intelligence Through the Lens of Marketing Mix. *Big Data Research*, 2(1), 28–32. DOI: <https://doi.org/10.1016/j.bdr.2015.02.006>.
- GANDOMI, A., & HAIDER, M. (2015). Beyond the hype: Big data concepts, methods, and analytics. *International Journal of Information Management*, 35(2), 137-144. DOI: <https://doi.org/10.1016/j.ijinfomgt.2014.10.007>.
- LEWIS, S. C., ZAMITH, R., & HERMIDA, A. (2013). Content Analysis in an Era of Big Data: A Hybrid Approach to Computational and Manual Methods. *Journal of Broadcasting & Electronic Media*, 57(1), 34–52. DOI: <https://doi.org/10.1080/08838151.2012.761702>.
- HOLTZHAUSEN, D. R. (2016). Datafication: Threat or opportunity for communication in the public sphere? *Journal of Communication Management*, 20(1), 21–36. DOI: <https://doi.org/10.1108/JCOM-12-2014-0082>.
- MOLLEDA, J. C., MORENO, A., & NAVARRO, C. (2017). Professionalization of public relations in Latin America: A longitudinal comparative study. *Public Relations Review*, 43, 1084–1093. DOI: <https://doi.org/10.1016/j.pubrev.2017.08.003>.

MORENO, A., MOLLEDA, J. C., ATHAYDES, A., SUÁREZ, A. M., HERRERA, M. & ÁLVAREZ, A. (2017). *Latin American Communication Monitor 2016 - 2017. Tendencias en comunicación estratégica: big data, automatización, engagement, influencers, coaching y competencias. Resultados de una encuesta en 17 países.* Madrid, España: EUPRERA/DIRCOM.

NAVARRO, C., MORENO, A., & ZERFASS, A. (2018). Mastering the dialogic tools: Social media use and perceptions of public relations practitioners in Latin America. *Journal of Communication Management*, 22, 28–45. DOI: <https://doi.org/10.1108/JCOM-12-2016-0095>.

RAFFO, J., LHUILLY, S., & MIOTTI, L. (2008). Northern and southern innovativity: A comparison across European and Latin American countries. *The European Journal of Development Research*, 20 (2), 219–239. DOI: <https://doi.org/10.1080/09578810802060777>.

SIVARAJAH, U., KAMAL, M. M., IRANI, Z., & WEERAKKODY, V. (2017). Critical analysis of Big Data challenges and analytical methods. *Journal of Business Research*, 70, 263-286. DOI: <https://doi.org/10.1016/j.jbusres.2016.08.001>.

TAYLOR, C. (2018). *Structured vs. Unstructured Data.* Retrieved from <https://www.datamation.com/big-data/structured-vs-unstructured-data.html>.

UNESCO (2020). *Latin American States.* Retrieved from <https://whc.unesco.org/en/statesparties/?region=3>.

WAMBA, S. F., GUNASEKARAN, A., AKTER, S., REN, S. J.-F., DUBEY, R., & CHILDE, S. J. (2017). Big data analytics and firm performance: Effects of dynamic capabilities. *Journal of Business Research*, 70, 356–365. DOI: <https://doi.org/10.1016/j.jbusres.2016.08.009>.

WIENCIERZ, C., & RÖTTGER, U. (2017). The Use of Big Data in Corporate Communication. *Corporate Communications: An International Journal*, 22(3), 258-272. DOI: <https://doi.org/10.1108/CCIJ-02-2016-0015>

WIESENBERG, M., ZERFASS, A., & MORENO, A. (2017). Big Data and Automation in Strategic Communication. *International Journal of Strategic Communication*, 11(2), 95-114. DOI: <https://doi.org/10.1080/1553118X.2017.1285770>.

YAQOOB, I., HASHEM, I. A. T., GANI, A., MOKHTAR, S., AHMED, E., ANUAR, N. B., & VASILAKOS, A. V. (2016). Big data: From beginning to future. *International Journal of Information Management*, 36 (6), 1231–1247. DOI: <https://doi.org/10.1016/j.ijinfomgt.2016.07.009>.

ZERFASS, A., VERHOEVEN, P., MORENO, A., TENCH, R., & VERČIČ, D. (2016). *European Communication Monitor 2016. Exploring trends in big data, stakeholder engagement and strategic communication. Results of a survey in 43 Countries*. Brussels: EACD/EUPRERA, Quadriga Media Berlin.

Forma de citar este artículo:

WIESENBERG, M. & MORENO, A. (2020). Communication Practitioners' Perceptions of Big Data and Automation: A Comparative Study between Europe and Latin America. *Revista Internacional de Relaciones Públicas*, Vol. X, Nº 19, 29-48. Recuperado el ____ de _____ de ____, de <http://dx.doi.org/10.5783/RIRP-19-2020-03-29-48>.