

IT Addiction: Role of SNS Addiction as an enabler for Procrastination and Technological Frictions

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Proposal of Dissertation presented as partial requirement for
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by

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ABSTRACT

Numerous studies have been done on the field of SNS addiction as it is a phenomenon that has been growing significantly in today's digital society. However, some limitations to the already published studies exist, namely the lack of literature linking this form of addiction to procrastination. This research aims to analyze the impact that Social Networking Site's use and addiction can have on an individual's adoption of procrastination behaviors and how the three main life environments of the user - work, family, and personal health – can be influenced by these concepts. Additionally, using stimulus-organism-response (SOR) theory, it is also examined how information overload can moderate the relationship between the frictions felt in an individual's life environments (T-FWP) and how viable could be the adoption of a corrective measure such as the reduction of use. The data gathered to sustain this study consists of 314 responses to a survey and the findings showed that SNS addiction is a driver for the adoption of procrastination and that both behaviors create technological frictions in users' lives, although procrastination did not significantly influence the family life domain. Regarding the T-FWP frictions, only the stress felt in the work domain did not significantly influence the decision to correct use and, opposite to what was expected, the state of information overload actually decreased the intention to reduce SNS use when it is felt within the user's family life domain.

KEYWORDS

SNS addiction; procrastination; technological frictions; SOR theory (stimulus-organism-response); information overload; SNS use reduction

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LIST OF ABBREVIATIONS AND ACRONYMS

IS	Information Systems
IT	Information Technology
SNS	Social Networking Services
SOR	Stimulus-Organism-Response
T-FWP	Technological-Family, Work and Personal Health

1. INTRODUCTION

The digital society that we know today brought people closer together through the usage of virtual platforms such as Social Networking Sites (SNSs). These are defined as web-based platforms where individuals can create profiles to communicate within these systems (Boyd and Ellison, 2007) and have provided positive aspects in our day-to-day lives. However, SNS use has also proven to be damaging if the use is not managed correctly, being able to induce a set of negative outcomes on an individual's well-being (Bevan et al., 2014). Research on the dark side of IT led to the concept IT addiction which is a specific form of behavioral, non-substance addiction to technology (Turel et al., 2011; Venkatesh et al., 2019). The state of addiction is achieved when a person reaches a point of maladaptive psychological dependency towards the use, leading to material negative consequences for the user (Vaghefi et al., 2020) which can manifest themselves as disturbances in the user's life domains through a set of symptoms such as the overwhelming domination of use over a person's thoughts and behaviors (salience), the negative emotions that are generated when a person cannot use (withdrawal), the struggle that arises when a person chooses not to perform a certain task due to use (conflict), the difficulty to autonomously reduce or stop the use (relapse), the need to continuously increase the use to satisfy the organism's higher demands (tolerance) and the roller-coaster of emotions that the user experiences due to use (mood modifications) (Venkatesh et al., 2019).

In a situation of SNS addiction, the ease of access to usage can rapidly create a toxic habit that interferes with other aspects of the user's life such as the delay of work-related tasks that can lead to a worse performance on the job (Lanaj et al., 2014; Turel & Bechara, 2016). A theoretical link between SNS addiction and the act of postponing due tasks can be found within the definitions of the addiction symptom of conflict and of the behavior of procrastination:

Concept	Definition
Symptom of conflict	struggle that arises when a person chooses not to perform a certain task due to use (Venkatesh et al., 2019)
Behavior of procrastination	act of postponing a task and the consequence of an individual's failure to self-discipline and control (Geng et al., 2018)

Therefore, it can be posited that within this certain symptom of addiction (conflict), there can be a nature of procrastination and, although some studies have touched on this topic (Moqbel and Kock, 2017) the literature published to date does not often make this link. In this paper, we will try to deepen the understanding of the relationship between these two concepts.

When evaluating the literature, we also found that SNS addiction is also characterized by an excessive consumption of information (due to the excessive use). This factor is identified as information overload, which defines a state in which an individual cannot process the volume of the information gathered, leading to breakdown (Rogers and Agarwala-Rogers 1975). The relationship between SNS addiction and information overload is of particular interest due to the fact that while addiction drives the SNS use, information overload should cutback the SNS use. In this paper we will analyze the relationship between the two factors, extending the current research on SNS addiction.

Another important aspect, yet understudied by literature, is the adoption of SNS corrective behaviors. SNS corrective behaviors are adopted when SNS users feel negative consequences due to the SNS

(ab)use generating the need to mitigate those feelings. A particular behavior is SNS use reduction. This behavior is taken when a user decides to decrease the SNS use levels but not completely eliminate the use which allows the user to mitigate some problems originated by the use, yet still enjoying the technology in a healthy manner. In this paper, by using the SOR model as a behavior discontinuance theory, we try to understand how the SNS addiction might trigger negative behaviors, such as procrastination, and affect the work, personal and family environment leading to the adoption of SNS use reduction (Osatuyi & Turel, 2020).

In sum, the main objectives of this paper are: (1) understand if SNS use can be a direct enabler for procrastination; (2) comprehend the impact of SNS addiction and procrastination in the main life domains of a person: work, family and personal; (3) recognize the importance of information overload as a moderator of the previous relationships, while also contributing to the literature by extending the current body of knowledge about IT addiction and SNS corrective behaviors. In a more practical way, we want to inform and aware users for the negative impact of SNSs and explain how a reduction of use might be a good solution for addictive cases.

2. THEORETICAL BACKGROUND

2.1. STIMULUS-ORGANISM-RESPONSE (SOR) FRAMEWORK

In the framework of SOR, the environment interacts with the individual as a stimulus (S) which in turn influences the internal state of the organism (O) inserted in said context, leading the individual to take responsive action (R) (Mehrabian & Russell, 1974). Just as Cao & Sun (2018) used this model to explore the effects of overload state on the intention to discontinue the use of social media, the present paper uses the same model of stimulus-organism-response to analyze and better understand the intention to correct SNS use when the user feels the negative effects of SNS addiction and procrastination on its main life domains.

Depending on the initial motivation behind the use, each individual uses SNSs for its own specific purposes with previous research identifying three different types of use: i) social (establish two-way communications between network members with the intent of maintaining social relationships; Luqman et al., 2017), ii) hedonic (personal pleasure and quick entertainment; Choi, Lee, & Kim, 2011), and iii) cognitive (creation and sharing of content – information, ideas and opinions; Papacharissi and Mendelson, 2011). Hence, different types of use alter the internal state of the user in different ways. If an individual feels the emotion of loneliness, it might respond with a social-type of use as to correct its internal state. For many individuals, SNS use has become the chosen stress coping behavior (Tarafdar et al. 2020) by giving SNS a hedonic-type of usage to provide the user's organism with a relaxing sensation.

By acting as a stimulus itself (Luqman et al. 2020), SNS use affects users' environments and internal states. This influence can either be positive or negative on the user's life depending on the role that SNS use plays for the user itself.

2.2. SNS ADDICTION AND PROCRASTINATION AS STRESSORS

Research has proven that the SNS use can provide the user's organism with the same chemical reactions as other addictive substances/behaviors do through the production of dopamine in the short-term (Turel and Bechara, 2021) and can also lead to morphologic changes in the user's brain anatomy in the long-term (He et al., 2017).

Whatever the type of use, resorting to social media as a solution towards negative emotions can develop into a habit in the long-term (Lee, 2014) by becoming a routine action that often happens on a subconscious level as a response to specific cues/triggers (Verplanken and Aarts, 1999; Shiao & Luo, 2013). The use of SNSs mainly to relax and cope with stressful situations can easily become automatic when the response stage takes a low amount of effort and the reward is felt shortly after the response is taken (Verplanken, 2006). Together with the greater ease of access to SNSs through smartphones, the automation effect is amplified and users rationalize less their use and the habit of SNS use is established as a behavioral response to a cue/trigger felt (Tarafdar et al. 2020; Shiao & Luo, 2013).

Thus, with the automation of the behavior of SNS usage, users may lose all awareness of their use patterns and begin to show typical addiction symptoms (Venkatesh et al., 2019). This may lead users on a path to whenever an unpleasant emotion arises, the addicted user shifts its focus towards SNS use (Moqbel and Kock, 2017), enhancing the environment for individuals to procrastinate (Blunt and

Pychyl, 2005) as they delay facing uncomfortable situations by resorting to SNS use. By failing to self-discipline and regulate the use, users procrastinate by postponing situations that need to be addressed leading to negative consequences for the procrastinator (Geng et al., 2018) – in other words, the SNS user. Procrastination is seen as a dysfunctional strategy used in an attempt to cope with conflict or stressful choices (Kim & Seo, 2015) and its impacts could reach multiple levels on the procrastinator's life.

While most of the published literature researching the behavior of procrastination focused mainly on students and the impact on their academic performance, this paper will extend the research to older age groups such as adults and young seniors as these generations can also use SNSs on a daily basis.

2.3. T-FWP AS STIMULUS FOR THE ORGANISM

The impacts of procrastination (Hen & Goroshit, 2018) and SNS addiction (Castellacci & Tveito, 2018) on an individual's life have been a topic of study over the past years as both behaviors tend to be dysfunctional strategies for individuals to cope with uncomfortable situations. Using the SOR paradigm (Mehrabian & Russell, 1974), the excessive incurrence on these behaviors can lead to impacts on the organism's internal state and life environments.

The stimulus induced by technology use that arises in the key areas of an individual's life can produce tensions which together are seen as technology induced frictions (Luqman et al., 2020). As to ease the analysis, the technology tensions in an individual's environment are divided in 3 key sections: i) technology-family frictions, which arise when SNS use interferes with family tasks namely a board-game night or dining with the family (Turel, Serenko, & Bontis, 2011); ii) technology-work frictions, that can occur when SNS use impacts the performance of the user on work or school tasks (Hong, Chiu, & Huang, 2012); and, finally, iii) technology-personal health frictions, such as poor sleep quality or reduced cognitive capabilities which are impacts felt by the user on its health and physical condition due to SNS use (Zheng & Lee, 2016).

In the beginning stages, SNS use has a stronger influence on the individual rather than its environment since the organism is satisfied by a small amount. However, by increasing the use to satisfy the organism's higher demands (addiction symptom of tolerance – Venkatesh et al., 2019), the initial SNS use tends to become an automatic behavior that occurs on a subconscious level (Lee, 2014) leading to the loss of usage awareness by the SNS user. At this point, the incurrence on both behaviors gains an excessive nature which then begins to influence the individual's environment by producing the priorly mentioned technological frictions (T-FWP) that together operate as a stimulus for the organism by influencing its internal states as well (Luqman et al., 2020).

2.4. SNS USE REDUCTION AS RESPONSE

As the use becomes more excessive, the negative consequences of SNS addiction become to be more palpable towards the individual and begin to act as stimulus in the form of technological frictions (T-FWP) in the main life domains of the user (Luqman et al., 2020).

Overall, most of the published literature commonly refers to discontinuance of use as a corrective measure to combat IT addiction (Soliman & Tuunainen, 2022) which, by cutting the source of the problem, could be one of the most effective courses of action to take. Nonetheless, numerous other corrective measures are at the disposal of addicted users, namely the change of the SNS platform used

(Maier, Laumer, & Weinert, 2015) or the adoption of a strategic temporary break of usage – also known in IS research as “vacationing” (York & Turcotte, 2015). In the present research, the action to be studied is the use reduction. In addiction type situations, the weaning of the addictive substance/behavior can be more effective than the complete interruption of the addictive element (Osatuyi & Turel, 2020) since this solution allows users to continually benefit from the advantages that these platforms have to offer (Neves, Turel & Oliveira, 2022). Furthermore, due to the fact that users can still use SNSs, although in a more controlled way, this approach should be more appealing as it is seen by users as a more flexible course of action to take when it comes for users to autonomously correct their use (Meshi et al., 2020).

2.5. INFORMATION OVERLOAD

Salehan & Negahban (2013) argue that with the advances made on smartphones’ development, the use of ICTs (Information and communication technologies) increased to new highs, making smartphones a powerful tool for people to use numerous times a day for every sort of activity. The greater amount of SNS use translates in a greater amount of information for users to consume. Therefore, with excessive use, individuals may find themselves reaching a point to which their available resources to respond to new information are not enough to what that same information requires in order to be processed (Eppler & Mengis, 2004). When SNS users reach a state of breakdown as they cannot process the information gathered at the moment, they reach an internal state of information overload (Rogers and Agarwala-Rogers 1975) which is one of the most common consequences of SNS addiction for the user itself (Cao & Sun, 2018).

The outcome of information overload can affect users’ well-being and, consequently, all aspects of its life. Therefore, in this research, building on the SOR paradigm and the environmental stimulus that SNS addiction, procrastination and the T-FWP frictions provide, we extend the contribution to the field of study by analyzing if the internal state of information overload can influence the intention to reduce SNS use since it should amplify the negative overall status of the users’ internal state when SNS users feel the impairing of their cognitive capabilities by not being able to process, store, and select mediated information at a given moment (Rogers and Agarwala-Rogers 1975; Eppler & Mengis, 2004; Matthes et al., 2019).

3. RESEARCH MODEL

Building on already published research, the proposed design of study will consist in the combination of two different models previously used with the addition of a new moderator and a new variable as the corrective measure towards T-FWP frictions.

Thus, this model will allow to answer the main research question of this paper: is SNS addiction an enabler for procrastination and does this behavior induce technological frictions on an individual's life domains?

As mentioned, the role of SNS addiction as an enabler for procrastination will be the main object of study and, as way of deepening the research, the SOR theory will be used to investigate if the corrective response of reduction of use can be viable, instead of the complete discontinuance of use (Turel et al., 2020). Additionally, the state of information overload will be used in this paper to see if this concept can be a driver for individuals to seek corrective action towards SNS use when frictions in their life domains are felt.

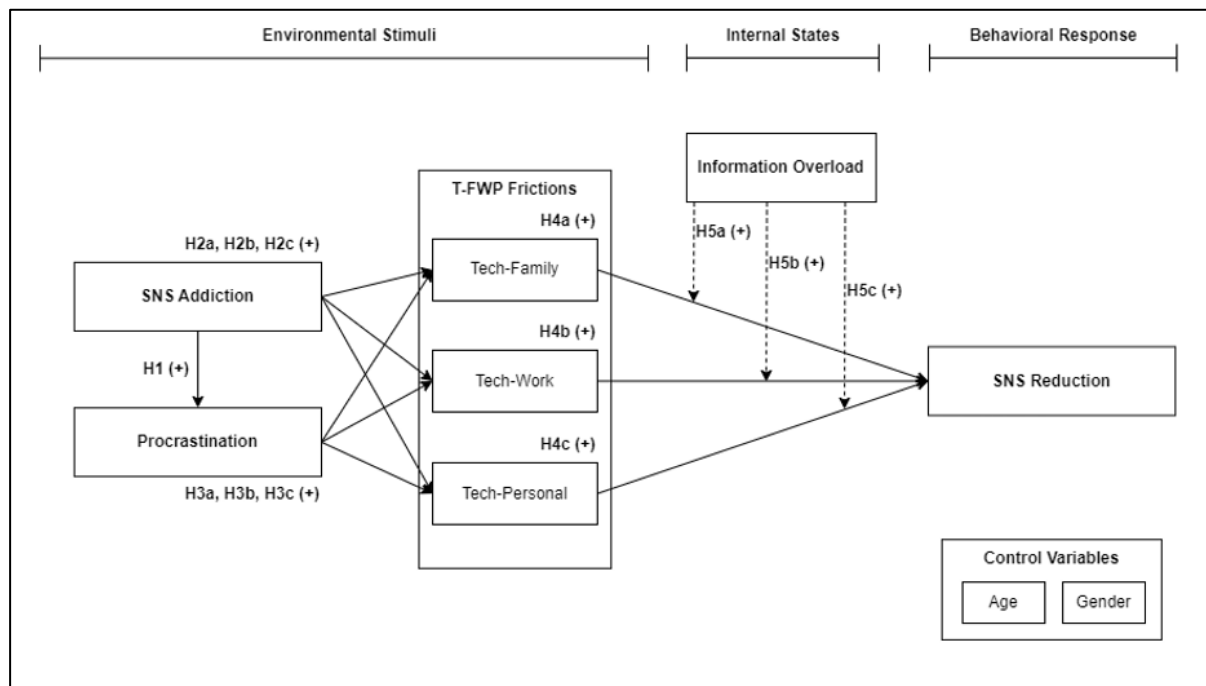


Figure 1 – Research's final conceptual model

As proven by previous research, the organism produces dopamine while using SNSs, regardless of the reason for the use, just like any other addictive substance/behavior (He et al., 2017; Turel and Bechara, 2021). However, when an organism is consistently provided with the same stimulus, it progressively adapts, and the use loses the impact that it had at the beginning stages leading the user to intensify its consumption to get the same result as it did when the SNS use started, showing signs of the addiction symptom of tolerance (Venkatesh et al., 2019). The user then begins to form the habit of using SNSs while losing track of the patterns of use (Shiau & Luo, 2013) which can induce the prioritization of use above all else (addiction symptom of conflict – Venkatesh et al., 2019). Therefore, it is expected that SNS addiction can act as an enabler for individuals to procrastinate (Blunt and Pychyl,

2005; Geng et al., 2018) as they delay doing a certain task to prioritize their use. As such, in this study is hypothesized that:

H1: SNS addiction has a positive impact on procrastination.

Overall, SNS users put a lot of effort in developing their accounts and spend quite some time enjoying what these applications have to offer (Turel et al., 2016a). However, when this use begins to be excessive, the user's environment begins to suffer the effects of such an excessive consumption. Fundamentally, when the level of addiction increases, the disturbances felt on the three main environments of an individual (family, work and personal) (Luqman et al., 2020) should increase as well. Therefore, it is hypothesized that:

H2a: SNS addiction has a positive impact on technology-family friction.

H2b: SNS addiction has a positive impact on technology-work friction.

H2c: SNS addiction has a positive impact on technology-personal health friction.

Once again, as SNS usage increases, the user forms the habit of use as its first response to the feeling of the underlying need that motivates its SNS use (Lee, 2014). As previously mentioned in the paper, this induces a better environment for the adoption of procrastination behaviors (Geng et al., 2018) and building on this link between the two concepts, as SNS addiction should induce higher levels of T-FWP frictions, so should the procrastination induced by the SNS use. As such, it is hypothesized that:

H3a: Procrastination has a positive impact on technology-family friction.

H3b: Procrastination has a positive impact on technology-work friction.

H3c: Procrastination has a positive impact on technology-personal health friction.

As the research made by Luqman et al. (2020) confirmed, when the user feels uncomfortable with its surroundings, it appears the need to act and correct the behavior that caused the context. Although it is generally assumed that in a state of addiction, severe corrective measures must be taken to be effective in the combat against the current state of the individual, a more flexible approach could facilitate the acceptance of an individual to correct its patterns of use (Osatuyi & Turel, 2020). Therefore, this paper will study the acceptance of individuals to a more flexible approach such as the reduction of SNS use instead of forcing the users to immediately discontinue the use, being expected that the greater the level of distress in one's environment, the greater is the intention of the user to act accordingly. As such, it is posited that:

H4a: Technology-family friction has a positive impact on SNS reduction intention.

H4b: Technology-work friction has a positive impact on SNS reduction intention.

H4c: Technology-personal health friction has a positive impact on SNS reduction.

Information overload can be defined as an internal state that is generated when an individual cannot process all communication and data inputs, losing its capabilities to process information effectively (Rogers & Agarwala-Rogers, 1975; Eppler & Mengis, 2004). Individuals addicted to SNSs are expected to have difficulties navigating through their lives as the loss of focus impacts their time with family and

their job performance (Moqbel and Kock 2017). Bearing that in mind, it is expected that the state of information overload should amplify the outcomes of T-FWP frictions which in turn should drive the user to take corrective action. Building on this premise, it is expected that:

H5a: Information overload has a positive impact on the relationship between technology-family friction and SNS reduction intention.

H5b: Information overload has a positive impact on the relationship between technology-work friction and SNS reduction intention.

H5c: Information overload has a positive impact on the relationship between technology-personal health friction and SNS reduction intention.

4. RESEARCH METHODS

4.1. MEASUREMENT

The research instrument used to gather the data consisted of an online survey built and distributed amongst some of the most used SNSs such as WhatsApp, Facebook, and LinkedIn. Since most of the constructs mentioned on the present study have already been individually surveyed, the majority of the items were adapted from already published literature. In the specific case of procrastination, building on published literature (Svartdal et al., 2016), two scales were used to measure this construct to understand both the rational (Pure Procrastination Scale) and irrational (Irrational Procrastination Scale) types of procrastination.

Before distributing the final version of the survey, a pilot questionnaire was launched to give room for adjustments to be made regarding the measurement instrument, reaching between 20 and 30 responses. After the necessary adaptations, the final survey was distributed which compiled the items showed in the table below.

Construct	Items	Sources
SNS Addiction (A)	A1. Using my favorite SNSs sometimes interfered with other activities A2. I have made unsuccessful attempts to reduce the time I interact with my favorite SNSs A3. Arguments have sometimes arisen at home because of the time I spend on my favorite SNSs A4. I think that I am addicted to my favorite SNSs since its use interferes with my: - Sleep A5. I think that I am addicted to my favorite SNSs since its use interferes with my: - Physical training A6. I think that I am addicted to my favorite SNSs since its use interferes with my: - Eating/Nutrition A7. I think that I am addicted to my favorite SNSs since its use interferes with my: - Job performance A8. I think that I am addicted to my favorite SNSs since its use interferes with my: - Social interactions A9. I think that I am addicted to my favorite SNSs since its use interferes with my: - Family time	(Mogbel and Kock, 2017)
Irrational Procrastination (IPS)	IPS1. I put things off so long that my well-being or efficiency unnecessarily suffers IPS2. If there is something I should do, I first do less important tasks IPS3. My life would be better if I did some activities or tasks earlier IPS4. At the end of the day, I know I could have spent my time better IPS5. I delay tasks beyond what is reasonable IPS6. I do not do everything I set myself to, even when I believe it needs to be done	(Svartdal et al., 2016)
Pure Procrastination (PPS)	PPS1. I delay making decisions until it's too late PPS2. Even after I make a decision, I delay acting upon it PPS3. I waste a lot of time on trivial matters before getting to the final decisions PPS4. In preparation for some deadlines, I often waste time by doing other things PPS5. Even jobs that require little effort, I find that I take days to get them done PPS6. I often find myself performing tasks that I had intended to do days before PPS7. I am continually saying to myself "I'll do it tomorrow." PPS8. I generally delay before starting on work I have to do PPS9. I find myself running out of time to meet a deadline or to execute a certain task PPS10. I cannot get things done on time PPS11. I am not very good at meeting deadlines PPS12. Putting things off till the last minute has cost me money in the past	(Svartdal et al., 2016)
Technology-family friction (TFF)	TFF1. The use of SNSs keeps me from my family and friends more than I would like TFF2. The use of SNSs takes up time that I feel I should spend with my family and friends	Luqman et al., 2020

	TFF3. The time I devote to the use of SNSs does keep me from participating equally in my non-work-related activities	
Technology-work friction (TWF)	TWF1. SNS use influences my school/job performance TWF2. I neglect school/job tasks to spend more time using SNSs TWF3. My school/job performance and concentration are negatively influenced by SNS use TWF4. I feel busy or rushed because of SNS use which influences negatively my school/ job performance	Luqman et al., 2020
Technology-personal health friction (TPF)	TPF1. I experience physical problems because of SNS use (e.g. exhaustion and sleep deprivation) TPF2. Sometimes I get exhausted from using SNSs TPF3. I have to sacrifice my personal time to keep up with new SNSs updates TPF4. Some SNSs features are invading my personal life	Luqman et al., 2020
SNS reduction intention (R)	R1. I believe the reduction of my SNS use would be beneficial for me R2. I predict I would be successful at reducing my SNS use R3. I plan to reduce my SNS use in the next 3 months	(Osatuyi and Turel, 2020)
Information overload (IO)	IO1. While spending an unusually large amount of time on SNSs, I sense that: - There is more information on SNSs than I can digest IO2. While spending an unusually large amount of time on SNSs, I sense that: - It is difficult for me to focus on the essential information on SNSs IO3. While spending an unusually large amount of time on SNSs, I sense that: - The amount of information on SNSs makes me overlook important information	Luqman et al., 2020

Table 1 – Measurement items

4.2. SAMPLE SELECTION AND DATA COLLECTION

The data collected reached a total of 314 responses with the sample showing various professional backgrounds but with the predominance of the Portuguese nationality (more than 90%). Further characteristics of the respondents can be seen on Table 2.

Variable	Sample value
Age	~41 years
Gender	65% Female and 35% Male
Nationality	98% Portuguese and 2% Other
Education	28% below college, 46% bachelor's degree, 25% master's degree, 1% PhD
Monthly Income	47% below 1.500€, 29% between 1.500€ and 3.000€, 12% above 3.000€, 11% choose not to disclose this information

Table 2 – Sample

The common method bias was examined in two ways. First, we used Harman's one-factor test and concluded that the first factor explains 44.1% of variance. This result means that none of the factors individually explain the majority of the variance. Second, we used the marker variable method and obtained a value of 0.017 (1.7%) as the maximum shared variance with other variables. This value is considered low. In that way, no significant common method bias was found.

5. DATA ANALYSIS AND RESULTS

In order to study the data gathered, the software SmartPLS 3.0 was used to run the research model while applying the partial least squares (PLS) technique to verify the validity and reliability of the model. Furthermore, a statistical analysis was conducted on the model's final results to compare them with the hypotheses previously assumed to access their validity.

5.1. MEASUREMENT MODEL

To support the Fornell Lacker criterion, the AVE square root of each construct should be higher than the correlation between the constructs, which is verified in this study. The simple exception is the correlation of Procrastination with Pure procrastination. This was expected since Procrastination is a second-order construct composed of Pure procrastination and Irrational procrastination.

Constructs	Mean	SD	CR	A	IPS	PPS	P	TFF	TWF	TPF	R	IO
Addiction (A)	1.83	1.12	0.94	0.82								
Irrational Procrastination (IPS)	3.48	1.74	0.94	0.53	0.89							
Pure Procrastination (PPS)	2.66	1.41	0.96	0.61	0.78	0.83						
Procrastination (P)	2.83	1.42	0.97	0.62	0.88	0.98	0.81					
Technology-family friction (TFF)	1.94	1.38	0.95	0.72	0.39	0.47	0.47	0.93				
Technology-work friction (TWF)	1.86	1.31	0.95	0.70	0.45	0.58	0.57	0.56	0.92			
Technology-personal health friction (TPF)	1.97	1.15	0.83	0.56	0.45	0.49	0.50	0.54	0.59	0.75		
SNS reduction intention (R)	3.72	1.91	0.91	0.50	0.40	0.41	0.43	0.43	0.44	0.56	0.88	
Information overload (IO)	4.38	1.62	0.86	0.27	0.38	0.30	0.34	0.15	0.22	0.23	0.22	0.82

Table 3 – Descriptive statistics, correlations, composite reliability (CR), and average variance extracted (AVE)

Notes – Values in diagonal (bold) are the AVE square root; SD = standard deviation

Regarding the loadings and cross-loadings of the statistical analysis, the items A2, A3, IPS1, IPS2, and PPS12 were deleted from the study due to the lack of indicator reliability. All loadings were above 0.7, except the item IO1, which is close to 0.7, which suggests a good loading pattern. The items between 0.4 and 0.7 need to be deleted if they affect other measures, such as the AVE and composite reliability, which does not happen in this study.

Constructs	Item	A	IPS	PPS	TFF	TWF	TPF	R	IO
Addiction (A)	A1	0.719	0.515	0.499	0.540	0.539	0.477	0.447	0.313
	A4	0.862	0.477	0.528	0.576	0.569	0.570	0.487	0.249
	A5	0.851	0.387	0.465	0.568	0.567	0.446	0.421	0.216
	A6	0.782	0.267	0.407	0.622	0.492	0.368	0.291	0.125
	A7	0.852	0.493	0.557	0.514	0.718	0.460	0.404	0.229
	A8	0.865	0.467	0.519	0.598	0.594	0.457	0.396	0.234
	A9	0.823	0.429	0.514	0.751	0.542	0.410	0.405	0.156
Irrational Procrastination (IPS)	IPS3	0.436	0.881	0.660	0.314	0.330	0.391	0.308	0.308
	IPS4	0.446	0.887	0.625	0.331	0.371	0.396	0.380	0.366
	IPS5	0.546	0.899	0.760	0.365	0.468	0.453	0.408	0.350
	IPS6	0.451	0.886	0.709	0.377	0.418	0.360	0.338	0.319
Pure Procrastination (PPS)	PPS1	0.528	0.566	0.774	0.361	0.478	0.345	0.315	0.212
	PPS2	0.512	0.583	0.802	0.342	0.479	0.358	0.322	0.236
	PPS3	0.541	0.726	0.833	0.434	0.443	0.406	0.372	0.299
	PPS4	0.540	0.655	0.871	0.430	0.531	0.410	0.405	0.225
	PPS5	0.499	0.679	0.862	0.385	0.521	0.481	0.374	0.260
	PPS6	0.444	0.707	0.835	0.378	0.447	0.411	0.305	0.201
	PPS7	0.420	0.684	0.832	0.306	0.422	0.325	0.259	0.308
	PPS8	0.522	0.729	0.871	0.404	0.549	0.454	0.446	0.282
	PPS9	0.520	0.644	0.820	0.403	0.461	0.471	0.352	0.236
	PPS10	0.553	0.597	0.836	0.448	0.503	0.379	0.290	0.264
	PPS11	0.472	0.491	0.772	0.386	0.439	0.395	0.279	0.189
Technology-family friction (TFF)	TFF1	0.603	0.308	0.389	0.902	0.439	0.397	0.319	0.089
	TFF2	0.711	0.398	0.487	0.933	0.581	0.573	0.454	0.162
	TFF3	0.685	0.371	0.419	0.941	0.528	0.514	0.401	0.144
Technology-work friction (TWF)	TWF1	0.580	0.341	0.466	0.448	0.866	0.508	0.382	0.149
	TWF2	0.647	0.423	0.537	0.514	0.939	0.518	0.393	0.226
	TWF3	0.659	0.423	0.525	0.502	0.937	0.523	0.434	0.243
	TWF4	0.676	0.451	0.587	0.590	0.921	0.617	0.404	0.193
Technology-personal health friction (TPF)	TPF1	0.491	0.402	0.484	0.460	0.571	0.820	0.478	0.209
	TPF2	0.392	0.426	0.418	0.337	0.411	0.811	0.500	0.220
	TPF3	0.369	0.231	0.238	0.449	0.405	0.630	0.312	0.013
	TPF4	0.404	0.249	0.264	0.396	0.363	0.709	0.356	0.212
SNS reduction intention (R)	R1	0.491	0.414	0.388	0.423	0.435	0.561	0.915	0.208
	R2	0.301	0.260	0.291	0.249	0.296	0.325	0.790	0.153
	R3	0.477	0.364	0.384	0.416	0.405	0.544	0.921	0.199
Information overload (IO)	IO1	0.119	0.250	0.167	0.029	0.113	0.142	0.145	0.697
	IO2	0.235	0.357	0.298	0.159	0.220	0.218	0.170	0.868
	IO3	0.276	0.318	0.259	0.151	0.203	0.201	0.208	0.880

Table 4 – Loadings and cross-loadings

Construct	A	IPS	PPS	TFF	TWF	TPF	R	IO
Addiction (A)								
Irrational Procrastination (IPS)	0.574							
Pure Procrastination (PPS)	0.648	0.828						
Technology-family friction (TFF)	0.785	0.423	0.499					
Technology-work friction (TWF)	0.752	0.482	0.611	0.600				
Technology-personal health friction (TPF)	0.673	0.534	0.560	0.662	0.705			
SNS reduction intention (R)	0.542	0.445	0.445	0.462	0.482	0.670		
Information overload (IO)	0.308	0.456	0.348	0.171	0.259	0.323	0.262	

Table 5 – Heterotrait-Monotrait Ratio (HTMT)

To confirm the validity of the formative constructs, the variance inflation factor (VIF) was used. The VIF value of each indicator should be lower than 5 to guarantee that a problem of collinearity does not exist which is the case in the situation with the maximum VIF value being 2.4. Thus, we can conclude that the formative constructs are valid.

5.2. STRUCTURE MODEL

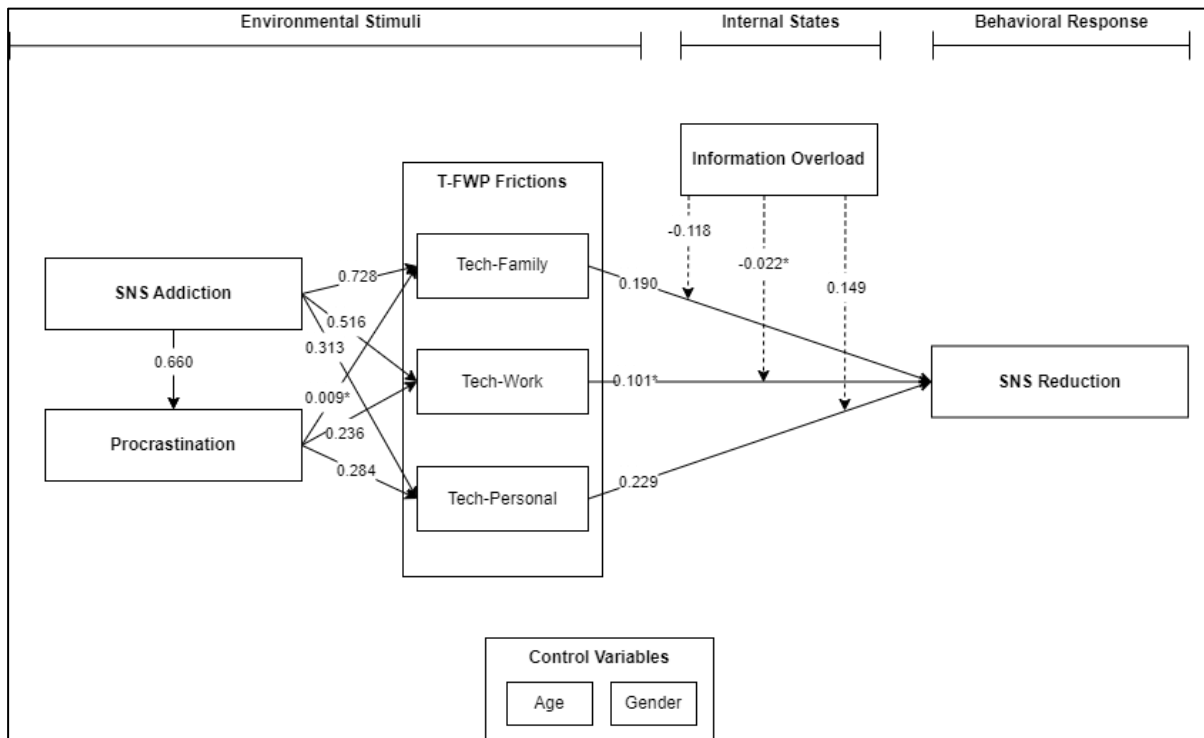


Figure 2 – Direct effects over the research model

Notes – * $p > 0.05$ (absence of * means that the hypothesis is statistically significant for the significance level of 5%)

By considering a standard confidence interval of 5%, we can take insights from the research model executed. SNS addiction construct is statistically significant on all its relationships ($p < 0.05$) and H1, H2a, H2b and H2c are supported, verifying the published literature. As for the construct of procrastination, this variable is also statistically significant for technological frictions with the exception for the technology-family friction ($\beta_a = 0.009$; $p > 0.05$). Hence, H3b and H3c are supported but H3a is not. Regarding the relationships between the T-FWP frictions and the decision to reduce use, both the technology-family and technology-personal health frictions are statistically significant but technology-work is not ($\beta_a = 0.101$; $p > 0.05$) which means that H4a and H4c are supported and H4b is rejected. Finally, the construct of information overload is not statistically significant for the relation between technology-work and reduction ($\beta_a = -0.022$; $p > 0.05$) and statistically significant for the relationships between technology-family and reduction and technology-personal and reduction. However, the model suggests that the construct of information overload actually has a negative effect on the relation between technology-family and reduction ($\beta_a = -0.118$; $p < 0.05$) which means that H5c is supported and both H5a and H5b are rejected. Overall, out of the 13 hypotheses assumed, 9 were supported by the data gathered.

6. DISCUSSION

The present research aimed to study the influence that SNS addiction has on procrastination adoption, the rise of technological frictions within one's environment and how does the moderator role of information overload acts upon the decision to reduce SNS use. Although there has been previously published literature on all of these concepts, there are very few papers that link them all in the same framework of study as it was the case in this paper. The research model, collectively with the data gathered, supported 9 of the 13 hypotheses assumed concluding that SNS addiction is a good driver for the adoption of procrastination.

The data gathered suggested that procrastination did not show significant impacts on the levels of friction felt within the user's family environment, meaning that when a SNS user procrastinates, it does not materially affect its relationship with its family. However, procrastination influences the user's well-being individually as the model showed that it impacts significantly the friction on its work and personal health life domains. Opposite to it, SNS addiction by itself highly influences the three technological frictions of the user, significantly impacting all its life domains, as supported by published literature. These results may suggest that an individual excessively postponing due tasks might not be seen as a disruptive act for the family environment but the fact that the user prioritizes SNS use disregarding family activities should be a cause for argument within this life domain. On the other hand, individuals feel that both behaviors, when having an excessive nature, negatively impact their well-being individually.

Analyzing the rise of T-FWP frictions, the relation between technology-work friction and the intention to reduce SNS use was not found to be significant, unlike the other two life domains. These findings show that the individuals surveyed only sense the need to take action if they feel that their family or their well-being is being threatened by SNS use. However, if individuals sense a poor job or school environments, there is not a feeling that changing their SNS use will alter their work/school performance and their workplace environment.

Information overload was the construct that showed more deviance from the hypotheses assumed. While there seems to be no significant influence on the relation between technology-work friction and the intention to reduce SNS use, the higher the state of information overload and the technology-family friction, the lower is the level of intention to reduce SNS use, meaning that information overload actually has a negative impact on this relationship. These findings may suggest that when there is a tense family environment, if a feeling of overwhelming with new information is sensed, the user actually decrease its intention to alter SNS use instead of driving the decision to reduce the use. On the other spectrum, as supported by published literature, the feeling of information overload drives the decision to reduce SNS use when the user's personal health is already poor. The feeling of losing cognitive capabilities, by failing to process new information, gives the user a sense of a worse well-being, amplifying the intention to take corrective measures towards the use.

6.1. IMPLICATIONS OF THE STUDY

From a theoretical perspective, this research has served to broaden our understanding of the behaviors of SNS addiction and procrastination by establishing a link between the two concepts. Applying the SOR theory was particularly useful to understand the relation between the two behaviors,

the rise of other stimulus (technological frictions, information overload) and the ultimate intention to reduce the use, contrary to prior research that focused primarily on discontinuance of use.

The study also provides practical implications for individuals to understand how behaviors such as SNS use and procrastination impact an individual's psychological state and, ultimately, its well-being (influenced by the outcomes felt within its life domains). Furthermore, the insights from the research conducted can also be of practical use for SNS providers to adapt their platforms and continue to develop them to better serve their consumers and, consequently, the digital society on which we live nowadays.

6.2. LIMITATIONS AND CONTRIBUTIONS

As previously mentioned, different underlying needs lead to different types of SNS use and, with the development of the market, each platform was developed towards a specific pool of users. The survey for this paper aimed to collect data to provide overall information regarding SNS use, the adoption of procrastination behaviors and the level of intention to reduce SNS use, making no specification regarding which platform the respondents used. Hence, future research could specify its study on specific SNS applications (such as Instagram, TikTok, YouTube, LinkedIn, etc.).

Building on the findings of this study, future research should also verify and extend the relationship between information overload and the family environment of the SNS user as in this paper we found that while technology-family friction drives the intention to reduce use, when the internal state of information overload is felt the intention to correct the use actually decreases.

The main contribution of this paper is the link established between procrastination and SNS addiction which is not often made in the field of study of IT addiction. The door was opened to discussion in this paper through the similarities between the definitions of procrastination and of the addiction symptom of conflict and, as to strengthen the argument, research was conducted on how habits form and how can SNS use become automatic to the level of users unconsciously deciding to postpone due tasks by prioritizing the use of this IT tool. Nevertheless, upon researching literature already published, this paper is only scratching the surface of the topic and future studies should deepen the research on the connection between the two behaviors.

Research should also be conducted as to understand if a SNS user must be addicted as to procrastinate through SNSs or if procrastination is achieved at earlier stages of the use (overuse or even at earlier stages, before the user reaches a stage of addiction).

Furthermore, future research should also analyze what makes SNSs so appealing to individuals who procrastinate. In this paper, the argument was made that this could be due to the fact that it takes a low amount of energy to use SNSs and that the reward of the usage is almost immediate which are key drivers for the formation of sustainable habits. Although there is already some published literature on the continuance intention of SNS use, there is still room to deepen the formation of SNS use as a habit.

Additionally, this paper not only showed the impact of SNS consumption within ourselves and the ones around us but also deepened the field of study by analyzing the reduction of use as a way to correct usage instead of the complete discontinuance, contrary to most of prior research. Finally, the present paper also contributes to the field of study by applying already used measures and models in a new

sample as to test the findings made on previously published research (different culture background – majority of the sample has a Portuguese nationality).

7. CONCLUSIONS

The research conducted aimed to study the existence of a link between SNS addiction, procrastination and the outcomes on the users' life domains.

The model presented in this study, analyzes the relationship between these concepts and the increase of intention to reduce the use when disturbances are felt within the user's environment, such as the technological frictions and the state of information overload. As a measurement instrument a survey was conducted to gather data to run the model proposed, while doing the necessary statistical treatments and tests on the dataset.

We concluded that SNS addiction is a driver for the adoption of procrastination and that both behaviors create technology frictions in users' lives (with procrastination not having much effect on the family domain). We also found that of these frictions, only the work domain seemed to not be significant as to influence the decision to correct use and opposite to what was expected, the state of information overload actually decreased the intention to reduce SNS use when it is felt within the user's family life domain.

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