Research Article

Digital Addiction of Employees: Damages to Quality of Life in Organizations?

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Abstract

Introduction: The expanded use of digital technological has transformed human behavior by altering the collective environment of organizations, by changing people's dynamics and quality of life. Our objective was to investigate the level of digital addiction among employees in a Brazilian Federal corporation of Information and Communication Technology.

method: Online application of a previously validated 20-item questionnaire constructed to evaluate the level of digital addiction within the workplace. A sample of 301 volunteers from the entire staff of the surveyed organization was selected.

results: Collected data were submitted to a question-by-question percentage evaluation; individual results were not discussed. Tabulated results were submitted to statistical evaluation and showed the collective level digital addiction detected by each question. Results suggested the occurrence of moderate to severe addiction, but the overall addiction level was low.

conclusion: Results demonstrate the digital addiction stage of the sample studied, contribute to the debate of this collective phenomenon in organizations and may stimulate other similar projects.

Introduction

Quality of life is the individual's own perception of one's position within the context of the culture and value systems in which one lives and in relation to goals, expectations, standards and concerns. It is a comprehensive concept, affected in a complex way by the person's physical health, psychological state, level of independence, social relations and its relationship with salient characteristics of one's environment. Quality of life within an organization must include a comfortable and favorable working environment, including ergonomics and digital etiquette (1-3). Today, with the evolution of digital technologies and the intensification of their use, employee behavior has a relevant role in the establishment of good practices leading to an adequate condition for the entire organization: Abusive use and its resultant digital addiction must be avoided.

In a study performed with volunteers with abusive use and/ or addiction to digital technologies in daily life, King et al (4). Have shown that personal, social, academic and professional life are compromised According to Gonçalves, digital addiction has grown within organizations, whose leaders seem unprepared to identify and understand its effects, which interfere in human behavior within the organizational environment and consequently in performance and expected results, as well as in the cultural framework (5). Our objective was to investigate possible digital addiction of employees of a Brazilian Federal organization operating in information and communication technology, aiming to broaden the debate on the theme.

Method:

The target population included employees of a Brazilian Federal organization operating in information and communication technology. The sample included 301 volunteers not occupying managerial positions aged 18 to 65 years. The study consisted of an online application of a previously validated 20-item questionnaire constructed to evaluate the level of digital addiction within the workplace Virtual data collection was made available for 30 days and offered the Employee Digital Addiction Scale questionnaire containing 20 questions with four response options (Never, Rarely, Frequently, Always) (6). The confidentiality of the individual

volunteer responses was safeguarded by access to individual data restricted to the research team; Only collective results are made publicly available.

A preliminary test with volunteers with profiles similar to those of the sample showed that responders needed 14 to 18 minutes to complete the questionnaire. At the end of data collection, a database was created to perform descriptive statistics analysis, factorial analysis, factor loads, Screeplot, Parallel Analysis and internal consistency, using the R programming language software (7).

Results
Data: Out of the 301 completed questionnaires, mistakes were detected in the sum of the question scores of 7 volunteers which were excluded; thus, a workable data set with 294 entries was evaluated;

this is an adequate number for a 20-item questionnaire.

Descriptive Statistics:
Responders were classified into age bands. The 41 - 50 and 51 - 60 bands presented percentages of 25.2% and 26.3% respectively; thus, more than half of responders were employees with a long professional history. The 31 - 40 band was the most populous, including 39.3% of the sample. Thus, 90.8% of included volunteers ranged from 31 - 50 years. Two-thirds of respondents are male. Schooling levels were: specialization (54.7%), followed by undergraduates (30.7%), masters (13.2%), and doctors (1.4%).

Answers options: N (Never) and R (Rarely) scored 0 points; F: Frequently (1 point), A: Always (2 points). Table 1 presents the percentages of responses for each option per question.

Table 1. Quantitative results for 20 questions

Questions	N	R	F	A
1. How often are you destabilized by restrictions to CCT&O access imposed by the organization?	12.5%	59.1%	22.6%	5.8%
2. How often do you prioritize your personal communication (Facebook, WhatsApp, E-mail, etc.) to the detriment of work?	23.2%	66.0%	5.0%	5.8%
3. How often has your work performance been affected by the overuse of CCT&O information and communication technologies in your organization?	35.0%	52.2%	11.8%	1.0%
4. How often do you worry about restrictions on the use of CCT&O individual communication technologies during your work day?	17.5%	61.3%	17.5%	3.7%
5. How often do you feel restless because of actions taken by your organization to minimize CCT&O Digital Addiction?	45.5%	44.1%	9.4%	1.0%
6. How often do you notice that your organization is unconcerned with CCT&O Digital Addiction?	17.5%	42.9%	28.0%	11.6%
7. How often do you turn a blind eye to labor rules regarding the use of CCT&O devices for personal communication by your co-workers in their professional activities?	27.1%	44.1%	23.4%	5.4%
8. How often does your work efficiency improve with indiscriminate personal use of CCT&O?	28.4%	42.6%	24.0%	5.0%
9. How often in your workplace do you disregard the boundary between normal or acceptable versus abusive use of CCT&O?	37.1%	49.7%	10.8%	2.4%
10. How often do you fail to use work intervals specifically designed for stretching, breathing and relaxation exercises to relieve the tension resulting from intensive use of CCT&O	49.8%	27.9%	16.5%	5.8%
11. How often do you avoid taking breaks from the use of CCT&O equipment in your company?	29.8%	41.4%	22.7%	6.1%
12. How often do you use your private CCT&O devices to perform services in the organization?	17.8%	50.8%	25.6%	5.8%
13. How often do you feel motivated because the organization grants you more digital freedom with CCT&O?	11.8%	32.7%	41.4%	14.1%
14. How often do you minimize your relationships with co-workers due to the use of CCT&O?	37.4%	49.8%	11.4%	1.4%
15. How often do you feel more comfortable with your organization's permission to use your own CCT&O digital devices?	12.5%	25.0%	45.9%	16.6%
16. How often do you disregard the negative effects of abusive use of CCT&O digital technologies?	32.1%	49.7%	15.2%	3.0%
17. How often do you relate better to colleagues in your organization due to the use of CCT&O digital technologies	13.5%	39.2%	39.2%	8.1%

18. How often do you conceal from the organization your relationship with other colleagues through the use of CCT&O digital technologies	68.2%	27.7%	4.1%	0.0%
19. How often do you wait for messages of recognition/compliments from the company/boss that come through CCT&O?	69.9%	24.7%	5.4%	0.0%
20. How often would you use CCT&O for forbidden personal communication in the company?	33.9%	45.4%	15.6%	5.1%

Factorial Analysis: The scale was submitted to factorial analysis using the Bartlett Sphericity tests and the Kaiser - Meyer - Olkin - KMO criteria. These revealed, respectively, a satisfactory correlation between variables and suitability for factorial analysis (8, 9). The scale was analyzed by 3 criteria: Factorial Loads, Screeplot and Parallel Analysis, and the Screeplot indicated the existence of 3 factors and the withdrawal of only one issue (question 7) from the scale. The internal consistency presented a Cronbach's Alpha of 0.764 which signals consistency between the variables in addition to satisfactory internal consistency of the scale (10, 11).

Results by Subject: Table 1 presents percentages response options where CCT&O stands for Computers, Cellphones, Tablets & Other digital media (this table can be found after the References into this manuscript).

Discussion:
It is necessary to expand investigations on this phenomenon in the collective organizational environments for greater consistent data. Individual performance must include features of quality of life, including the non-abusive use of digital technologies (12). The data set was satisfactory considering the number of 20 questions of the initial scale.

Question #1 shows that most respondents do not destabilize with Internet access restrictions, with "Never" (12.5%) plus "Rarely" (59.1%) at 71.6%; however, "Frequently" (22.6%) and "Always" (5.8%) added up to 28.4% signaling over ¼ of destabilized persons. This is an important point to be grasped by company leaders, because it shows that company enforced restrictions, often unavoidable for safety or productivity, can destabilize part of the workforce.

Question #2 indicates that virtually ¼ (23.2%) of respondents "never" prioritize personal communication at the expense of work, while 66% said this "rarely" happens, which totals 89.2%; thus, the workforce is extremely focused on their tasks. However, it should be noted because the personal use of digital resources intermingles with work use, the perception about prioritization becomes relative and cannot be seen in an isolated and definitive manner (13).

Question #3 we see that than 35% stated that personal use of digital media "never" impacts their work performance. The option "rarely" appears at an expressive rate of 52.5% totaling 87.2% instances of "Never"+ "Rarely".

Question #4, the high percentage of 78.8% for "Never" plus "Rarely" reveals that employees are not worried about restrictions of use to their devices in the office; thus, the implementation of such restrictions is not critical. This is a higher percentage of "Never" plus "Rarely" compared to

Question #1, which also refers to such restrictions. This lack of concern occurs either because respondents do not believe in their implantation or because they do not feel harmed, if they occur. In the latter case the meaning is that most of responders are not so digitally dependent. But this still shows that 21.2% of the volunteers are bothered with restraints.

Question #5 shows that actions implemented by the organization aimed at minimizing digital addiction recorded 89.6% declaring no concern for these actions. ("Never" plus "Rarely").

As in Question #4 "Never" and "Rarely" are predominant.
Question #6 deals with a perception by employees of a lack of company concern about digital addiction; 39.6% ("Frequently" plus "Always") perceive the company's unconcern about it. In contrast, 60.4% "Never" or "Rarely" notice this lack of concern.

Question #7 deals with this new digital scenario and the corresponding labor relations issue regarding the use of personal digital devices in the workplace: here, "Never" plus "Rarely" provide a high percentage (71.2%) of awareness of these labor aspects; in contrast, 28.8% appear to be unaware of these aspects, probably because of their newness, having come into existence in this digital age.

Question #8 deals with the problem of whether efficiency is improved by indiscriminate personal use of digital devices. A significant 71% of responders "Never" or "Rarely" believe that such use improves work performance, although 29% ("Frequently" plus "Always" believe that such improvement occurs. These results should be compared to with those of

Question #3, where, 87.2% believe that "Never" or "Rarely" their performance is affected by the excessive use of digital technologies. Taken jointly these results show that excessive use does not disturb performance, neither does it improve performance.

Question #9 discusses the boundary between normal or acceptable versus abusive use of CCT&O: only 13.2% admit to breaking the boundary; this is a low but expectable percentage, because users themselves may not perceive their excesses. Results for this Question #9 converges with Questions #1, #2, #4, #5. In all five, the "Never" + "Rarely" are very close to each other, signaling the internal consistency of the questionnaire.

Question #10 looks at the physical health of employees. The rest intervals from digital devices for exercising is an important factor for relaxation form digital activities, alleviating their intensive use. "Never" plus "Rarely" reaches 77.7%, meaning that responders do not waive these intervals.

Question #11 examines all forms of leisure breaks; as noted,

relaxing is vital to health and 71.2% answered they "Never" or "Rarely" avoid taking such breaks, which ratifies the importance of such intervals in the eyes of the responders.

Question # 12 looks at how the use of private devices at the workplace is handled: although 68.6% say they do not use their private devices in the workplace, 31.4% admit to using them. This reinforces two aspects made available by mobility. The first is the breaking of the boundaries between working time vs. leisure or workplace vs. home; the second, certainly valid for Brazil, is that the use of own equipment can lead to labor relation problems because Brazilian legislation does not provide for such situations.

Question 13 dwells on the problem of digital freedom, generating the most balanced results: 44.5% of our sample ("Never" plus "Rarely") believe that company digital freedom induces no motivation; contrarily, 55.5% ("Frequently" plus "Always") feel motivated by this freedom. Compared with responses to Question #12, this greater motivation reinforces the 31.4% of respondents to the said question, who admitted using their devices at work.

Question #14 covers the minimization of relations between work colleagues due to the use of the technologies: 87.2% volunteers ("Never" plus "Rarely") deny compromised relations with colleagues because of the devices.

Question #15 reinforces this aspect of digital freedom in the workplace: the 62.5% ("Frequently" plus "Always") found here reinforce answers to Question #13, where 55.5% are comfortable about more freedom; thus, these two questions reinforce response coherence.

Question #16 deals with the negative effects of abusive use of digital technologies. A majority (81.8% of "Never" plus "Rarely") are conscious of the effects of abusive use of technologies. This is an obviously positive expectation for the management of this addiction in organizations. Leaderships should permanently observe this aspect (14).

Question #17 revisits inter-employee relations as a function of digital technology use, previously discussed in Question #14; better/worse relations are balanced with a tie between antithetic "Rarely" or "Frequently" at 39.2%; though "Never" (13.5%) and "Always" (8.1%) differ slightly, the balance between opinions is obvious.

Question #18, on concealing inter-colleague relations through CCT&O from the company, this question achieved the highest of response consistency throughout the entire research, with 95.9% ("Never" plus "Rarely") denying such concealment. Regardless of organizational permission there appears to be a private forum from the point of view of volunteers.

Question #19 deals with employee expectation of recognition/praise messages from the company/boss via digital devices; as in the previous question and with the second highest result the "Never" plus "Rarely" sum (94.6%) signaling no expectation of mana-

gerial reinforcement through the digital media.

Question #20 deals with the use of digital devices for personal use when this is prohibited by the company, 79.3% ("Never" plus "Rarely") means adherence to discipline, which requires follow up on how much people actually have control over digital use (15).

In general terms this discussion must close on a note of caution. On every application of this instrument, profile of respondents must be scrutinized, because the researcher will be able to observe that results reveal varied characteristics. As an example, as this field of research belongs in the context of digital technologies, a specific employee profile is found; not simply because of the daily use of technologies, but also because, technological organizations are more flexible than less technological and orthodox organizations. If this instrument is applied in traditional organizations, specific results may arise as environment and culture shape the values of employees. By aggregating data from very different types of organizations this questionnaire may result in distortions of incremental results that will hamper more accurate analyzes of the phenomenon under study. Although data insertion goes into the same database, transforming analyzable results into equivalent numbers, one must observe the phenomenon by the angle of organizational profile and culture, as mentioned.

In our sample, digital devices do not seem to compromise organizational dynamics because high responder percentages denied features that would classify the sample as digital addiction. Such situations remain balanced in face of prohibition of digital access or not prioritizing their private life at the expense of work or not having their performance reduced by abusive use, none of these seem to worry most of the responders, indicating an absence of addiction. Digital freedom is cherished as a motivator; most do not worry about actions that minimize addiction, but many admit to occasional abusive use.

Limitations that did not compromise the result were identified: (a) the novelty of the Digital Addiction theme, as well as the first application of this Employee Digital Addiction Scale (B) the online application, advantageous for reaching respondents, but demanding in the management of the process to prevent responder losses. (C) the lack of comprehension by organizational leaders who did not perceive the importance of research in these environments and refused participation. (D) the fear of functional losses of respondents, even though confidentiality and collective treatment of responses were ensured.

Conclusions
It is necessary to relativize results mainly where the respondents are employees of organization intensive in digital technologies which makes them experienced in the use, generating more natural perceptions regarding its use, although to the researcher, it seems to him to use abuse or addiction. The general objective proposed for this research was achieved according to results and its discussion, being able to contribute to the theme Digital Addiction in the organizational segment, besides interest for teachers and students of human behavior and others correlated.

Scale to evaluate the employee's digital addiction (EDAS). Date: _____ / _____ / _____ Age: _____
* Name Voluntary: _

Volunteer Initials: ——————————————————————— (Required for Database) Gender: F ( ) M ( )
Company: ( ) Public ( ) Private
Level of Instruction: ( ) Middle ( ) Upper ( ) Specialization () Master ( ) Doctoral
*   Signature of the Volunteer: ————————————————————————————
*Email: ————————————————————————————
*   Phone # ————————————————————————
*   Interviewer: ————————————————————————

*   Response options
This is a 20-question scale that measures the employee's digital addiction at a mild, moderate, or severe CCT&O level. CCT&O refers to the addiction of digital technologies (Computer, Cellphone, Tablet, & Others).

Please enter the number corresponding to the answer next to the question: a_ Never (0)
b_ Rarely (0)
c_ Often (1)
d_ Always (2)

Questions:
1. How often are you destabilized by restrictions to CCT&O access imposed by the organization?
2. How often do you prioritize your personal communication (Facebook, WhatsApp, E-mail, etc.) to the detriment of work?
3. How often has your work performance been affected by the overuse of CCT&O information and communication technologies in your organization?
4. How often do you worry about restrictions on the use of CCT&O individual communication technologies during your work day?
5. How often do you feel restless because of actions taken by your organization to minimize CCT&O Digital Addiction?
6. How often do you notice that your organization is unconcerned with CCT&O Digital Addiction?
7. How often do you turn a blind eye to labor rules regarding the use of CCT&O devices for personal communication by your co-workers in their professional activities?
8. How often does your work efficiency improve with indiscriminate personal use of CCT&O?
9. How often in your workplace do you disregard the boundary between normal or acceptable versus abusive use of CCT&O?
10. How often do you fail to use work intervals specifically designed for stretching, breathing and relaxation exercises to relieve the tension resulting from intensive use of CCT&O
11. How often do you avoid taking breaks from the use of CCT&O equipment in your company?
12. How often do you use your private CCT&O devices to perform services in the organization?
13. How often do you feel motivated because the organization grants you more digital freedom with CCT&O?
14. How often do you minimize your relationships with co-workers due to the use of CCT&O?
15. How often do you feel more comfortable with your organization's permission to use your own CCT&O digital devices?
16. How often do you disregard the negative effects of abusive use of CCT&O digital technologies?
17. How often do you relate better to colleagues in your organization due to the use of CCT&O digital technologies?
18. How often do you conceal from the organization your relationship with other colleagues through the use of CCT&O digital technologies?
19. How often do you wait for messages of recognition/compliments from the company/boss that come through CCT&O?
20. How often would you use CCT&O for forbidden personal communication in the company?

Results of Questions
After answering the questions, add up the numbers you have selected for each answer to get a final score. The higher the score is, the higher the employee's digital addiction level and related problems. Below are the ratings for your score: Up to 10 points: No signs of digital addiction with full control over CCT&O use.

11 to 20 points: Possible signs digital addiction in the company at a light level. The company may begin to have occasional problems due to the onset of digital addiction. This may present future impacts in the business context because you may be using CCT&O more often than necessary. Make sure that digital addiction does not harm the organization.

21 to 30 points: Signs of possible digital addiction at a moderate level. You begin to have problems due to the more frequent CCT&O digital addiction. You should consider the impacts on

your life in the company, because you use CCT&O with greater intensity than recommended. You must learn to deal with CCT&O technologies more consciously.

31 to 40 points: Your use of CCT&O technologies causes significant problems at a serious level. The company may evaluate the consequences of these impacts. Losses in tour efficiency can be observed at personal, social, family and professional areas, compromising the quality of work and performance. The company may seek professional evaluation (doctor and psychologist) to guide you to specialized centers and if necessary to treatment.

References

1. WHO Measuring Quality of Life. Geneva: World Health Organization (2017) http://www.who.mt/healthinfo/survey/whoqol-qualityoflife/en/.
2. King ALS, Pádua MK, Guedes E, Nardi AE (2018) Ergonomia Digital. Porto Alegre: EducaBooks.
3. King ALS, Guedes E, Nardi AE (2017) Etiqueta Digital. Porto Alegre: EducaBooks.
4. King ALS, Nardi A (Organizadores) (2014) Nomofobia - Dependência do computador, internet, redes sociais? Dependência do Telefone Celular? Editora Atheneu: Rio de Janeiro.
5. Gonçalves LL (2017) Dependência Digital: tecnologias transformando pessoas, relacionamentos e organizações. Rio de Janeiro: Editora Barra Livros.
6. Gonçalves LL, Pádua MK, Guedes E, Santos HK, Guimarães FL, et al. (2018) Validation of a scale to evaluate Digital Dependence of Employees. MedicalExpress 5:mo18015.
7. R Core Team (2017) REdaS: A language and environment for statistical computing. R Foundation for Statistical Computing. Vienna, Austria: https://www.R-project.org/.
8. Falissard B (2012) Various procedures used in psychometry. R package version 1.1. https://CRAN.R-project.org/package=psy .
9. Dinno A (2012) paran: Horn's Test of Principal Components/ Factors. R package version 1.5.1. https://CRAN.R-project.org/package=paran.
10. Hair JF, Anderson RE, Tatham RL, Black WC (2005) Análise Multivariada de Dados. Tradução: A. Sant`Anna e AC. Neto. Porto Alegre: Bookman.
11. Hair JF, Babin B, Money A, Samouel P (2005) Fundamentos de métodos de pesquisa em administração. Tradução: Lene Belon Ribeiro. Porto Alegre: Bookman.
12. Guedes E, Sancassiani F, Carta MG, Campos C, Machado S, et al. (2016) Internet addiction and excessive social networks use: what about Facebook? Clin Pract Epidemiol Ment Health 12: 43-48.
13. Guedes E, Nardi AE, Guimarães FMC, Machado S, King ALS (2016) Social networking, a new online addiction: a review of Facebook and other addiction disorders. MedicalExpress 3: M160101.
14. King ALS, Nardi AE (2013) Novae tecnologias: uso e abuso. In: Associação Brasileira de Psiquiatria; Nardi AE, Silva AG, Quevedo JL, Organizadores. PROPSIQ Programa de Atualização em Psiquiatria: Ciclo 3. Porto Alegre: Artmed/ Panamericana 2: 9-27.
15. King ALS, Valença AM, Silva AC, Sancassiani F, Machado S, et al. (2014) Nomophobia: Impact of Cell Phone Use Interfering with Symptoms and Emotions of Individuals with Panic Disorder Compared with a Control Group. Clin Pract Epidemiol Ment Health 10: 28-35.