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The Y generation myth: evidences based on the causality relations among age, diffusion and adoption of technology of college students of São Paulo state

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ABSTRACT

The objective of this research was to assess whether college students, classified as Digital Natives and Digital Immigrants, show different behavioral styles and adoption profiles in relation to technology. To do so three measurement scales (Technological Origin - OTE, Adoption Profile - PAD and Innovator Behavioral Style - ECI) were used and to identify the causal relationships among concepts, attitudes and processes of technology adoption among students. The data analysis choice was based on structural equation model (SEM) variance based approach or partial least squares (PLS-SEM) using the SmartPLS 2.0 software. The general model was tested, comprised by the constructs of the three scales and then a variable which characterizes the respondent's generation was introduced as moderator. As a result it is possible to state that for the concepts of Digital Native and Digital Immigrant are lacking empirical foundations, simply serving as a rhetorical figure, of easy acceptance and assimilation, but unable to substantiate the existence of a phenomenon or

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generations effect on the process of diffusion and technology adoption, unlike what is commonly proposed in the literature.

Key Words: Technology Management, Consumer Behavior, Technology Adoption, Y Generation.

RESUMO

O objetivo desta pesquisa foi avaliar se estudantes universitários, classificados como Nativos Digitais e Imigrantes Digitais, manifestam diferentes estilos comportamentais e perfis de adoção em relação à tecnologia. Para tal foram usadas três escalas (Origem Tecnológica, Perfil de Adoção e Estilo Comportamental Inovador) e para identificar as relações de causalidade entre concepções, atitudes e processos de adoção de tecnologia entre os estudantes fez-se uma opção pelo modelo de equações estruturais pela abordagem baseada em variância ou mínimos quadrados parciais (PLS) com o software SmartPLS 2.0. Testou-se um modelo geral composto pelos constructos das três escalas e em seguida introduziu-se nele uma variável que caracteriza a geração do respondente. Como resultados é possível afirmar que os conceitos de Nativo e Imigrante Digital carecem de sustentação empírica, servindo simplesmente como figura de retórica, de fácil aceitação e assimilação, mas sem condições de fundamentar a existência de um fenômeno ou efeito de gerações sobre o processo de difusão e adoção de tecnologia, diferentemente do que é comumente proposto na literatura.

Palavras-Chave: Gestão da Tecnologia, Comportamento do Consumidor, Adoção Tecnológica, Geração Y.

1 INTRODUCTION

The diffusion and adoption of technology - technology or innovation here understood as the application of scientific knowledge or of other type in practical tasks through commanded systems that involve people and organizations, productive skills, living things and machines (Dusek, 2009) - is not a new theme nor is it an exclusive theme of the contemporary society and its study or analysis can be applied to any period of history, as it encompasses different situations and needs. Lately, it has become quite common to call as Y Generation those who were born after the 1980s, at a time of great technological advances. Their main features would be the ability to engage in multiple tasks in a digital world. The acceptance of temporal predisposition for use, diffusion and adoption of technologies has led to extrapolations about the model of diffusion of innovations (DOI) as established by Everett Rogers (2003).

Although it is a hypothetical construct, this model has laid the foundation to assess the phase in which an innovation is, within a given social system and how the members of this system relate and interact with technology. To classify these individuals according to their adherence degree to innovation, it was coined terms such as innovators, early adopters, among others.

Different factors affect the diffusion and hence the adoption of innovations and technologies in addition to the factors mentioned above. It is incumbent upon the individual the interaction and the transformation of innovation into something present and helpful, belonging to the group of resources available for the achievement of their daily activities. It is only in this way that innovation can be validated in a social system.

Whereas the individual in society influences and is influenced by technology and in his relationship with this technology, there are factors that modulate his attitudes and conceptions, the problem set for this research aims to answer the following question: Do individuals who, due to age, are classified as digital natives (Y Generation) and digital immigrants (those born before 1977) have different behavioral styles and adoption profiles in relation to technology? To answer the question, hypotheses are presented that, converted into models

and studied within a causality relationship, point out to the existence of antecedents and descendants in the diffusion and adoption of technology.

As a general objective, in this research it is sought to assess whether individuals classified as digital natives and digital immigrants show different behavioral styles and adoption profiles regarding technology.

The paper is divided into four main parts: a literature review on the subject, methodological procedures, analysis and discussion of the results and final considerations.

2 LITERATURE REVIEW

The term Net Generation, created to define those born between 1977 and 1997, sought to characterize the first generation that, in the digital age, came to adulthood more adapted to a crucial innovation than the previous generation (Tapscott, 2009). To Napoli and Ewing (2001), this generation has a strong sense of independence and autonomy, is assertive, self-confident, groundbreaking, curious and expressive both intellectually and emotionally. It is a sophisticated generation from the technological standpoint and assimilates innovations in their daily environment.

Looking for creating a unique identification of what he considered to be distinct generations in thought and in cognition, Prensky (2001a, 2001b and 2009) has coined the terms "digital natives" and "digital immigrants" in his study about the American education system. For him, the new generation of students would cause a split in the teacher-student relationships, opposing the digital natives (students) to the digital immigrants (teachers). These youngsters, having grown up with computers and the Internet, showed natural readiness and superior skills in using new technologies when compared to the previous generations, unable to achieve new standards of fruition both in the communication and in the relationship and entertainment.

If the terms digital natives and digital immigrants have become a reference in the speeches about the uses and needs of technology in education, they have also been subject to criticism and questionings about its empirical validity and were categorized as rhetoric without scientific foundation, leading to

a binary, simplistic reduction, through the categorization by generations, disregarding other influencing factors such as age, sex and socioeconomic context (Bayne & Ross, 2007).

For Kennedy, Judd, Churchward and Gray (2008), such a very unlikely simplification of reality in binary terms assumes that the students' technological experiences are relatively homogeneous because of the access asymmetry to new information and communication technologies (TICs) by different power purchasing social classes. Likewise, there is a simplistic and deterministic approach in the polarization between natives and digital immigrants, based on a sample of the educational universe, since the influence or control over a generation is beyond students and teachers (Bayne & Ross, 2007).

Another important point about this discussion relates to the precision with which the start and end dates of the appearance of this generation are defined. The approach that is based only on chronological terms neglects social, economic and cultural aspects (Sevcenko, 2001). To fill this gap, Kennedy et al. (2008) conducted a research with Australian students, all freshmen from different university courses who were born after 1980. The results highlight that there is no homogeneity among the students regarding to the use of technology that is not, in any way, a universal experience, contradicting the theoretical construction about the digital natives (Kennedy et al., 2008).

Reviewing the published literature on youth and digital technology in education, Selwyn (2009) calls attention to the fact that the term digital native assumes that the student connected to the Internet is no longer a passive recipient of educational instruction, but appears as a leading player in the role of (re)construct the nature, place, pace and time of learning, in the way he/she wants.

What is observed, however, is that the learning ability of young people is undermined by their inability of, when obtaining information from the Internet, to discern about its contents, considering the results found through the search engines as correct and absolute. This assumption suggests that it has been forming a generation of intellectual kleptomaniacs, with thoughts and opinions obtained through the copy-paste function, replacing the verb to think by the verb to click (Selwyn, 2009).

Similar to that proposed by Bayne and Ross (2007), Selwyn (2009) points out that empirical studies suggest that young people skills in accessing digital technologies continue being defined largely by their socioeconomic status and social class, as well as gender, geography and other boundary lines that still remain outstanding at the beginning of the 21st century.

Other studies analyzed by Selwyn (2009) also indicate that students are not expecting to use the technological resources in the classroom (or in the learning environment) in the same way they use at home. The author emphasizes it is still necessary to recognize the significance of the context and circumstances in the understanding of the use of technology by students.

Based on these evidences, Jones, Ramanau Cross and Healing (2010) conducted a study in five British universities, seeking to identify access and use of technology. In the results, it is pointed out that the arguments about the digital natives high preference in using Web 2.0 resources are somewhat exaggerated, since only the minority of respondents reported the constant use and set a high importance to such use. In reviewing the execution of common technological tasks (like sending and receiving emails, use instant messaging on mobile phones, participate in social networks, etc.), it became clear that the age is not related to the nature and to the type of the use of technology (Jones et al., 2010).

In this study the concepts of digital native or digital immigrant will not be used in a simplistic way to classify the respondents. As from conceptualizations borrowed from the human geography, the characterization of natives and immigrants presupposes the identification of a common location where both meet and where the differences resulting from the origin of both become visible. Thus, it was opted for the definition and use of the term "technological origin," based on the assumption that the nature, type and frequency of use of certain technology is related to social, economic and demographic factors. And that even a respondent born outside the period in which technologies were available and more easily accessible, may have been exposed to other forms of technology access.

The most important foundation pillars for this research were arranged in three constructs: Innovative behavioral style (ECI), adoption profile (PAD) and

technological origin (OTE) in order to equate the variables intended to relate, its conceptualization can be seen as follows.

2.1 CONSTRUCT INNOVATIVE BEHAVIORAL STYLE (ECI)

To measure the innovation in the context of the individual consumer, Vandecasteele (2010) identified 11 scales that presented generic or specific approaches, such as innovation in the context of the global consumer, the predisposition to innovate or even criteria for social innovation and hedonic innovation. Among these, in order to measure the respondents innovative behavioral style (ECI), it was adapted the scale of Goldsmith and Hofacker (1991). In its original version, the scale was applied to a sample of 309 individuals, 151 male and 157 female and one respondent with no indication of sex, with an average age of 21.6 years old. The collected data were analyzed using the Cronbach's alpha coefficient and showed a value of 0.82, resulting in a final scale with six items, three with positive focus and three with negative focus. In order to validate the scale translated into Portuguese, the judges suggested keeping the original ten assertives and submit the items to a confirmatory factor analysis, as well as developing a scale in the positive version, thus emphasizing the innovative behavior, since the scale had as a premise to be a tool for self-assessment of innovation, understood by the authors as a predisposition to learn about new products and adopt them in a specific domain of consumer behavior. (Goldsmith & Hofacker, 1991)

2.2 CONSTRUCT ADOPTION PROFILE (PAD)

When developing a favorable or unfavorable attitude toward the innovation, the individual might imagine the idea applied in his reality or anticipate future situations before deciding by the adoption. This vicarious testing involves the ability of thinking hypothetically (Rogers, 2003). To this attitude it was assigned the construct adoption profile (PAD).

As from the empirical conceptualization of Hirschman (1980) regarding the adoption of innovations, Hartman, Gehrt and Watchravesringkan (2004) developed a scale to measure three proposed dimensions - adopted innovation (*innovativeness adoptive*), vicarious innovation (*vicarious innovativeness*) and

use innovative (*use innovativeness*) - as they considered this three-dimensional conceptualization is needed to capture the full manifestation of innovation.

The innovation adopted was defined in the literature as the acquisition of a product or idea and has always been the dominant aspect of the research. For Midgley and Dowling (1978), this approach is only one measurement of an isolated behavior (the buying) and not the expression of the individual's cognitive construction.

Through the vicarious innovation, the individual can, in essence, adopt the concept of innovation without the need of its effective adoption. This condition allows the individual to store information relating to innovation in his memory to have them available at the decision time, thus avoiding the costs and risks inherent in the effective adoption of the product (Hartman & Watchravesringkan Gehrt, 2004). Furthermore the individuals expand their knowledge of situations for use and consumption of innovation through vicarious trial of these situations. As an example the individual can read about the tire change on a car, without necessarily having performed this change (Hirschman, 1980).

In turn, the innovative use refers to the use of a product or an innovation in a manner not intended by the manufacturer, using the product in many different ways or revising/modifying the product. For Hirschman (1980), this concept must be measured as from two components: the number of times that the new use has occurred and the degree of novelty that characterized each new use.

The original instrument was distributed to 330 respondents, being 42% of them male and 58% female with an average age of 12.7 years old. Of the 330 questionnaires, 309 were considered valid (Hartman et al., 2004).

The data were analyzed using the Cronbach's alpha coefficients for the three subscales (innovation adopted, vicarious innovation and innovative use) and for the scale as a whole. In addition, exploratory factorial analysis was carried out for each of the three subscales.

With these procedures, the scale was reduced and presented Cronbach's alpha coefficient of 0.86 and factor loadings higher than 0.5. The three subscales after being debugged, presented the following Cronbach's alpha coefficients:

adopted innovation = 0.66, vicarious innovation = 0.80 and innovative use = 0.71 (Hartman et al, 2004.).

The data were also subjected to a confirmatory factor analysis (CFA), with the following results: GFI = 0.94, (Adequacy Index of Fit), RMSEA = 0.036, AGFI = 0.91, (Adequacy Index of Adjusted Fit), NFI = 0.88 (Standardized Index Fit) and CFI = 0.96, (Comparative Fit Index) all indicative of the data fit to the hypothetical model (Hartman et al. 2004). The instrument developed by Hartman et al. (2004) was translated twice. From the original 20 items it was eliminated four (04) whose contents referred exclusively to the American reality.

2.3 CONSTRUCT TECHNOLOGICAL ORIGIN (OTE)

To operate the construct technological origin (OTE) four variables were formulated considering the nature of information searches through the Internet as a way to identify the interests. Starting from the definition of Selwyn (2009) and the behavioral characterizations proposed by Prensky (2001a, 2001b, 2009), Oblinger and Oblinger (2005) and Tapscott (2009), different behaviors among age groups were evidenced: especially those related to the trend of young people to seek on the Internet more information about sports, humor and entertainment than adults of any age and that these adults use the Internet to seek information on health, religion, healthcare and travel.

To build the variables of this construct, it was employed the relationship between reading instruction manuals for new products or intuitive use of technology as a way of learning. In this sense, the technological origin of the individual is independent of the terminology used to characterize the respondent, but serves as an assessment of their attitudes towards daily activities that may be mediated by information and communication technologies.

3 METHODOLOGICAL PROCEDURES

This study is characterized as a quantitative exploratory research. It was chosen the *survey* method due to the limitations inherent in the object of study (the conceptions, attitudes and process of technology adoption among students) and due to the characteristics of the population (college students in the State of

São Paulo). It was used a purposive and non-probabilistic sampling (Babbie, 2003).

To identify the causality relationships among concepts, attitudes and processes of technology adoption among students, it was chosen the structural equation modeling due to the approach based on variance through the use of partial least squares analysis - *path model* PLS-PM (Haenlein & Kaplan, 2004), since the scales variables were not adherent to the normally multivariate distribution, condition required for the use of most covariance based models (Hair Jr., Anderson, Tatham & Black, condition 2005).

For drawing up the instrument, it was used existing researches as from the literature review. The scales and research instruments were adapted by the authors and then translated and back translated by two translators, the first one has worked as a language teacher for 15 years and the second lived in the U.S. for over 10 years.

For the assessment of digital natives and digital immigrants, it was taken into account the time frames proposed by Tapscott and Oblinger and Oblinger: to Tapscott (2009), Net generation starts in January 1977 and ends in December 1997 while Oblinger and Oblinger (2005) suggest that the members of this generation were born between 1982 and 1991.

Specifically, in the instrument, it was asked the respondents' age and based on the responses two models were tested with the age ranges proposed by the mentioned authors. It was defined a moderator variable of the model such as age range (FX_ID), to assess the effect of the variable age as an antecedent of the other causality relations.

The content analysis of the test was conducted by judges, experts in the field, PhDs-Professors with expertise in quantitative methods, construction of scales and indicators and attitude surveys. The test of the version analyzed by the judges was taken by 32 college students who were required to answer the instrument and point out difficulties in understanding of the utterance as well as to suggest changes in the structure of the instrument.

As from this analysis, the Likert scale, which was built containing seven alternatives (from 1 to 7, being 1 complete disagreement and 7 total agreements), was changed to five alternatives considering that the respondents

pointed out difficulties in assigning a gradation between 2 and 3 and between 5 and 6. As a final result of the content and semantics analysis, it was drawn up the final version of the survey instrument with 30 assertions.

The instrument was divided into three parts. In the first part, it was presented the research scope and it was stressed up the respondents' anonymity, informing them that identifying was not necessary.

In the second part, respondents were asked to manifest their degree of agreement or disagreement with the assertions presented, which deal with relations between perception, adoption and use of technology. The assertions were presented randomly in its sequence, using the Random.org random number generator developed by Mads Haar of Trinity College in Dublin, Ireland and available for free on the Internet. Thus, it is avoided that the respondents feel influenced to answer the question according to the content of the previous questions (Selltiz, Wrightsman & Cook, 2005).

In the third and last part, it was collected socio-demographic information of the respondents: gender, age, family income in minimum wages, Subject studied and Higher Education Institution (HEI).

The data were collected from college students of five HEIs in São Paulo, three private Institutions and two public Institutions, located in the capital, the Great São Paulo and in the countryside of the State. The sample was designed with the criterion of having the maximum of variations in the individuals' profiles (Nunally & Bernstein, 1994). 707 questionnaires were collected, which generated a list of approximately 23 respondents for each assertion.

For the analysis of the items that make up the respondents socio-demographic inventory it was used the SPSS (Statistical Package for Social Sciences) in its version 15. For the structural equation modeling it was used the SmartPLS 2.0 software (Ringle, Wende & Will , 2005).

To form the general causal model (Figure 1) it was consulted four experts in technology, education and higher education who defined the possible causality relations, being the technological origin (TO) always antecedent and factor conditioning of the innovative behavioral style (IBS) and of the adoption profile (AP).

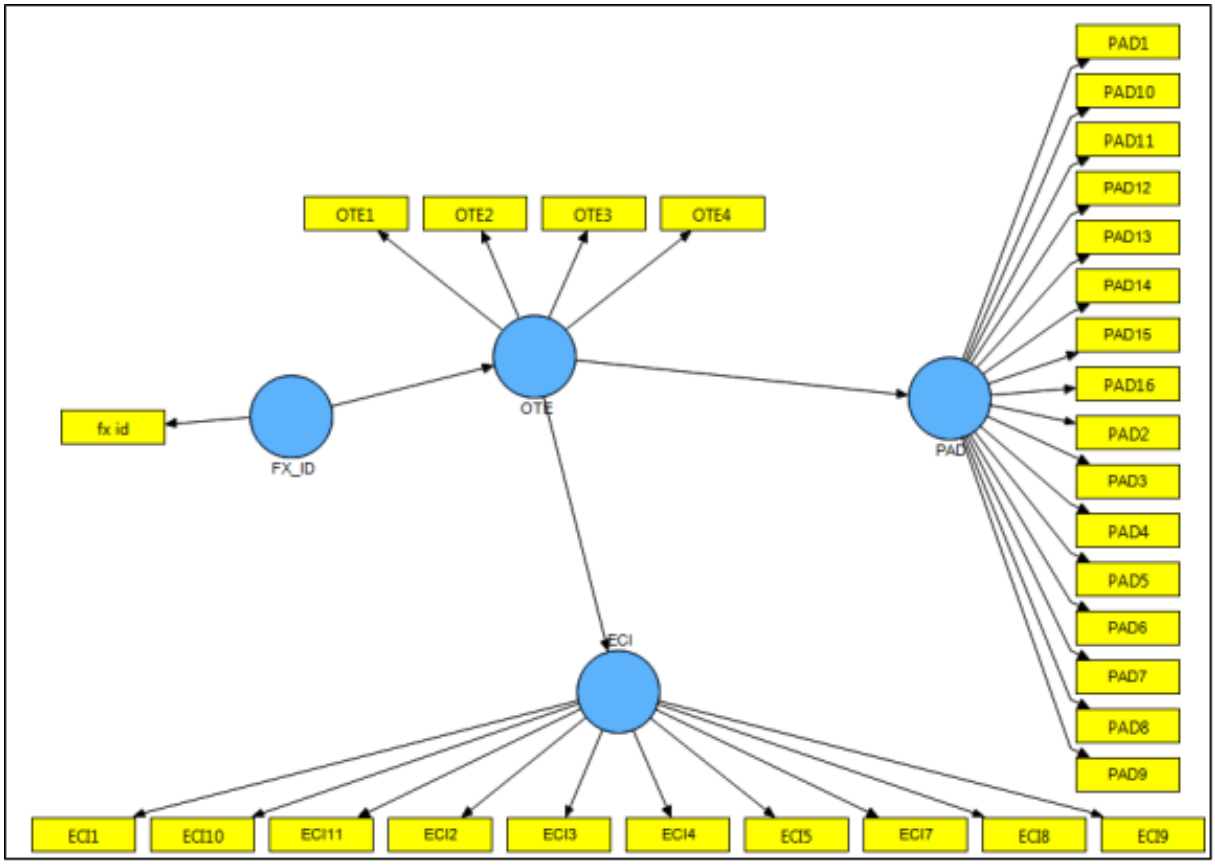

Figure 1: General Causal Model
Source: **Drawn up by the authors**

As of the general causal model shown in Figure 1, three causal models were analyzed: 1) without the moderator variable age range; 2) with the age groups proposed by Tapscott (2009) and 3) with the age groups proposed by Oblinger and Oblinger (2005).

4 ANALYSIS AND DISCUSSION OF RESULTS

The research instruments were applied to undergraduate students at public and private HEIs in the State of São Paulo. From the total respondents, 71% study in private HEIs (HEI1, HEI3 and HEI4) and 29% in public HEIs (HEI2 and HEI5).

Of the 707 questionnaires applied, 699 were considered valid. With regard to the respondents' gender it was obtained 61.6% of female and 38.4% of male. Regarding the respondents' age, the option for the answer in the survey instrument was open, allowing that the age was indicated directly. For purposes

of this analysis, the respondents were divided into eight groups of response at intervals of four years between the groups except group 1, whose age group ranges from 17 and 20 and group 8 with respondents are over 50 years old.

Thus, the following values were found: 1) 17 to 20 years old, 202 respondents or 28.9%; 2) 21-24 years old, 253 respondents or 36.2%; 3) 25 to 29 years old, 101 respondents or 14.4%; 4) 30-34 years old, 65 respondents or 9.3%; 5) 35 to 39 years old, 35 respondents or 5.0%; 6) 40 to 44 years old, 25 respondents or 3.6%; 7) 45 to 49 years old, 10 respondents or 1.4%, and 8) over 50 years old, 8 respondents or 1.1%.

4.1 **RELATIONS OF CAUSALITY WITHOUT THE MODERATOR VARIABLE AGE GROUP (MODEL 1)**

The first model was calculated to check the causality relations among the three constructs OTE, ECI and DBP. The initial results indicated that the variables ECI2, ECI3, ECI4, ECI7, ECI10, ECI11, PAD3, PAD6, PAD7, PAD9, PAD12, PAD13, PAD14 and PAD15 presented factorial loads inferior to 0.50 and therefore were eliminated from the model.

As a general result of the model fit tests it was obtained values considered suitable for assessing the quality adjustment. Table 1 shows the values found.

Table 1: Values of the fit tests of model 1

	AVE	**Composite Reliability**	**R^2**	**Cronbachs Alpha**	**Communality**
ECI	0,586	0,849	0,522	0,765	0,586
OTE	0,891	0,970	----	0,959	0,891
PAD	0,675	0,943	0,527	0,930	0,675
Referential Values	0,500	0,700	>0,300	0,600	0,500
Discriminant Validity	Fornell-Larcker Criterion √AVE > Correlation among factors		Correlation OTE – ECI = 0,722 OTE-PAD = 0,726		√AVE ECI = 0,765 PAD = 0,822

Source: Drawn up by the authors

The analysis of Table 1 indicates that the adjusted model shows the construct reliability demonstrated by composite reliability values higher than the recommended by the literature, convergent validity in terms of AVE values higher than 0.50 and discriminant validity confirmed by the Fornell-Larcker criterion.

Figure 2 shows the results regarding the measurement and structural models of model 1, without the moderator variable FX_ID.

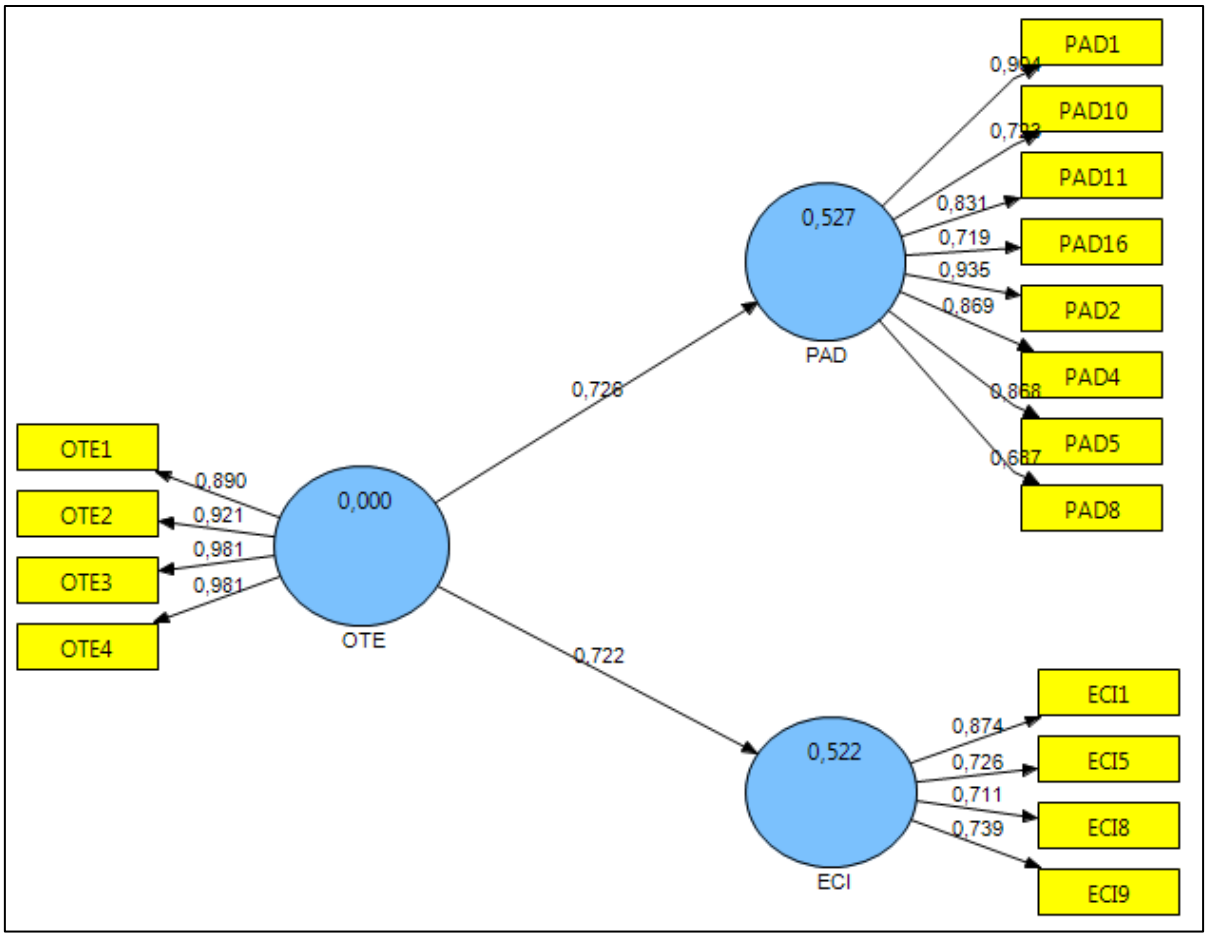

Figure 2: Causal model without the moderator variable FX-ID (model 1)
Source: Drawn up by the authors

The analysis of Figure 2 shows that the values of the path coefficients are: OTE → PAD of 0.726 and OTE → ECI of 0.722, indicating that the causal relations provided for the experts are confirmed, since the values are higher than 70%.

Once validated the general model, it was started to include the moderator variable of age group. The group of respondents was divided into two subgroups in order to measure the effect of the criteria of Oblinger and Oblinger (2005) and Tapscott (2009).

Moreover, to better clarify the fit model, Figure 3 presents the items of the scales that remained in it.

OTE1	Always use the Internet as a source of information on any topic.
OTE2	Always read the instruction manual before using a product.
OTE3	The Internet is my main source of information on sports, humor and entertainment.
OTE4	The Internet is my main source of information on health, religion and travel.
ECI1	I'm always the first of my circle of friends to buy new technologies when they appear.
ECI5	I always buy new technologies even without having ever heard about.
ECI8	I am consulted by my friends about technological innovations.
ECI9	I prefer to buy new products than those already known.
PAD1	Whenever I hear about a different product, I like to learn about it. .
PAD2	I always wonder how the products will be in the future.
PAD4	I always wonder how the travel, communications and purchases will be in the future.
PAD5	Whenever I hear of products which have not been released I try to know about them.
PAD8	Usually I spend part of my time thinking about how the future will be.
PAD10	I constantly think about how I would use different products, even without having them.
PAD11	Whenever I need to do something different, I can "get by" on what I have available around me.
PAD16	I always try different computer programs, even if I do not need them.

Figure 3: Items of the scales that remained in the adjusted model.

4.2 **MODEL 2 WITH MODERATOR VARIABLE (FX_ ID) - TAPSCOTT CRITERION (2009)**

When including the FX_ID moderator variable created according to the Tapscott criterion (2009), the model undergoes some changes in fit values and overall quality, as shown in Figure 4.

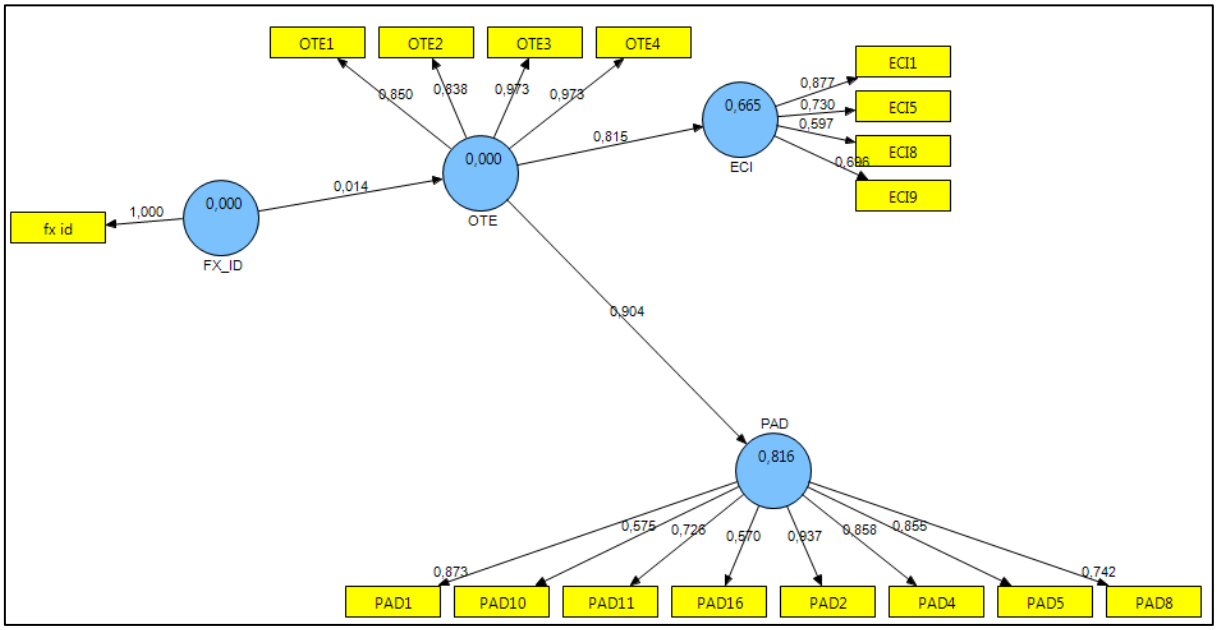

Figure 4: Causal model with the FX_ID moderator variable, Tapscott criterion (model 2)

Source: Drawn up by the authors

As a result of the inclusion of the moderator variable FX-ID, new values were found, as shown in Table 2.

Table 2: Values of the fit tests of the model 2

	AVE	Composite Reliability	R^2	Cronbachs Alpha	Communality
ECI	0,536	0,819	0,665	0,707	0,536
FX_ID	1,000	1,000	----	1,000	1,000
OTE	0,830	0,951	0,000	0,930	0,830
PAD	0,605	0,923	0,816	0,905	0,605
Referential Values	0,500	0,700	>0,300	0,600	0,500
Discriminant Validity	Fornell-Larcker Criterion √AVE > correlation among factors		Correlation OTE – ECI = 0,815 OTE – PAD = 0,903 FX_ID - OTE = 0,016		√AVE ECI = 0,765 PAD = 0,822 OTE = 0,910

Source: Drawn up by the authors

The analysis of Table 2 shows that with the inclusion of FX_ID variable in the fit model, this shows the construct reliability demonstrated by values of composite reliability higher than that recommended by the literature, convergent validity due to AVE values higher than 0.50, but does not show discriminant validity. This criterion was rejected according to the Fornell-Larcker criterion.

Furthermore, the obtained index values of redundancy Stone-Geisser (Q^2) were of ECI = 0.230, PAD = 0.280 and OTE = -0.004, indicating average relevance in the first two constructs, and small relevance in the variable FX_ID (→OTE) to predict the model. The value of Gof (*goodness of fit*) was calculated as 0.605, indicating an excellent overall fit of the model. However, when assessing the path coefficients, it is observed that its values are: OTE → PAD of 0,904, OTE → ECI of 0,815 and FX_ID →OTE of 0,014.

As a reference, the path coefficients of a structural model PLS-PM can also be interpreted as beta coefficients (standardized regression coefficients) of least squares, which can be used for a direct comparison between coefficients and their relative explanatory powers of the dependent variable (Hair et al., 2005).

4.3 **MODEL 3 WITH MODERATOR VARIABLE (FX_ID) - OBLINGER AND OBLINGER CRITERION (2005)**

Similarly as carried out in Model 2, it was included in Model 3 the FX_ID moderator variable created according to the Oblinger and Oblinger criterion (2005) and, similarly, the model undergoes some changes in fit values and of overall quality, as Figure 5 shows.

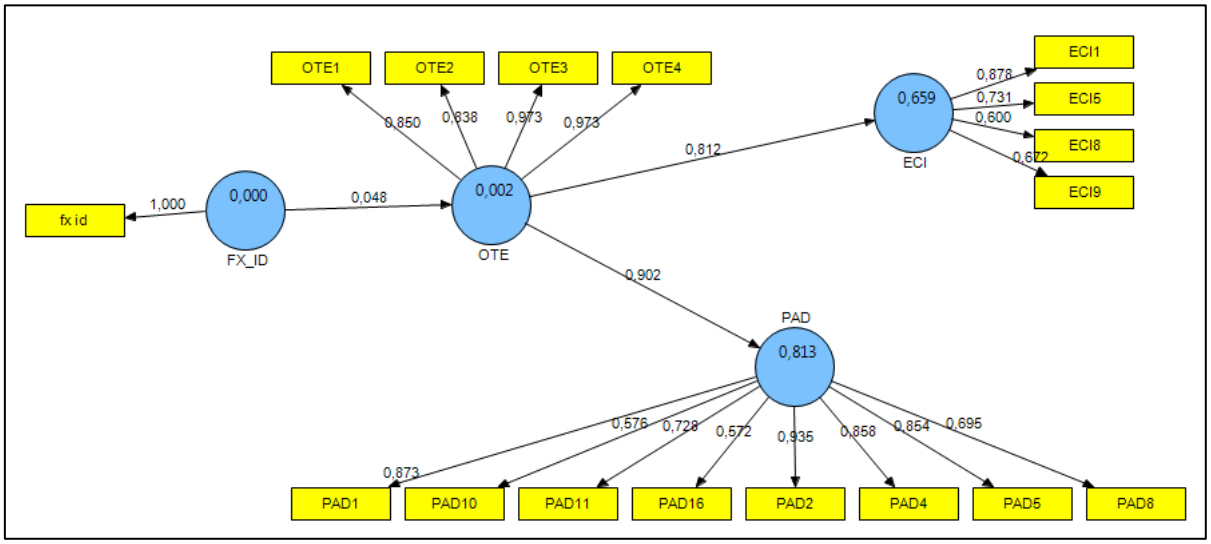

Figure 5: Causal model with the FX_ID moderator variable, Oblinger and Oblinger criterion (model 3)

Source: Drawn up by the authors

The analysis of Figure 5 shows that the values of the path coefficients are: OTE → PAD of 0,812, OTE → ECI of 0,902 and FX_ID → OTE of 0,048, indicating, in the same way, that, in model 2, there are average relevance in the two first constructs and small relevance in the variable FX_ID (→ OTE) to predict the model, as it is shown in Table 3.

The analysis of Table 3 indicates, in the same way as Model 2 does, that with the inclusion of FX_ID variable in the fit model, there is construct reliability demonstrated by values of composite reliability higher than that recommended by the literature, convergent validity due to values of AVE higher than 0.50, but it does not present discriminant validity. This criterion was rejected according to the Fornell-Larcker criterion.

Table 3: Values of the fit tests of the model 3

	AVE	Composite Reliability	R^2	Cronbachs Alpha	Communality
ECI	0,529	0,815	0,659	0,699	0,529
FX_ID	1,000	1,000	----	1,000	1,000
OTE	0,830	0,951	0,002	0,930	0,830
PAD	0,597	0,920	0,813	0,901	0,597
Referential Values	0,500	0,700	>0,300	0,600	0,500
Discriminant Validity	Fornell-Larcker Criterion √AVE > correlation among factors		Correlation OTE – ECI = 0,815 OTE – PAD = 0,903 FX_ID - OTE = 0,016		√AVE ECI = 0,765 PAD = 0,822 OTE = 0,910

Source: Drawn up by the authors

Moreover, the obtained redundancy index values of Stone-Geisser (Q2) were of ECI = 0.231, PAD = 0.280 and OTE = -0.004, indicating average relevance in predicting the model in the relations OTE→ECI e OTE→PAD and null relevance for the relation FX_ID →OTE. The Gof value was calculated as 0.603, indicating an excellent overall fit of the model. However, when assessing the path coefficients, it is observed that their values are: OTE → PAD de 0,902, OTE → ECI de 0,812 e FX_ID → OTE de 0,048.

5 FINAL CONSIDERATIONS

In this research, the overall goal was to assess whether individuals classified as digital natives and digital immigrants show different behavioral styles and different adoption profiles regarding technology. For this purpose, three causal models were analyzed relating to the influence of technological origin (OTE), understood as the previous experiences with technology in the innovative behavioral style (ECI) and in the technology adoption profile(PAD) among college students. Also, it was sought to assess whether there are

differences between students classified as digital natives (Y Generation) and digital immigrants (those born before 1977).

The results showed that there is a "strong" causal path between technological origin (construct OTE) and innovative behavioral style (construct ECI) of the respondents, as well as between the technological origin (construct OTE) and the adoption profile (construct PAD), but a "very weak" relationship between the age groups (moderator variable FX_ID) and the technological origin (construct OTE) of the respondents.

This observation allows inferring that there is no relation among the age groups with the model remainder. Better explaining, when the FX_ID variable is placed with the antecedent of the model, the FX_ID variable ends up "organizing" the respondents in groups and also evaluating the "consistency" of their choices of the scale items. The low value of the path coefficient shows that this "distribution" does not occur and that the age of the respondents has no significant interference in the response pattern.

As from the analysis of results found it can be stated that the concepts of digital native and digital immigrant is in need of empirical support, simply serving as a rhetorical figure, of easy acceptance and assimilation, but unable to substantiate the existence of a phenomenon or generations effect on the process of diffusion and technology adoption, unlike what was proposed by Ewing and Napoli (2001), Prensky (2001a, 2001b and 2009), Oblinger and Oblinger (2005) and Tapscott (2009).

The results corroborate those found by Bayne and Ross (2007), Kennedy et al. (2008), Selwyn (2009) and Jones et al. (2010), which evidence of the absence of a significant effect of the age on the behavior in relation to technology and, above all, that it could not generalize the attitudes of young people based simply on their age. Such outcomes bring into question the use of the terms digital natives and the digital immigrants, as well as the generalizing and fallacious assumption of the existence of a Y Generation or a Net Generation.

A limitation of the research was the use of the non-probability sample and for convenience, which prevents the universalization of the results. Nevertheless, as from the analysis of causality relationships among age and diffusion and

technology adoption among college students, it is intended to contribute to a broader discussion to the field in its academic aspect and allow deeper understanding and discussion of the issue, pari passu with other countries and previous studies. It also opens room for future researches, with broader geographic sections and with specific problems, addressed to the resolution of other questions that are emptied by the lack of the causality attribution to the rhetoric and mythical picture of the Y generation.

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