When Technology Marginalises: A Critical Incident Analysis of User Exclusion

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Abstract: In the age of globalization and new technologies, we are witnessing the services digitalisation coupled with the marginalisation of some segments. This study aims to deepen our understanding of digital exclusion in the service sector and to analyse its impact on user responses. Based on a qualitative study using the critical incident method, participants were asked to describe a negative experience recently had when using a digital service.

The findings showed that digital exclusion refers to perceived digital inaccessibility, perceived inequity, skills gap and lack of autonomy. They also highlighted the feelings and experiences expressed by those affected, as well as the impact of perceived exclusion on their behaviour and coping strategies. Thus, the digital transformation is not merely a technical subject, but also a social one.

This study raises awareness among professionals about the importance of redesigning their websites and adopting hybrid solutions and support measures to maintain service quality and accessibility for vulnerable users.

Keywords: Digital exclusion; consumer responses; critical incident approach; digital journey, service

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Introduction:

As regards its usefulness in both personal and professional areas, digitalisation occupies an unrivalled position in society, which has become even more intense since the Covid-19 pandemic (Lachaud & N'Goala, 2023). The connected world brings economic and social progress, as well as performance for businesses (N'Goala, 2016), and it aims to ensure consumer well-being and a better quality of life (Edwards et al., 2018). In fact, in this global era, markets are converging towards common uses, practices, and standards, and several trends are emerging, including sustainable innovation promoting low-carbon technology, the inclusion of vulnerable people, etc. (N'Goala & Lachaud, 2023; Liu et al., 2025)

However, the impact of ICT (Information and Communication Technologies) use and digital behavior on various areas of social life is a real dilemma (Valenduc & Vendramin, 2006). Indeed, although the digital divide is tending to narrow, digital technology is still a vector of inequality, particularly in Tunisia, where "the level of digital inclusion is equal to 50". Differences in ICT access conditions, user practices, and service offerings have been highlighted. These gaps do not stem from a clear-cut divide but rather from the overlapping of a series of cleavages generating exclusion and marginalisation (Granjon, 2011). These discriminatory effects affect several areas, including consumption, i.e., conditions of access to existing goods and services, as well as the segmentation of markets for new services on the Internet (Valenduc & Vendramin, 2006).

Faced with such a situation, the phenomenon of exclusion represents a challenge for optimizing the design of digital pathways, which are facing difficulties in terms of use and accessibility, and which increasingly involve users. Practitioners can thus consider the repercussions of such a phenomenon, as perceived by consumers, to take appropriate measures and improve their designs (Fisk et al., 2018). Several questions deserve to be raised by researchers. (N'Goala, 2016).

This study is part of this dynamic. It aims to highlight the effects of perceived digital exclusion by providing an answer to the following

question: *"How does digital exclusion, as perceived by users, impacts their responses and behaviors*?".

This research seeks to deepen our understanding of the various aspects of perceived digital exclusion, and subsequently to understand the behavior of "excluded" people faced with stressful situations involving digital technology.

The structure of this paper is as follows. The first section is devoted to presenting the conceptual framework and state of the art on the concept of digital exclusion. The second outlines the qualitative approach adopted and justifies the use of the critical incident method. The third section presents and discusses the main themes and outcomes of content analysis. Finally, the last section is intended to propose practical implications for managers and stakeholders in the field as well as to address the limitations of the study and the prospects for future work.

I- The Conceptual Framework:

I.1. Perceived digital exclusion

The term "exclusion" is often used to illustrate problematic situations generating social disadvantage and disqualification (Hill & Stephens, 1997). Marketing literature describes exclusion as the situation of people who are unable to participate in consumer activities (Hamilton, 2012) and/or who experience discrimination (Saatçioğlu & Ozanne, 2013). This phenomenon is apprehended as an individual's deviation from the required criteria of "normality" (Shrum & Lee, 2012; Beudaert et al., 2017). Today, the advent of information and communication technologies (ICT) is bringing about a transformation of social norms and, consequently, of the factors leading to exclusion (Bauman, 2005; Park, 2017). Some researchers (Beauchamps, 2009; Dennis et al., 2016) have shown that certain information technologies reduce the feeling of social exclusion, but it has been assumed that Internet dissemination and use create diversity and inequalities among various groups in society, leading to the marginalisation of certain individuals (Cauchard, 2021). These disparities seem to depend on several socio-demographic aspects (gender, age, family composition, social class, income) and geographical factors. It is the overlap of

several gaps that is likely to lead to the digital divide or exclusion (Valenduc & Vendramin, 2006; Van Dijk, 2006; Lythreatis et al., 2022). For his part, Park (2017) states the existence of an emerging digital underclass that cannot be fully explained by existing socioeconomic factors.

This specific exclusion phenomenon reflects a lack of digital inclusion, which refers to the individual's degree of participation and enjoyment of the digital opportunities presented to them (Brotcorne et al., 2019). Some researchers have established typologies of the Digital Divide. This can be either involuntary (internet non-users who are unable to access the internet due to a lack of material resources or skills) or voluntary (people who choose to stay outside the Internet world due to a previous disappointing experience) (Granjon, 2011). By distinguishing between a first-order and a second-order divide, Valenduc & Vendramin (2006) argue that the divide does not lie in access to the Internet (first order), but in the different skills required for users to take advantage of the information and services offered. These are mainly instrumental skills (handling hardware and IT tools), structural skills (familiarity with new ways of accessing content: comprehension, analysis and selection) and strategic skills (active search and use of information for decision-making).

Drawing on the "anthropocentric" Innovation Diffusion Theory, Rogers (1950) identified three main factors that contribute to the diffusion of innovations and noted the way in which users mobilise material, social, and physical resources that aren't evenly distributed throughout society. Furthermore, based on perceived justice theory (Tax et al., 1998), Vodoz (2010) identified types of individuals or social groups likely to experience some degree of exclusion from the information society by establishing a correlation between social and digital levels of integration. To this end, it focused on three dimensions to assess a system's fairness: Access to information and communication technologies (internet connection, costs, computer access), as well as the social and technical skills required to use these technologies, and content access (ability to exploit the technical, informational, and communicational assets provided by the information and communication technologies).

This perspective has been expanded by recent research which has introduced the concept of perceived digital exclusion, referring to the individual's feeling of being left out of the digital world, regardless of their access or skills (Heeks, 2021). This emphasises the psychological and social aspects of exclusion rather than purely material inequalities. If digital divide theory provides an essential framework for understanding the origins of this phenomenon, Heeks (2022) proposes the "Adverse Digital Integration" model to move beyond this dichotomous view. This is because digital inclusion can itself generate disparities when it is perceived as a constraint, as certain connected consumers may feel excluded due to the difficulties of benefiting from the opportunities offered by digital technologies.

Several studies (Zhang, 2013; Bartikowski et al., 2018; Heeks, 2022; Wang et al., 2023) have confirmed the economic and social effects of this perceived divide. They argue that perceived digital exclusion is a psychological and emblematic form of inequality, based on the loss of legitimacy in the digital world and social comparison.

I. 2. Users' coping strategies

With all forms of exclusion, the user is bound to feel stigmatised (Beudaert et al., 2017). To alleviate this feeling, he or she tends to mobilise coping strategies (Hill & Stephens, 1997) managing specific external and internal demands that exceed the person's resources. Such strategies involve cognitive changes and behavioral efforts (Lazarus & Folkman, 1984) .

In exploring consumers' experiences of exclusion during digital journeys, we aim to determine their responses and coping strategies.

I.2.1. Cognitive reactions

On a cognitive level, perceived digital exclusion often translates into reduced consumer confidence in technologies and brands (Akhter, 2003). Users perceiving themselves as "technologically incompetent" doubt their ability to adapt, thereby fostering a sense of technological injustice. The theory of perceived justice (Tax et al., 1998) is also relevant in this context. It suggests that a system's fairness is assessed based on compliance with distributive, procedural, and interactional dimensions. In the same vein, Ullah et al. (2025) show that digital

literacy directly influences the perceived usefulness and ease of use of digital platforms. This utility has also been raised in its interactions with trust in TAM (Gefen et al., 2003).

I.2.2. Affective responses

The perceived digital exclusion leads to intense emotional reactions such as frustration, shame, fear, or stress (Tarafdar et al., 2011; Bartikowski et al., 2018). These emotions stem from the confrontation between the challenging digital environment and the user's perception of his inability to cope effectively with it. The mechanism behind these reactions is rooted in self-determination theory (Deci & Ryan, 2000). Indeed, the feeling of digital exclusion threatens three fundamental psychological needs: competence (inability to use digital tools), autonomy (lack of control over digital participation), and belonging (feeling of being excluded from a social group that is connected). As such, the perception of injustice and digital dependence can cause emotional distress that deeply influences consumer satisfaction and loyalty. Wang et al. (2023) show that this digital anxiety reduces households' propensity to consume and amplifies welfare inequalities.

Along the same lines, Technostress Theory (Tarafdar et al., 2011) explains that continuous exposure to digital technologies can lead to chronic stress, linked to information overwhelm or a feeling of loss of control. In several countries, Internet access also seems to have an impact on consumers' well-being and sense of belonging. (Bartikowski et al., 2018).

I.2.3. Behavioral responses

In terms of behavior, consumers respond to digital exclusion with a variety of coping strategies. According to the theory of resistance to innovation (Ram & Sheth, 1989), these behaviors constitute a form of identity defense against a perceived innovation threat. People may actively resist new tools or delay adopting them for fear of failure or stigmatization. For others, they simply avoid potential issues by sticking to traditional channels or by delegating digital transaction management to their friends or family (Shi et al., 2023).

Finally, some others develop compensatory strategies by seeking physical and human interactions to preserve their sense of control and competence. These behaviors are often associated with reduced loyalty and negative word of mouth toward brands perceived as "exclusionary".

II– Methods and Materials:

To provide an in-depth understanding of the notion of digital exclusion and to grasp its consequences, we opted for the critical incident method.

After outlining the methodology adopted, the data collection and processing procedure will be presented.

II. 1 The critical incident method :

The critical incident method is a valuable tool in inductive research (Bitner et al., 1990). It is "a set of procedures for collecting direct observations of human behavior in such a way as to facilitate their potential usefulness in the solution of practical problems and the development of broad psychological principles" (Flanagan, 1954). Among the advantages of this method is that it enables us to study attributes that are salient to consumers, and to deepen our understanding of certain phenomenon by generating process descriptions (Bitner et al., 1990), which is in line with our main objectives. Indeed, by prompting respondents to tell a "story" about experiences, this approach relies on their description of an event as they have perceived, interpreted, and remembered it (Bitner et al., 1990; Pellat, 2010). In this way, we get a rich and detailed description of their experiences (Edvardsson, 1992; Gremler, 2004). This brings us closer to everyday conversations between acquaintances (Pellat, 2010).

To be classified as critical, an incident needs to meet several conditions: it must be extremely satisfactory or very dissatisfactory, involve interaction between the consumer and the service, involve the event's conative aspect as well as the individual's perception, and provide enough detail to be perceived by the respondent (Bitner et al., 1990; Roos, 2002). Far from this dual society metaphor with

inclusion/exclusion processes and dialectics creating the excluded (Brotcorne et al., 2010), we are inclined to admit that "there are no excluded people per se " (Schnapper, 2007) and to acknowledge the relative nature of exclusion. This feature is a further reason for adopting the critical incident method, designed to examine the dynamics of phenomena.

Several techniques have been used to collect critical incidents: questionnaires (with open-ended questions), in-depth interviews and focus groups (Edveardsson, 1992; Johnston, 1995; Wong & Sohal, 2003).

II. 2 The sample

We settled on 6 group interviews whose characteristics are illustrated in Appendix 1. Considering the ephemeral nature of digital uses and the changing nature of vulnerable people in this regard, we did not exclude young people (especially students) from our sample.

A moderation guide was prepared to ensure that the meetings ran smoothly. First, participants were invited to talk generally about their digital experiences. Next, they were invited to describe a recent negative incident they had experienced when using a digital service, and then to describe their affective reactions as well as their behaviors observed afterwards. Some students opted to describe their stories on a sheet of paper in Arabic or French. Five respondents could not remember any critical incidents. Respondents' stories were entirely transcribed. We were thus able to collect 57 incidents.

II. 3 Data analysis

Several procedures were used to analyse the content: thematic analysis (to identify discourse competencies), lexicometry analysis (to evaluate the relative weight of discourse units) and contingency (or co-occurrence) analysis (to reflect associations between discourse elements).

III- Results and discussion :

This section presents the results of the survey.

III. 1 A typology of critical incidents shaping perceived digital exclusion

A closer reading of the discourse collected allowed us to extract certain facets of digital exclusion that are likely to spark reactions among respondents. Three major categories of critical incidents were identified: perceived digital inaccessibility, perceived inequity of digital experience, and lack of user competence and autonomy.

III.1.1. Perceived digital inaccessibility

This refers to the user's negative assessment of the various devices available in his environment (infrastructures, networks, subscriptions, internet, smartphones) preventing the maximization of his digital experience and perceived value. It refers to the primary digital divide (related to access to information and communication technology equipment). This facet was invoked by most respondents (39.5%), particularly young people. As an example, we can mention the statements of this participant: " *It seems that the cause of this problem lies in the state of my smartphone. Some websites, such as the online registration site I mentioned, require higher-quality devices to better access their interfaces"* (Student).

The emergence of this aspect of digital exclusion contradicts certain researchers' opinions (Brotcorne et al., 2010), who assert that the obstacle of access to ICTs has been overcome and that attention has increasingly shifted to social inequalities related to their use. Indeed, disparities in terms of access to ICT persist in the Tunisian context.

III.1.2. Perceived inequity

It is also interesting to see how users evaluate devices made available to them compared to those provided to other users, as these interviewees put it: "*I had a very important event (my fiancée's birthday) and I had to book a restaurant in a hurry; but they refused, proclaiming that I would have to make a reservation in advance via the IJA app; so you see how people are pushed aside thanks to technology, which is intended to make our lives easier* ".

These findings therefore corroborate those of Cauchard & N'Goala (2023), who considered perceived external equity as a dimension of the digital inclusion scale.

III.1.3. Skill gaps and Autonomy constraints

Autonomy is often cited by respondents (42%). It illustrates people's assessment of their ability to handle their knowledge freely and independently to benefit from their digital experiences. Among the verbatims illustrating this aspect, the following comments can be noted: *" ... But, unfortunately, since I'm not very in and I don't have anything to do with technology, I was obliged each time to divulge my secrets and my projects, i.e. my schedules, my dates of departure and return, just because they had to help me book a suitable flight ...* " (Executive).

This dimension is mainly raised by older users with a low level of secondary education. This is consonant with previous research (Valenduc & Vendramin, 2006) that has considered the lack of autonomy as an aspect of second-degree fracture.

III. 2 The impact of digital exclusion on user responses

To investigate the impact of digital exclusion as perceived by respondents following the critical incidents reported, we conducted a contingency analysis. Appendix 2 illustrates the associations resulting from this analysis. To better assess the meaning of these associations, this analysis was followed by a thematic analysis through the illustrated verbatim.

III.2.1. Affective responses

Considering the association analysis, digital exclusion seems to elicit negative emotional reactions. These may be grouped into sub-themes: anger (eg. *"I was beaten on the nerves"; "I typed everywhere out of anger"; "I can't control myself" ...*), disappointment and perceived value destruction *(eg." Unfortunately, I consider this procedure unnecessary; I felt deceived; I was disappointed because it was taking up all my energy and time"*), stress (*terrible moments, I didn't feel at ease; it's tiring; you have no idea what's going on in my head; what terrible moments; Is it worth the cost?*) and shame (eg. *It's*

disappointing; I was ashamed; I even started to cry; I felt like I came from another world, out of place; It's disappointing to find myself left out). These findings are in line with previous research (Backer et al., 2005; Ford et al., 2016; Beudaert et al., 2017) by assuming that vulnerable consumers are more likely to express psychological distress, anxiety, low self-esteem, a deterioration in quality of life, and to negatively evaluate the service quality.

These results are consistent with the intercultural analysis proposed by Papadopoulos et al. (2023), suggesting that subtle forms of exclusion are culture-specific and they can lead to techno stresses, anxiety about privation, fraud, and inappropriate behavior.

III.2.2 Behavioral responses

Furthermore, the results show that exclusion is likely to trigger users' conative and behavioral reactions, such as renouncing the service *("don't let them disrupt our lives; I've already uninstalled the application...")*, spreading negative word-of-mouth as a form of compensation for psychological discomfort *("I've told my friends about my bad experience; I told other people I knew who were using the same service as me; I have a lot of complaints"*), looking for other alternatives *("far from this back and forth in vain, it would be better to consult the administration directly")*, asking for help *("unfortunately, I always find myself obliged to ask for help"; "so that she can help me"; "I urgently contacted my sister-in-law"...)* and delegating *("to avoid the headache").*

Accordingly, these critical situations reflect an "action paralysis" that triggers value destruction strategies, as suggested by Cauchard (2023). This concurs with several researchers too (Backer et al., 2005; Falchette et al., 2016; Ford et al., 2016; Chouk & Mani, 2016; Beudaert et al., 2017).

Besides, it has been noted that people from low-uncertainty tolerance cultures tend to reject unconventional behavior and to avoid any risks, especially those likely to compromise their privacy or safety. Accordingly, this lies in with literature (Wang & Liu, 2019) and more particularly with the Theory of Resistance to Innovation (Ram &

Sheth, 1989) which emphasises that users are likely to develop defense mechanisms against eventual innovation threats.

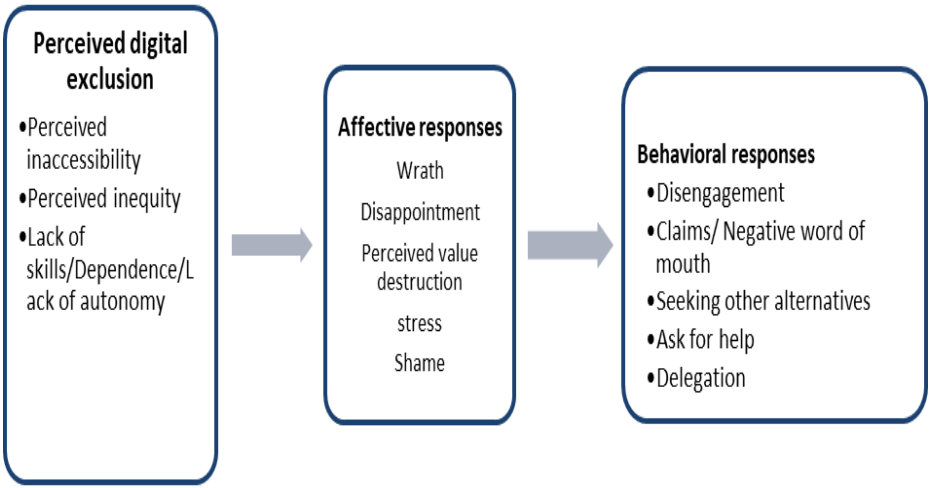
In general, in terms of users' affective responses, those who perceived digital inaccessibility and inequity were more likely to experience anger (25 occurrences), disappointment and perceived value destruction (9 occurrences), while those who perceived a lack of digital skills were more likely to express shame (11 occurrences) and stress (22 occurrences).

As for behavioral responses, perceived inaccessibility and inequity are more associated with foregoing service and complaining, while the less qualified seek help (16 occurrences), delegate (13 occurrences) and opt for other alternatives (12 occurrences). These distinctions seem to be inherent to the user profile.

Finally, by combining these proposals for causal relationships, we tend to assume that digital exclusion, as perceived by users, triggers adaptive responses to reduce vulnerability (Wünderlich et al., 2020). Accordingly, it seems that digital transformation is not simply a technical subject, but also a social one. Several theories relating to innovation are thus confirmed, notably the theories of Innovation Diffusion (Rogers, 1950) and the Perceived Justice Theory (Tax et al, 1998). In the same vein, the findings are consistent with the model of "Adverse Digital Inclusion" (Heek, 2022), revealing that digital inclusion might, in its turn, give rise to exclusion due to the perceived barriers faced.

These relationships are summarised in the model below. The profile of users is also relevant to explore, as we have pointed out that exclusion and, consequently, its impact depends on certain user characteristics (age, level of education, residential area, digital anxiety).

Figure (1): Proposed Conceptual Model



Conclusion:

From a theoretical stoned point, this research contributes to a better understanding of users' reactions and insights when they use digital services. This goes beyond the simple perspective that the phenomenon is merely a consequence of objective inequalities (access issues, knowledge gaps, and skills gaps in current digital devices). In fact, users' reactions to digital pathways are rather based on their own perception of exclusion. This represents the main theoretical contribution of our research.

The multidimensional structure of perceived exclusion is also highlighted. It reflects the perceived digital inaccessibility, perceived inequity, skills gap and lack of autonomy.

From a practical standpoint, this study shows the importance of developing sustainable services within a massive digitization context. For example, the perceived inequality and dependence experienced by vulnerable individuals leads us to recommend that companies should engage in meaningful dialogue with users to identify issues associated with perceived exclusion. Also, companies risk amplifying inequalities by marginalizing consumers with less technical expertise.

This study is therefore useful in raising awareness among professionals about the importance of considering the design of their websites. To do this, they must focus on solutions that work for vulnerable users (Rosenbaum et al., 2017). Brands must therefore design hybrid, simple, and empathetic customer journeys that can restore a sense of fairness and belonging (Papadopoulos and Cleveland, 2023). It is also recommended that a human presence be established in addition to the technological devices put in place. This includes free access to paper documents (forms, invoices, contracts, etc.) and direct or telephone contact with agents to file a complaint or make a request, etc.

An effort at segmentation is therefore necessary on the part of professionals to personalise their offerings. It's about ensuring their inclusion, their perception of fairness, as well as their well-being and the co-creation of value (Vodoz, 2010), all within a TCR (Transformative Consumption Research) approach (Blak & Gallan, 2015). This approach aims to improve and modify service to maximise the perceived value and well-being of all consumer entities concerned (Rosenbaum et al., 2011; Anderson et al., 2013). As illustrated in Appendix 3, identifying the different profiles of digitally excluded individuals allows us to determine how they adapt and then the managerial implications. The table illustrates only a preliminary attempt at classification.

This research also has social implications for the government, which is responsible for combating digital exclusion and supporting such population segments. Companies, whether public or private, which fail to include all their customers, risk damaging their ethical reputation and losing these stigmatised segments. Nevertheless, by placing greater emphasis on inclusion, they reduce the costs of their services, as well as the number of incidents and failures.

Despite the attractiveness of this research, it's not exempt from several limitations. Firstly, the results of this study are based on a small number of critical incidents, which restrict the generalization of the findings. This study could therefore be supplemented by a quantitative study or typological analysis providing an in-depth segmentation of

digital exclusives in Tunisia, to propose appropriate managerial implications.

A second limitation relates to the method of data collection, which calls into question the memory of the participants. Individual filters and emotions need to be considered.

Moreover, perceived digital exclusion depends on the user's profile and the situation encountered. Further research could therefore take this into account for a better understanding of the phenomenon. An experimental approach would be an interesting way of rethinking all the parameters involved in the digital experience.

Furthermore, recent studies (Lythreatis et al., 2022) reveal that a new shape (type of Internet access) and two potential new levels of digital divide (algorithmic awareness and data inequality) have been identified. Future work could focus on this topic.

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Appendices:

Appendix 1: Focus group session details

Initials	Gender	Age	Region	Occupation	Familiarity with technology
Session 1 (N=11 students) / Faculty of Economics and Management of Mahdia/ mean duration 1H					
Session 2 (N=12 students) / Faculty of Economics and Management of Mahdia/ mean duration 1H					
Session 3 (N=10 students) / EIMS Business School Sousse/ mean duration 1H					
Session 4 (N=9 participants) / mean duration 35mn					
Session 5 (N=10 participants) / mean duration 40mn					
Session 6 (N=10 students) / FSEG Mahdia/ mean duration 1H					
TOTAL : 62 participants					

Appendix 2: Digital exclusion's impact on users' affective and conative responses

Exclusion	Affective reactions	Behavioral reactions
Inaccessibility	Anger/ Boredom: Freq[1]=25 / CR (+)	Disengagement/ Renunciation of service: Freq=18 / CR (+) Complaints/negative word of mouth: Freq=5 / CR (+) Looking for alternatives: Freq=12 / CR (+)
Perceived inequity	Disappointment / Perceived value destruction: Freq=9 / CR (+)	
Lack of autonomy	Stress: Freq=22 / CR (+) Shame/under-esteem: Freq=11 / CR (+)	Asking for help: Freq=16 / CR (+) Delegation: Freq=13 / CR (+)

[1] Freq: Frequency; CR: Suggested causal relationship; (-): Negative relationship

Appendix 3: An attempt to classify digital excluded and their adaptation modes

Who ?	What (Needs/Motivations/Problems)	Adaptation	Managerial and social implications
Individuals (young people/seniors) with access difficulties to online offers: lack of hardware / internet network	-Access to a connection. -Regular and easy access.	Search for other alternatives (off-line services/offer)	Guaranteeing a hybrid offering to ensure access to services (rural areas, priority neighborhoods, etc.) **Social implications:** The State is responsible for improving internet coverage throughout Tunisia.
Individuals (seniors/adults) with ICT difficulties	- Need for support -Handling ICT independently -Searching for functionalities that work smoothly -Difficulty in using digital technology for administrative or commercial purposes, despite ease of use on social networks	-Seek assistance ("'friends / acquaintances / social networks") -Learn how to take care of the necessary paperwork online	-Simplify site and interface design -Provide a human presence -Launch tutorials illustrating procedures and offers.
The reluctant (voluntary exclusion)	- Unaware of the appeal of online offers -Keeping their comfort zone	-Minimize risk by making do with existing offers and services	- Mobilize mobile communications as an infrastructure for delivering online services -Launch and promote online services (ergonomic, secure interfaces) -Reassure Internet users about the use of their data and payment methods - Access paper documents (forms, invoices, contracts, etc.) free of charge, -Benefit from direct or telephone contact with agents to lodge a complaint or make a request...). **Social implications:** -Promote digital culture -Raise awareness of the importance of digitalization -Establish interoperable and interconnected online offers and services