

# An Analysis of Digital Dependence in Dissonance with People's Perception of Digital Dependence in Companies

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*Abstract:* - Symptoms of digital dependence change according to the advancement of technology. There is still no standard to define its characteristics, but some types of behavior begin to be usual, as the compulsive use of the Internet, a constant concern to be online. In addition to these behaviors, the internet is affecting the personal, social and professional life of this user, by using the internet to soothe or distract from problems and unwanted situations, tending to develop dependence characteristics. This paper shows the application of Paraconsistent Logic applied in a questionnaire developed by Kymberly Young about digital dependency, thus creating a Paraconsistent Method for Digital Dependency-based on this questionnaire. It was necessary to elaborate a model that can get the perception of the companies about this problem and how it is affecting the work environment. These perception questions were based on Gabriela Machioro research and use semantical answers based on MACBETH making these questions more "friendly" to answer. In conclusion, we found out that the perception indicates that about 88% of people do not have any notion about digital dependence. When we add up the level of dependents, at the level of worrying, to the level of moderate, we reach 75.25% of dependence or tendency of digital dependence, which explains the perception of 88% of the people in general, that when observing around, will find, at some moment, someone connected.

*Key-Words:* - Paraconsistent Annotated Evidential Logic Et, Digital Dependency, Digital Dependency on Enterprises

## 1 Introduction

According to Young, the symptoms of digital dependence change according to the advancement of technology, another factor is when these technologies penetrate the lives of users, who sometimes end up using the internet abusively. [2]

Young reports that there is not a standard that defines such features, but some types of behavior begin to be usual, as the compulsive use of the internet, a constant concern to be online, lie or hide the extent or nature of your online behavior in addition to the inability to control or reduce the amount of time that may be connected. [1] [3]

In addition to these behaviors, it notes that the internet is affecting in any way the personal, social and professional user in question, using the internet to soothe and distract from problems and unwanted situations by changing your humor, and may develop dependency characteristics.

The important thing is not the time that the user spends connected, but what the internet is for your life and how to deal with it. [1] [3]

It is estimated that 10% of Brazilians face the problem. This number can be higher given the speed with which the internet comes to domestic households.

According to research by Navegg, online audience analysis company, Brazil registered a record 105 million people connected to the first quarter of this year.

Data from Serasa Experian show that Brazil spends more time on You-Tube, Twitter, and Facebook than internet users in the UK and US.

The network activity is driven by the explosion of smartphones.

According to Internet consulting Data Corporation, these devices accounted for 41% (5.5 million) of mobile phones sold in March.

In April, the index jumped to 49% (5.8 million). [11]

## 2 Theoretical Reference

## 2.1 Paraconsistent Annotated Logic Evidential $E\tau$

Roughly, a paraconsistent logic is a logic that serves as the basis for inconsistent but non-trivial theories. Issues such as those described above have been appreciated by many logicians.

The Brazilian logician Newton C.A. da Costa (1929-) constructed for the first time hierarchies of paraconsistent propositional calculi  $C_i$ ,  $1 \leq i \leq \omega$  of paraconsistent first-order predicate calculi. Another important class of non-classical logics is the paracomplete logics.

A logical system is called paracomplete if it can function as the underlying logic of theories in which there are formulas such that these formulas and their negations are simultaneously false.

Intuitionistic logic and several systems of many-valued logics are paracomplete in this sense (and the dual of intuitionistic logic, Brouwerian logic, is, therefore, paraconsistent) [7][8][9].

Consequently, paraconsistent theories do not satisfy the principle of non-contradiction, which can be stated as follows: of two contradictory propositions, i.e., one of which is the negation of the other, one must be false.

Moreover, paracomplete theories do not satisfy the principle of the excluded middle, formulated in the following form: of two contradictory propositions, one must be true.

Finally, logics which are simultaneously paraconsistent and paracomplete are called non-alethic logic [8].

## 2.2 Digital Dependency

The psychologist Cristiano Nabuco de Abreu, coordinator of the Dependence Technology Group, Hospital das Clinicas in Sao Paulo, there is one of the first references to the topic.

In it, the consequences of this dependence are described. "Users are easily distracted and find it difficult to control the time spent with the device," he wrote the expert. The work also points out the symptoms of addiction.

What scares is that they are very similar to those expressed by drug addicts. An example: when someone is not with his smartphone in hand, the user gets angry, anxious [10] [11]

Like all dependencies described by psychiatry, digital is not easily recognized. However, in the same way as the others, it can be diagnosed with a clear criterion.

It is installed when the individual begins to suffer losses in their personal, social or professional life because of excessive use of digital media. In real

life, this means, for example, fight with your partner because he wants to stay online even with dissatisfaction or the fall of production in Work it to you because it does not focus on the task that was delegated to. [10] [11]

The severity of the problem is leading to a global mobilization in search of solutions. One of the fronts - the medical recognition of the disorder - is in frank discussion.

Recently, the dependence was one of the issues surrounding the publication of the new version published by the American Psychiatric Association, namely "Diagnostic and Statistical Manual of Mental Disorders", published adopted as a guide for the diagnosis of mental illness.

In the final issue, addiction, not mentioned in previous editions, was mentioned as a disorder on the rise that requires further research.

Many experts have criticized the manual for accredited-tam already the disorder a disease with defined diagnostic criteria. [10] [11]

## 2.3 Dependency Classifications

In 1998, Young published the book Caught in the net, work in which were presented the results of years of research in the form of twenty questions that were given in the same year and subsequent years has been translated into several languages. [3]

Young reports the difficulty of creating standards of evaluation and answered meant the field is diverse and the terminologies in the academic literature ranging from "dependence on the Internet problematic Internet use, pathological Internet use, pathological computer use "and another concerning fact refers to the fact that there are several types of evaluation [3]

The difficulty of separating the use of the internet by need and use for its abuse, you can easily mask the diagnosis of Internet addiction. [1]

## 2.4 Questions created by Young

Table 1. Questions Created by Kimberly Young

How often do you find that you stay online longer than you intended?
How often do you neglect household chores to spend more time online?
How often do you prefer the excitement of the Internet to intimacy with your partner?
How often do you form new relationships with fellow online users?
How often do others in your life complain to you about the amount of time you spend

online?
How often do your grades or school work suffer because of the amount of time you spend online?
How often do you check your email before something else that you need to do?
How often does your job performance or productivity suffer because of the Internet?
How often do you become defensive or secretive when anyone asks you what you do online?
How often do you block out disturbing thoughts about your life with soothing thoughts of the Internet?
How often do you find yourself anticipating when you will go online again?
How often do you fear that life without the Internet would be boring, empty, and joyless?
How often do you snap, yell, or act annoyed if someone bothers you while you are online?
How often do you lose sleep due to being online?
How often do you feel preoccupied with the Internet when off-line, or fantasize about being online?
How often do you find yourself saying "just a few more minutes" when online?
How often do you try to cut down the amount of time you spend online and fail?
How often do you try to hide how long you've been online?
How often do you choose to spend more time online over going out with others?
How often do you feel depressed, moody, or nervous when you are off-line, which goes away once you are back online?

This questionnaire was composed of five answers for all the twenty questions: rarely (1), sometimes (2), often (3), usually (4), always (5) and does not apply (0), that can have a total of 100 points. As you fill out the answers, you will obtain a particular result:

- 0 – 20: Rarely uses the computer, or dislike the use of it
- 20 – 49: Median User, does not show symptoms of dependency but sometimes spends more time in the web
- 50 – 79: Having problems with the time spent on the internet with considerable impact

- 80 – 100: Dependent, the usage of internet is causing you problems, seek specialized attention

## 2.5 Normalization of the questionnaire to paraconsistent logic for the favorable degree of certainty and degree of unfavorable certainty

Normalization was carried out six tests where the first test is assigned weight 0 to all questions where the zero state means "not applicable."

The second test is assigned 1 to all questions where one means state "rarely."

The third test was assigned 2 all issues where the two-state means "sometimes".

The fourth test is assigned 3 to all matters where the three means state "frequent."

The fifth test was attributed 4 all issues where the four state means "usually."

The sixth test was attributed to all 5 questions where the five-state means "always."

As the Paraconsistent Logic is the degree of certainty in the range of values are between -1 and +1, where -1 indicates absolute false and +1 absolute truth.

Converting zero points of the questionnaire to the value -1 logic and 100 points of questioning to the value of +1 logic.

As the track survey values to assign the state dependent on the range of values comprises between 80 and 100 points in the logic associated with a range between 0.6 and 1.

Since the range of values questionnaire to attribute the worrying state comprises the range of values between 50 and 79 points, the logic associated with a range between 0 and 0.59.

As the questionnaire range of values to assign the median state comprises the range of values between 20 and 49 points, the logic associated with a range between -0.59 and 0 as the questionnaire range of values to assign the rarely been values range between 0 and 19 points, associated in the range up logic between -1 and -0.6.

Table 2. Normalization of questionnaire to a paraconsistent logic

Session	Value	Answer	Favorable Degree	Unfavorable Degree
S01	5	Always	1,0/100	0,0/0
S02	4	Usually	0,8/80	0,2/20
S03	3	Often	0,6/60	0,4/40
S04	2	Sometimes	0,4/40	0,6/60
S05	1	Rarely	0,2/20	0,8/80
S06	0	Does not apply	0,0/0	1,0/100

## 2.6 Perception in Dissonance to the Results Obtained

When presenting the results of the research to the participants, there was an impact of surprise, discontent, emptiness; it should not be, with the result about 10% of digital dependence.

The first step was the elaboration of questions aimed at this new universe, the perception of dependence rather than dependence itself. For this, performance was the chosen focus, as a reference [12]. List of questions:

- 1- Do your co-workers show signs of excessive concern related to the digital world?
- 2- Do your co-workers have a growing need for contact with the digital media to feel satisfied?
- 3- Do your co-workers show aggression and irritation when there are connection problems?
- 4- Has your company's productivity been affected due to the effects of digital dependency?
- 5- Have your company's revenues been affected by the effects of digital dependency?

For a more intuitive answer, the MACBETH [13] semantic judgment method was used as the basis:

- Extreme
- Very Strong
- Strong
- Moderate
- Weak
- Very Weak
- Null

It was necessary to normalize the degrees of evidence so that they were not presented in a numeral but literally, as shown in table 3

Table 3. Perception Questionnaire Normalization

Semantic Value	Favorable Evidence Degree	Unfavorable Evidence Degree	Semantic Value
Extreme	1,0	0,0	Null

Very Strong	0,85	0,15	Very Weak
Strong	0,65	0,35	Weak
Moderate	0,50	0,50	Moderate
Weak	0,35	0,65	Strong
Very Weak	0,15	0,85	Very Strong
Null	0,0	1,0	Extreme

## 2.7 Perception in Dissonance to the Results Obtained

ParaDecision LTDA company developed this software, and it follows all the concepts of Et Logic.

Fig1. Usage of ParaDecision-making Nott Software

The screenshot shows the ParaDecision-making Nott Software interface. At the top, there is a navigation bar with 'Register', 'Analysis', 'Report', and 'About' options. Below this is a table titled 'Evidence Degree' with columns for 'Factor', 'Tag Factor', 'Tag Session', 'Session', 'Favorable', 'Unfavorable', and 'Confirmed'. The table contains several rows of data, including factors like 'Spends more time on the internet than you see...' and 'Attend the household chores to spend more...'. The 'Confirmed' column has checkboxes for each row. The ParaDecision logo and website URL are visible at the bottom of the interface.

Using this software to create and analyze the results of the Paraconsistent Method of Digital Dependence and the Company's Perception questionnaire.

## 3 Questionnaire Application

### 3.1 Paper form

In this case, question 6 is not used, because this question was not applied in this academic scenario composed by master students, doctoral students and doctorate professors in the area of production engineering who answered the 19 questions.

In this research, we had as a result 0% of dependents, 10% worrying, 20% median and 70% non-dependents.

### 3.2 General public using Google Forms

The questionnaire was sent using google forms on a social network (Facebook, LinkedIn), which 66 volunteers have answered these questions.

In this research, we had as a result 6% of dependents, 27% worrying, 44% median and 23% non-dependents. Using ParaDecision-making Conference Nott software, a 97% success rate was obtained.

### 3.3 Perception Questionnaire

This research showed the perception of digital dependence in the corporate environment, with an 88% perception of certainty that companies are being affected by the digital dependency, obtained using ParaDecision-making Nott software

## 4 Conclusion

Making a direct comparison between the Paraconsistent Digital Dependency Method embedded in the ParaDecision-making Conference Nott software and the application of the Kimberly Young questionnaire, it suggests that the first method was able to show that the individual who answered the questionnaire could have omitted or he was not sincere in his answers.

The mixture of informatics applied to the theoretical concepts of Logic  $\epsilon\tau$  proved to be promising. The case studies confronted the presented concepts. The results of the tests with the software proved the manual simulations.

The comparison between the models resulted in a percentage of equal results of 98.5%, validating the Paraconsistent Digital Dependency Method, for a sample comprised of 217 individuals distributed as follows:

- 12 individuals from a master's and doctoral program;
- 66 professional market participants at all levels;
- 11 individuals participating in the commercial association board of directors;
- 53 entrepreneurs or entrepreneurs;
- 75 young individuals with ages ranging from 16 to 23 years;

In presenting the results to such a diverse audience, the feeling, demonstrated by the participants was by surprise. Where the question stamped on each one's faces was: How so; "The number of digital dependent people cannot be so small."

The average number of dependents for the sample universe was 5.2% with an anomaly, in the group of researchers in the master's / doctoral program, where there was no indication of dependence, 10% restricted, 20% -dependent at 70%.

By not considering the results of this particular group, the level of dependence rises to 6.5%; closer

to the bibliographical research that revolves around 10%.

When researching people's perception of digital dependency, in the various universes, a surprise. The result was 88%. When analyzing this number, we can conclude, that people do not have, the notion of the digital dependency level of their peers.

When we add up the level of dependents, at the level of worrying, to the level of moderate, we reach 75.25% of dependence or tendency of digital dependence, which explains the perception of 88% of the people in general, that when observing around, will find, at some moment, someone connected.

It was not considered the academic group, which presented an anomaly about the others: 30% academics, 77% professionals of all levels, 85% executives, 70% entrepreneurs and entrepreneurs and 69% young people.

When observing, the number of moderates, we reached 44.75%, indicating a tendency to rise to the next level, that is, worrying.

Among the groups, executives and professionals in general, have the highest rates of evolution of digital dependence, perhaps reflecting a society that is increasingly hostage to technology.

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