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The role of digital work in the new normal way of working

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Introduction

The world has witnessed what is perhaps the most dramatic transformation of work in the digital era. In the wake of the global pandemic, much has been written regarding the “new normal” of work. However, defining what the “new normal” is today seems very complex. Before the crisis, most companies had initiated their digital transformation to adapt to a changing environment. Covid-19 has subsequently forced organizations into rapid “big bang” adoption of “tech-driven” practices under severe time pressure (Carroll & Conboy, 2020). This transformation was particularly forced by the introduction of teleworking (Ng et al., 2022). In the aftermath of the crisis, workers are back to work, at least partially, and new forms of organization are appearing; leading to unprecedented hybrid work situations. Therefore, we can define the “new normal” as the development of new ways of working based on the adoption of digital work (Wibowo et al., 2022; Baiyere et al., 2023).

This article explores the place of digital work in this new normal way of working. While it seems clear that white-collar workers have reorganized themselves adopting digital work, the same question also arises for blue-collar workers. Although they did not benefit from teleworking, they are also in a new normal way of working after the crisis, leveraging the opportunities from a digital landscape of work. More specifically, this article addresses the following question: What is the role of digital work in the new normal way of working of white-collar and blue-collar workers? To address this question, we have analyzed a sample of 206 398 responses from an employee satisfaction survey conducted in a pre-digital (Sebastian et al., 2017) industrial international company employing more than 110 000 workers (60% blue collar and 40% white collar). The responses were collected by the company's Human Resources Department all through the Covid-19 crisis: 2020 (beginning of the crisis), 2021 (during the crisis) and 2022 (after the crisis).

Our research has two main contributions. The first is theoretical, as our work contributes to understand the employees' perception of digital work in the new normal way of working. The second contribution is methodological, as we have structured a textual data analysis method (Garnier, 2020; Moscarola, 2022) based on Sphinx IQ3 and DataViv software (Boughzala et al., 2014).

Context & background

A study conducted in an international industrial context

This study is part of a PhD initiated in May 2021 within the HR Department of a large industrial group. This company is a leader in its industrial field with a presence in over 30 countries. The organization employs more than 110 000 employees, 60% work in industrial production-related jobs (blue-collar) while the remaining 40% are office workers, with an “intellectual” occupation (white-collar). Over the past few years, the company has

conducted an annual employee satisfaction survey. In total, employees are requested to answer more than sixty closed-ended questions on more than 10 dimensions including different aspects of work such as: customer, leadership, respect for people, quality of work-life, career & development, and digital work. The survey then concludes with two open-ended questions: (1) Please tell us one improvement requested during the past year, (2) Please tell us the most positive experience you've had in the past year. These last two questions invite employees to share their perceptions of their work, either by taking up a dimension of the survey or by highlighting new themes. These responses therefore appear to be adequate to answer our research question. This enables us to study the role of digital work in the new normal way of working.

The role of digital work in the new normal

The Covid-19 pandemic has forced organizations into rapid a “big bang” adoption of “tech-driven” practices under severe time pressure (Carroll & Conboy, 2020). The pandemic has had massive implications for the nature of work and the role technology plays within the workplace (Carroll & Conboy, 2020). Further, Information Technology has played “a central role” in many aspects of the pandemic, including “behavioral, temporal, societal, and organizational” (Ågerfalk et al., 2020) although the belief that “technology is the remedy of all things”, has also been criticized (Zilber & Goodman, 2021). This central role of technology is especially induced by the massive introduction of remote work. Even though, many organizations found themselves introducing remote working practices with very little time to plan, consider alternative options, and set-up remote working with their employer and manager (Ågerfalk et al., 2020); the Covid-19 pandemic has established remote work as the new normal. Our work builds upon recent studies on digital work. This is a broad concept that still lacks a commonly accepted definition (Messenger & Gschwind, 2016; Duan et al., 2020). Based on a systematic literature review, Wibowo et al. (2022) propose the following definition of digital work “work arrangement between individuals and organizations for performing job-related tasks using digital technologies through processing diverse kinds of data from remote location”. They then detail this definition with four characteristics: Use of Technology, Remote Location, Flexible Working Hours and Contractual Arrangements. Baiyere et al. (2023) recently provide another perspective with a typology of digital work arguing that digital work requires three rationales to be fulfilled: process (How?), outcome (What?), and objective (Why?). Based on this, the authors highlight three variations – digital enabled work, digital engaged work, and digital embedded work. In this paper we focus on digital enabled work.

Nevertheless, there is a theoretical gap in the literature that seems to exclude blue-collar workers from debate. For this paper, we will then focus on the following definition: “digital work is the use of digital technologies in the process of work” (Mrass et al., 2017). Finally, though this research we aim at exploring the role of digital work in white-collar ways of working, and in blue-collar workers’ who are part of these same organizations.

Method

Alongside the development of Web 2.0, social networks, and Big Data, we notice the

development of textual data analysis software to meet the new needs and requirements, in terms of data, of researchers and companies, such as DataViv or N-vivo software (Garnier, 2020; Mothe et al., 2021). Given that our corpus of responses was sizable, we used Sphinx IQ3 and DataViv software. Textual data analysis is “all approaches, methods and computer tools that aim to discover the information contained in a textual corpus” (Boughzala et al., 2014, p. 1-2). The objective is to qualify the essential elements of a corpus using lexical and/or semantic categories and to quantify them by analyzing the statistical distribution of the corpus elements. Our textual data analysis method is divided into two phases: (3.1) the sampling approach and (3.2) the thesaurus design and the top-down hierarchical classifications.

The sampling approach: identification of a significant and calibrated sample

The objective of this first methodological phase is to identify a subset of the sample that is significant, documented, and calibrated. Our sampling approach was conducted in several steps defined below.

(1) Selection of expert responses: among the 206 398 responses, we excluded answers of less than 10 words. We consequently retained 117 313 responses qualified as ‘expert’ because they are long enough, documented, and they commonly develop multiple and varied points of view. (2) From answer to sentence granularity: we subsequently split the expert responses into sentences. Each answer is made up of several sentences which can represent several ideas. This step is necessary because within the same answer, several complementary or contradictory arguments can be found. The granularity of the sentence is therefore closer to the idea and thus allows a better identification of emerging themes. The sample is therefore composed of 227 732 sentences. (3) Selection of significative sentences: among these sentences, we excluded sentences containing no verb or sentences of less than 10 words. This allows us to retain 177 541 fully constructed and documented sentences. (4) Sample calibration: at this stage the sample is uncalibrated. For example, we had more white-collar sentences in 2020 for the positive experience question than blue collar sentences in 2021 for the improvement question. Given our objective in this article, which is to compare the expectations of white- and blue-collar workers over the period 2020 to 2022, we calibrated the sample. Having reached saturation in terms of responses, we were able to perform this calibration. The calibration is a random selection from the sample of significant sentences, in order to obtain as many responses as possible for the two context variables studied: socio-professional category (blue- and white-collar workers), year (2020, 2021 and 2022), question (improvement requested and positive experience). We finally identified a significant sentences sample of 82 848 sentences, in other words 6 904 sentences per sub-population.

Thesaurus design and top-down hierarchical classification

The objective of this second phase is to create a thesaurus to extract sentences related to our research question and then structure the data to make the corpus intelligible.

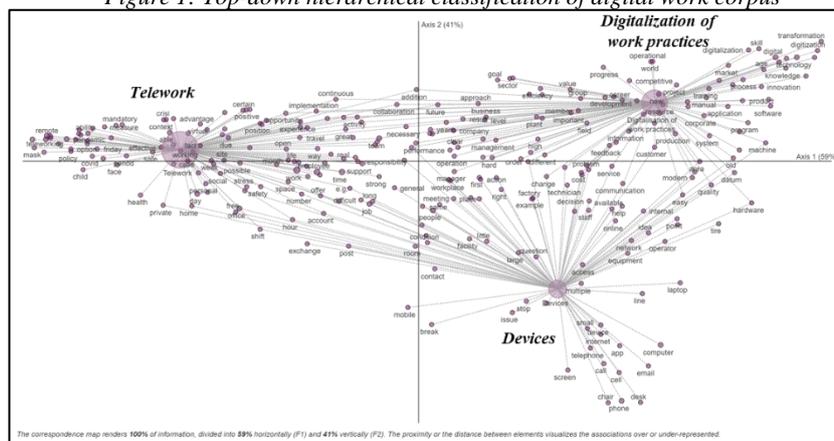
In the Information System field, the "thesaurus" is a vague concept, referring to synonym dictionaries, analog dictionaries, document dictionaries, semantic networks or networks, or

more complex structures such as ontologies (Da Sylva, 2015, p. 150). The use of the thesaurus offers many advantages, one of them is useful for our extraction. The thesaurus solves the problem of expressing the same concept in different ways. For example, it allows a program to recognize that, the two strings of characters c-o-m-p-u-t-e-r and l-a-p-t-o-p express the same concept. As a result, the thesaurus feature allows us to extract sentences from a corpus based on a selection of words. For this paper, we needed to extract all the sentences related to digital work. To design this thesaurus, we selected words from a list of words occurring at least 50 times in our corpus. For each word, there are two possibilities: (1) if the word refers necessarily to digital work, it is selected in our thesaurus (e.g. “teleworking”, “software”, “digitalize”); (2) otherwise, the word is excluded (e.g. “employee”, “collaboration”, etc., which can refer to other concepts, so they are not taken into account). The thesaurus designed at this phase allowed us to extract a sample of 3 749 sentences related to digital work.

After extracting a corpus of sentences related to our research object, a manual coding (Thiéart, 2014, p. 555-559) would have been time consuming, so we conducted a top-down hierarchical classification on this sample (Reinert, 1983; Moscarola et al., 2022). This classification is based on a sequence of multiple factorial analyses, dividing the elementary meaning units (sentences) of a corpus into two classes composed of similar elements in terms of the words that compose them. The class with the largest number of meaning units is then divided into two classes by a new factorial analysis. This process continues by dividing at each step the largest class. Finally, it stops when the class with the highest number of units is too small to be divided again or when a fixed number of classes is reached. Concretely, the top-down hierarchical classification gathers sentences with a similar meaning to identify emerging themes. However, given the size of the sample there is still a large thematic diversity within each class. At this stage, we can’t read all the sentences of a class to identify a common theme. We therefore proceeded to a second classification on each class.

Results and discussion

Figure 1: Top-down hierarchical classification of digital work corpus



Our textual data analysis method highlights the following initial findings. The place of digital work in employees' discourse on their work is modest. The digital thesaurus extracted 3 749 sentences on the sample of 82 848 sentences (i.e 4,5%). The first level top-

down hierarchical classification shows three distinct classes. Those classes represent how employees perceive digital work in their work. The first class refers to teleworking (48%). The second class addresses the need of digitalization of work practices (31%). The last class is related to the technological dimension needs (device, software, system) (20%).

Next steps

The next steps will consist in exploring the three emerging classes. To that end, we will study the level 2 top-down hierarchical classifications that divide each class into multiple sub-classes. This will allow us to identify the specific themes mentioned by the employees. An initial exploration of the teleworking class highlighted the positive impact of teleworking on white-collar workers in several areas, such as work-life balance, flexibility of working hours, work environment, etc. It would therefore be interesting in the next steps to identify the dimensions impacted by the introduction of telework among white-collar workers, and then to carry out a comparative analysis with blue-collar workers' perceptions on these same dimensions. There seems to be a gap between the two populations, with blue-collar workers showing a deterioration in the dimensions mentioned above.

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