

Examining B2C Relations Amid Health Crises: ICT's Role in Navigating Proximities

Pierre Daniel INDJENDJE NDALA*

Ph.D. in Management Sciences, Lecturer and Researcher at the Institut Supérieur de Technologie (IST), Head of the Computer Science and Management Research Laboratory (LARSIG), Libreville, Gabon.

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Corresponding Author:

Pierre Daniel INDJENDJE NDALA, Ph.D. in Management Sciences, Lecturer and Researcher at the Institut Supérieur de Technologie (IST), Head of the Computer Science and Management Research Laboratory (LARSIG), Libreville, Gabon.

ABSTRACT

A health crisis disrupts the usual close B-to-C relationship, imposing confinement and curfews to protect the population. The introduction of digital technology and the use of ICTs make it possible to revisit this relationship, which becomes virtual. The aim of this paper is to show that the use of ICT introduces an antagonism or a concordance between virtual proximity and physical, social, psychological and emotional proximity. Our methodological approach is quantitative. The primary data come from a questionnaire administered to 160 customers randomly interviewed in Gabon. We used the Logit binary regression technique in SPSS software. The results show that the use of ICT during a health crisis contrasts virtual and social proximity and reconciles virtual proximity with physical, psychological and emotional proximity.

Keywords : *B to C relationship, Health crisis, ICT use, Proximity antagonism, Proximity reconciliation.*

1. INTRODUCTION

During a health crisis, for example, the COVID-19 pandemic and the confinements decided by the States led to an increase of between 24% and 32% in daily downloads of mobile finance applications in 74 countries included in a sample (Nu-CE, 2020). "While in 2012, 95% of solicitations were made by telephone, today the situation has changed [...] 55% now come from digital channels such as SMS or email. This is a guarantee of an improved customer experience, one of the biggest issues in customer relations today.

During a health crisis, close customer-business or customer-client relations are revisited as a precautionary measure to avoid the spread of the disease. These measures include social distancing, physical distancing, the wearing of masks, the use of hand gel and ICTs, curfews and the confinement of populations. "These periods of confinement, gradual recovery and re-confinement, even if experienced differently, affect people emotionally. These periods of health crisis require managers to mobilise their emotional skills and develop a relationship of trust" (Frimousse & Peretti, 2020). This paper looks at the use of ICT during a health crisis and B-to-C proximity.

The use of new information and communication technologies (NICT) facilitates customer relations. As a result, the importance and number of virtual teams is growing considerably (Gibson & Gibbs, 2006). Bergadaà & Laaroussi (2001) find that the relationship between producer and consumer is not based exclusively on a commercial exchange because of the widespread use of ICTs, which can take place at a distance. Increasingly, the customer-business relationship, which used to be face-to-face in situ, is starting to become virtual. Proximity is a decisive strategic indicator in the management of customer relations, particularly between the customer and the company, and needs to be studied by integrating a new concept linked to the use of ICTs and a new parameter - the health crisis.

Proximity is used in the business world as a strategy because it has virtues of its own. It has been shown that the positive effects of proximity lead to the emergence of B-to-C relationships based on trust. However, it has also been shown that too much proximity, particularly cognitive proximity (Broekel & Boschma, 2012), can reduce firms' capacity for innovation when the knowledge bases of the different players are too similar (Nooteboom & al., 2007). This shows that proximity can carry the seeds of vice. Management researchers have been examining the notion of proximity for more than four decades (Kadushin, 1962 ; Loewen, 1969 ; Knight & Bair, 1970 ; Mc Allister, 1995 ; Laut, 1998 ; Mayoukou & Ruffini, 1998 ; Bergadaà & Laaroussi, 2001 ; Beardsley & al., 2003 ; Heinz & al., 2003 ; Dampérat, 2006 ; Bergadaà & Del Bucchia, 2009 ; Gomez & al., 2011 ; Kane & Sall, 2013 ; Audigier, 2014 ; Audigier & al., 2016 ; Labbé-Pinlon & al., 2016 ; Frimousse & Peretti, 2020 ; Alaoui & Cova, 2021). ICT has brought this subject back into the spotlight.

The concept of proximity is strongly based on the human element, which remains central to the customer relationship (Pozza & Texier, 2017). There is a new relationship at a distance but close to

customers (Pozza & Texier, 2017). Comparing the notions of distance and proximity offers a relevant vision of the relationship that opposes these two principles to circumscribe the different meeting spaces and understand how they are organised (Laut, 1998), all the more so in a period of health crisis. We take a processual approach to the crisis in terms of its incubation, its 'development dynamics' (Forgues, 1996) and its end. We adopt a crisis centre posture in the following crisis phases: challenge, equilibrium/change and post-crisis. We are more concerned with prevention, capitalisation and learning. The aim is to develop the capacity to respond to new crises on the basis of past experience (Baum & Dahlin, 2007). The commercial world is a place of exchange and social encounters where the commercial relationship which leads to the sensation of proximity deserves to be studied and clarified (Laut, 1998).

As far as we are concerned, we are studying proximity in the B-to-C relationship during a health crisis, and more specifically, we are studying proximity from the point of view of the use of ICTs during a health crisis. We are focusing on local shops or shops selling everyday consumer goods. We are also looking at all the virtual or digital spaces that can be accessed via the internet or text messaging, and all the digital platforms that offer products and services online and manage customer relations remotely. The tools used are capable of reproducing the same characteristics of the physical proximity experienced by the company (Pozza & Texier, 2017).

So we are asking the question "what are the effects of the use of ICTs induced by a health crisis on the B to C proximity relationship? In other words, we are trying to explain whether the use of ICTs during a health crisis brings customers closer or further away from the commercial enterprise. The aim of this paper is to show that in times of health crisis, such as those affecting the respiratory tract, in the B-to-C relationship, virtual proximity can be in opposition to or in harmony with physical, psychological, social and emotional proximity on the one hand, and virtual proximity can be in opposition to or in harmony with these same proximities on the other. The framework we adopt to answer the research question presents the conceptual framework, followed by the methodological approach, then the presentation of the results, which we discuss, followed by the managerial contributions, before concluding.

2. CONCEPTUAL FRAMEWORK

We present the B-to-C relationship in the context of a health crisis, then the notion of B-to-C proximity, and finally we infer research hypotheses.

2.1. B-to-C relations during a health crisis: use of NICTs

The "customer-company" or B-to-C relationship is defined as "the mutual recognition of a special status between the partners in the exchange" (Czepiel, 1990). This notion of relationship is rooted in the intersection of a human factor, a temporal factor and a proximity factor (Dampérat, 2006). Customer

relationship management is a tool available to companies to help them create a deep and lasting relationship with their customers and consider themselves "close" to them (Khalil & Khalife, 2015). This makes it possible to build relationships of trust and develop close relationships with these customers, which strengthens loyalty (Khalil & Khalife, 2015).

The context of the health crisis calls for the adoption of precautionary measures. Companies are making hand-washing gel available to customers, requiring them to wear masks or to check that they are wearing them, and using digital tools to avoid breaking off relations with customers. A health crisis has accelerated the implementation of remote customer relations to avoid the risk of contamination. In fact, a health crisis leads to changes in attitudes and behaviour in the relationship between the customer and the company, in particular a reduction in visits to shops and shops. The implementation of protective measures such as social distancing, verbatim abuse used instead of physical distancing, the use of hand gel and the use of new information and communication technologies (NICT) make it possible to maintain the customer-business relationship. Tournebise (2020) argues that while waiting for remedies to be found, it was vital to adopt practices such as barrier gestures, wearing masks, observing 'social distancing', and washing hands to avoid mass contamination. However, the customer must be at the heart of the strategy. One novelty is the management of mobile customer relations, where the customer has a face-to-face relationship at the same time as being connected to the company's central server. This encourages B-to-C relationships.

A B-to-C relationship is based on the customer's relative proximity to the company they are working for. Post-crisis management is a good alibi for managing proximity (Bley, 2020). Proximity" refers to a retail outlet frequented by customers living a short distance away. In the figurative sense, proximity refers to contact with local realities, close to everyday concerns (Larousse). Proximity, the time it takes to listen, customer satisfaction, employee motivation and the development of a sense of belonging to the company convey a very positive image that gives prospective customers confidence. However, a health crisis creates an atmosphere of mistrust, fear and caution in relation to the risk of massive contamination, which tends to put the brakes on close B-to-C relations. A B-to-C relationship is based on the customer's relative proximity to the company they are working for. Post-crisis management is a good alibi for managing proximity (Bley, 2020). Proximity" refers to a retail outlet frequented by customers living a short distance away. In the figurative sense, proximity refers to contact with local realities, close to everyday concerns (Larousse). Proximity, the time it takes to listen, customer satisfaction, employee motivation and the development of a sense of belonging to the company convey a very positive image that gives prospective customers confidence. However, a health crisis creates an atmosphere of mistrust, fear and caution in relation to the risk of massive contamination, which tends to put the brakes on close B-to-C relations.

People are moving away from each other to avoid becoming contact cases that spread and transmit the disease. The business environment has been turned upside down. The customer-business relationship can no longer be as fluid as it was before the health crisis. Characterised by containment, social distancing and other barrier measures, a health crisis puts organisations to the test of ICTs in a globalised system (Traoré, 2020). The author adds that this gives some credence to virtual meetings in companies. The more affluent and digitalised companies maintain customer relations at a distance.

ICTs are playing a very important role in the development of B-to-C exchanges, which are moving away from transactions towards relational and continuous aspects, enabling interactions between a customer and a company (Audigier & al., 2016). These customers must also take precautions to ensure that the customer-company relationship is as close as possible. The use of NICTs makes the virtual proximity of the customer-business relationship possible. Ardisson (2020) argues that virtual communication has become important, including in production facilities. Customers continue to feel close to the company virtually, even if they are physically far away. So the customer-company relationship is not interrupted. During a health crisis, customers adapt to a more digital relationship with the company. This gives them psychological and emotional confidence in their B-to-C relationship.

2.2. Virtual proximity and other proximities in times of health crisis

Proximity is a strategic concept in customer relationship management. It is considered to be the opposite of distance or remoteness. According to Talbot (2015), the proximity approach is more a heuristic than a theory. In our context, we are talking about B-to-C or customer-business proximity. Moreover, the health crisis context allows us to retain and distinguish, in this paper, psychological proximity, social proximity, emotional proximity, physical proximity and virtual proximity. During a health crisis, the psychology and emotions of individuals are called into play for fear of being contaminated or for fear of contaminating others. They are wary of frequenting in person common places such as shops etc. Individuals use digital tools, the internet, social networking platforms, etc. to maintain and continue B-to-C relationships. Thus, relationships of physical proximity are being replaced by relationships of virtual proximity. Pozza & Texier (2017) note that in a rapidly changing world, the customer relationship of the future will be remote. We are entitled to ask which distances are involved? In this research, we focus our attention on its corollary, the notion of proximity. Distance and proximity are two sides of the same coin. Proximity reflects a relational state that manifests a need for closeness (Laut, 1998). The author stresses that proximity is a state and a feeling. He postulates that there is no such thing as proximity, but rather feelings of proximity that differ according to individuals and their various affiliations. Experiments carried out in supermarkets and teleshopping show that there is not one proximity but many (Laut, 1998). We will develop the different proximities one after the other in order to understand them better, in the spirit of comparing virtual proximity with the others.

-Psychological proximity is an individual's psychological and subjective perception of the proximity of an object or person who may, not be physically present (Pozza & Texier, 2017). Hamilton (2015) defines psychological proximity as the gap between the present and the future, or the idea we have of something and the experience we have of it. The author supports the idea that when psychological proximity is low, we tend to think in more abstract terms, focusing on the big picture. Conversely, when psychological proximity is high, our thinking is more concrete, we focus on the details and how we will use them. Alaoui & Cova (2021) point out that consumers change their level of construction, moving from the abstract to the concrete, when they do not feel psychological proximity. Participating in maintaining a sense of belonging to the company is a form of psychological proximity. Mc Allister (1995) mobilises psychological proximity and the frequency of interactions in exchange relationships which favour the sharing of common interpretations. We do not take into account the social or spatial dimension of psychological proximity in this paper.

-Social proximity is defined as "feeling close to someone" (Trope & Liberman, 2010), as the closeness and similarity between the "self" and "others" (Pronin, 2008), as the similarity between the people around us, as the similarity felt with others (Liviatan & al., 2008). Social proximity is defined by the economic relations between actors, inserted into social relations (Granovetter, 1985). According to Dampérat (2006), social proximity corresponds to the customer's personal appreciation of the social dimension of exchanges, which is characterised by significant affective content. Social proximity is the more or less pleasant nature of relationships (Dampérat, 2006) and concerns the customer's judgement of the fact that the staff in contact are friendly and pleasant. It is different from physical proximity as proposed by Tournebise (2020).

-Emotional proximity: Frijda (1986) defines emotions as "tendencies to establish, maintain, or interrupt a relationship with the environment [. . .] emotions can be defined as readiness to act in response to emergencies or interruptions". These include surprise, anger, joy, disgust and fear (Izard, 1977; Plutchik, 1980; Ekman, 1992). For Plutchik (1980), confidence and distrust are also antagonistic emotions. Emotions are increasingly used in the field of marketing, and more specifically in sensorial marketing. Customers are also approached through their emotions to trigger purchases or react to advertising, etc. The concept of emotional proximity refers to "the feeling experienced by an individual of being close to another person" (Mencl & May, 2009). Emotional proximity makes it possible to explain relational proximity on the basis of attachment and affective commitment to the brand (Valette-Florence, 2012). We define emotional distance as "when relationships cool down, we often see the most reprehensible behaviours emerge. There are people who, after the emotional distance, physically disappear [...]. The cold that sets in when a friendship comes to an end" (Sabater, 2021).

-Physical proximity is a subjective, egocentric conception of space. From this perspective, a world centred on me is populated with beings and events only to the extent that I perceive them. Proxemics is the importance of beings, things and events, which necessarily diminishes with distance as their perception itself diminishes (Moles & Rohmer, 1978). The law postulates that "what is near is, all other things being equal, more important than what is far, whether it be an event, an object, a phenomenon or a being". We are comparing physical proximity with geographical and spatial proximity. Proximity is also "the ability to welcome the customer when and how he wishes, to meet him physically face-to-face, and this physical relationship implies a presence, requiring the customer to travel" (Pozza & Texier, 2017). Gomez & al. (2011) point out that distance creates virtual proximity that imitates physical proximity, and that the Internet does not radically alter the modes of exchange.

-Virtual proximity is linked to remote interaction, without travel, via information and communication technologies (ICT) (Bourdeau-Lepage & Huriot, 2009). In the current context of digitalisation of businesses, the B-to-C relationship is undergoing major change and is increasingly based on remote exchange channels (Pozza & Texier, 2017). These same authors maintain that the key to a successful remote customer-business relationship lies in the perceived proximity to the business, i.e. the customer must perceive the business as "close", even if it is physically distant, even if the exchange is carried out using digital tools such as the telephone, email, and the more recent digital tools chat, video-conferencing, Twitter, Whattapp, tik-tok and Facebook (Pozza & Texier, 2017).

The customer service department of a company that develops its customer base is better able to respond to the different expectations of customers because it is closest to them (Aoun, 2015). Pozza & Texier (2017) show that proximity to management is a prerequisite for proximity to the customer. Pozza & Texier (2017) identify several reasons for paradoxically building proximity, conveyed by a remote B-to-C relationship, including familiarity, a sense of service, the ability to listen, customer knowledge, empathy, benevolence, pro-activity, speed and immediacy. In the customer-company relationship or the home-store round trip made by the customer, he settles down at home with his family, where he buys remotely and carries out his tasks at home. Jézégou (2018) in the context of e-learning, argues that the presence of learners and the trainer in the digital space, fosters virtual proximity between them, thus constituting an online learning community. The author notes that equating the virtual with the digital is questionable.

- H1: "The use of ICT promotes virtual proximity between customers and companies but reduces physical proximity".

The opposition between these two proximities is natural. It can be explained by the customer's satisfaction, attachment and loyalty, and by his fear of being contaminated by the virus if he is physically present in a shop and makes his purchases in person. In the case of banking and insurance in France, there is a reduction in branch visits and a move towards remote relations (Pozza & Texier, 2017). On the one hand, they would prefer not to travel physically to the company and stay at home,

and on the other, the accessibility and speed of ICT tools make it easier for them to make the same purchases online. Customers are unanimous in saying that they do not have the time to visit branches (Pozza & Texier, 2017). They make purchases remotely or online, a practice that is increasingly developing around the world. However, the introduction of connected checkouts in shops, where customers can make their payments independently and avoid the endless queues, would help to nuance the opposition between virtual and physical proximity.

- H2: "The use of ICT promotes virtual proximity between customers and the company but reduces psychological proximity".

This can be explained by the fact that the customer contacts the company remotely and that the customer is wary and is careful not to get too close and be contaminated. Distrust can be seen as a psychological distance. In teleworking mode, where virtual proximity decreases, managers and employees are physically and psychologically distant from each other and from everything that the work environment encompasses: common spaces, colleagues, shared values and informal interactions (Taskin, 2006). Perceptions of psychological immersion felt by the user within so-called 'virtual' environments (Jézégou, 2018), bring psychological and virtual proximities closer together. Digital purchases (symbolising virtual proximity) can reflect a high degree of uncertainty and thus reduce psychological proximity by reducing the consumer's trust in the supplier (Alaoui & Cova, 2021).

- H3: "The use of ICTs promotes virtual proximity between customers and companies and increases social proximity".

This can be explained by the fact that the customer gets closer to the company by ordering remotely, and the customer stays at home, next to his family, friends and relatives, because he doesn't travel. Marcotte (2020) believes that face-to-face working also creates a social fabric, because some employees find the solitude that teleworking can bring very hard to bear. The constraints associated with the pandemic, inducing teleworking, but also the social health of companies that must rely on the full commitment of their employees for their survival (Marcotte, 2020). Tournebise (2020) argues that "the various videoconferencing software packages make it possible to have the sound and image of 'distant' relatives on the screens. Jézégou (2018) argues that the environment supported by networked IT infrastructures and software is a place of social interactions constituting a commons. On the other hand, Mabrouki & al. (2022) find that the digitalisation of HR practices makes it possible to simplify the relational channel between the HR entity and the employees, despite the fact that it contributes to establishing a social distance between them.

- H4: "The use of ICTs encourages virtual proximity between the customer and the company and increases emotional proximity".

This can be explained by the fact that the customer gets closer to the company by buying remotely and has confidence in it because he is not travelling, so he is not exposed to the risk of contamination

through contact, and finally, he has confidence in this method of remote purchasing. [Canivenc & Cahier \(2021\)](#) point out that "a false proximity would consist in forcing a meeting, virtual or real, to say 'we see each other', and therefore 'we maintain the link'. Respectful closeness is established to recreate the lost emotional closeness". In the context of teleworking, employees no longer have the opportunity to express their feelings or emotions ([Casa & Dupont, 2021](#)). They are then deprived of these "sensory" interactions, gradually leading to an emotional and relational estrangement ([Ollivier, 2017](#)) and therefore to the risk of isolation. This is the feeling of being "cut off from others and not having their needs for support and understanding met" ([Golden & al., 2008](#)). [Stevens \(2009\)](#) argues that emotional closeness contributes to strong stakeholder involvement. In this paper, we relate the emotions trust, mistrust and fear to emotional closeness. Trust in a relationship brings people closer together, whereas mistrust and fear take them further apart. We ask the question: "Does a health crisis involving the use of ICTs create antagonism or conciliation between virtual proximity and other proximities? We note from the above that the use of ICTs can introduce a paradox in proximity where the customer is physically distant from the company but remains close virtually through ICTs and emotionally and psychologically close to the company. This paradoxical approach to proximity leads to the following conceptual model.

2.3. Model of proximities in the B-to-C relationship: analytical framework

The paradox noted above allows us to propose an analytical model underpinned by the above hypotheses, which we will test later in this work.

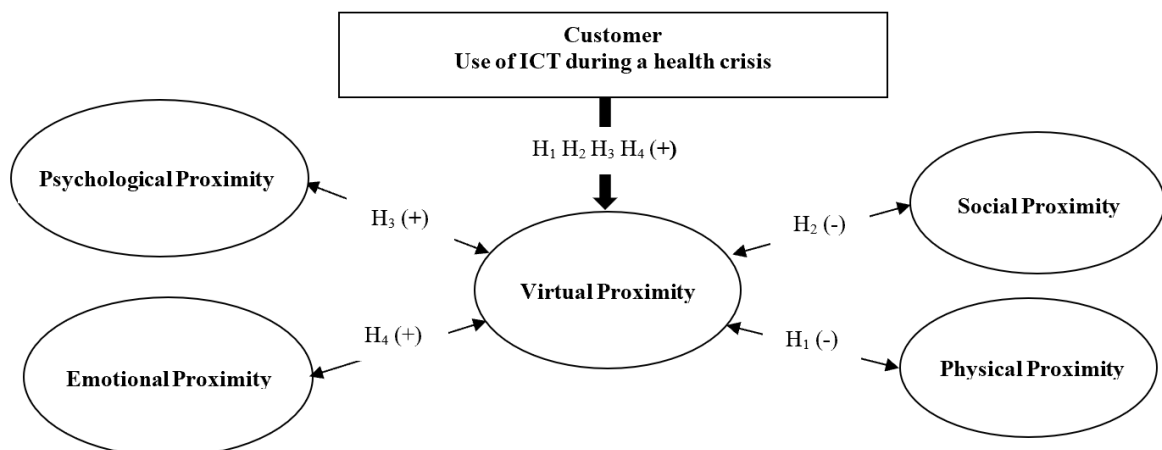


Figure 1: Hypothetical model of proximity in B-to-C relations during a health crisis

3. METHODOLOGICAL APPROACH

We present our methodological approach, the data used and the data processing techniques.

3.1. Research methodology

The B-to-C relationship during a health crisis encourages new attitudes and behaviour among customers and companies. The way in which ICTs are used disrupts the behaviour of customers, businesses and their usual relationships in terms of proximity. These innovations prompt us to test the effects of these practices on the closeness between customers and businesses. Our methodological approach is quantitative. In fact, we are approaching this research to highlight the effects of the use of ICTs on customer-business proximity. We draw on the literature to isolate the variables required for our approach. We deduce research hypotheses that we test with empirical data.

3.2. Research data

Our objective is to identify the proximities in the B-to-C relationship in order to extract the effects of the use of ICTs during a health crisis on the perception of proximities in the customer-business relationship. We administered a 21-question questionnaire (13 closed and 8 opened questions) randomly to 160 people in the streets of Libreville and Owendo, 50 of whom were self-administered and 110 face-to-face. The profiles of the informants are summarised in Figure 2. We questioned their perceptions of their proximity to the company, as a result of their use of ICTs during the crisis. These two communes were chosen because they are home to the largest number of businesses in Gabon, particularly local shops. Table 1 summarises the responses of the 160 informants.

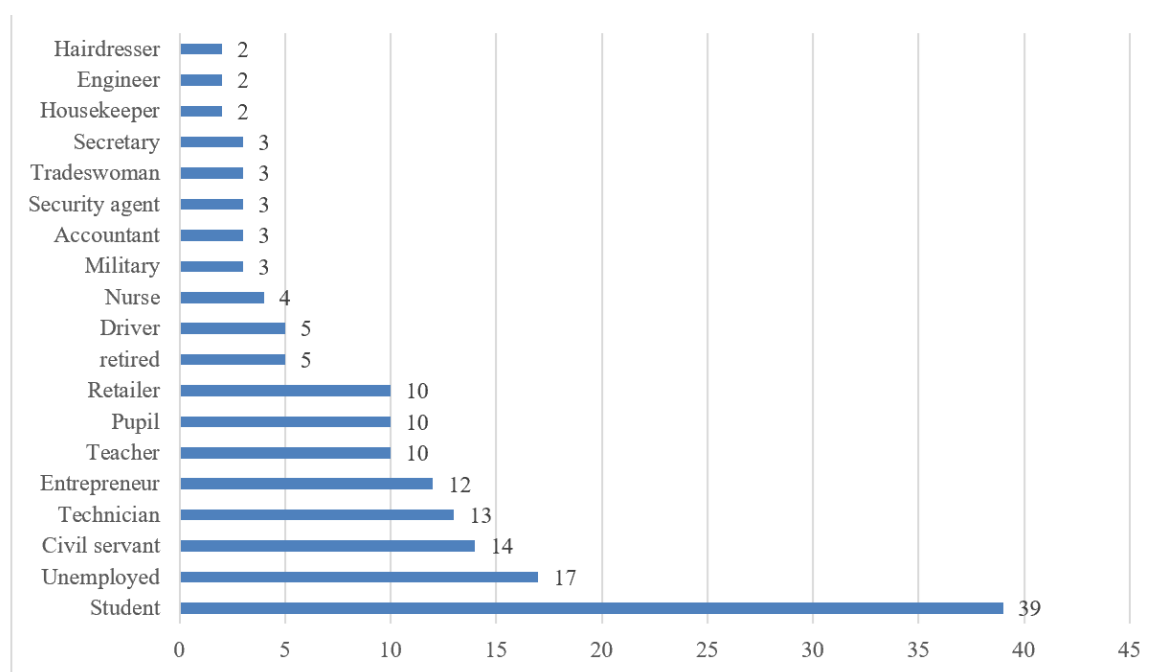


Figure 2: Profile of 160 respondents (graph based on field data processed with Excel software)

Table 1: Summary of responses to questions from 160 informants (occurrence of survey responses)

Answers	%
Individuals who shopped in a shop during the health crisis	87
Individuals feeling physically close to the shop before the health crisis	85
Individuals feel virtually close during the health crisis by buying remotely via ICT	85
Individuals afraid of being contaminated in a shop during the health crisis	77
Individuals who shopped in person at a local shop during the health crisis	60
Vaccinated individuals	40
Individuals who trusted the shop regarding contamination during the health crisis	30
Individuals made distance purchases during the health crisis	25
Individuals feeling psychologically close to the shop before the health crisis	25
Individuals feel psychologically close during the health crisis by buying remotely via ICT	25
Individuals who contracted the disease during the health crisis	21
Individuals who contacted a company remotely using ICT during the health crisis	21
Individuals got very close to other customers in the shop during the health crisis	21
Individuals prefer to order online rather than in-store	17
Individuals feel physically close during the health crisis by buying remotely via ICT	14
Individuals from asymptomatic cases	14
Individuals feel virtually close to the shop before the health crisis	8
Individuals feel socially close during the health crisis by buying remotely via ICT	8
Individuals feeling socially close to the shop before the health crisis	4

The average age of respondents is 34. The vast majority buy food in person. Remote purchases are justified by ease, speed, the distance between shops that are not located in the same commune, the restrictions imposed by the health crisis (confinement, curfew, refusal to gather) and the fear of being contaminated. The ICTs used are Internet (47%), Whatapps (41%), Facebook (24%) and telephone (27%).

3.3. Data processing techniques and variables

We use the binary logistic regression technique, Logit, to process the data. This discrete choice model is used to analyse an individual has to make a choice between two or more mutually exclusive modalities. In our case, the choice is to buy remotely using ICT during the crisis on the terms proposed in the questionnaire (see [Table 2](#)). The Logit model situations in which calculates the probability that an individual will select a particular modality from a set, based on field observations. [Ingram & al. \(2007\)](#) used a Probit model in which the perception of constraints in the business environment determines whether firms choose to operate formally or informally. [Rubilar-Torrealba & al. \(2022\)](#) use the Logit model to characterise the probability associated with a respondent's decision regarding a particular discrete choice, which is conditioned by the values of the explanatory variables. These authors find that the distribution functions characterising the explanatory variables are often not linear. In this research, we also use the binary Logit model. Logit modelling is a binary regression whose form is :

$$Y = \text{Ln}\left(\frac{P_i}{1 - P_i}\right) = C(1)*X_1 + C(2)*X_2 + C(3)*X_3 + C(4)*X_4 + C(5)*X_5 + \dots C(i)*X_i + C(i+1)$$

In a Logit model, the only interpretable information is the signs and relative values of the coefficients of the explanatory variables. The sign of a coefficient indicates whether the associated variable has an upward or downward influence on the probability $P(Y=1)$. In practice, however, we use marginal effects to study the effect of an explanatory variable on the increase or decrease in the probability of the explained variable. The elasticity of the probability of $(Y=1)$ to the change in the variable X_i is given by the coefficient $C(i)$. This elasticity allows us to say how much the probability of $(Y=1)$ varies for individual (i) if the variable X_i varies by 1%. This elasticity is given by

$$P_i = \left(\frac{e^{C(i)}}{e^{C(i)} + 1} \right). \text{ To validate qualitative choice models, indicators based on likelihoods rather than}$$

squared residuals are used. The software outputs the "p-value" of the LR statistic, also known as the "residual χ^2 statistic", i.e. the probability that, under the null hypothesis, the LR statistic exceeds the observed value. This "p-value" must be low (less than 10%) to retain the model. R2 is also used to validate the model. The Eviews software we used for modelling gives the values of these indicators. Laut (1998) emphasises that proximity evades the binary logic of separation and simplification. Nevertheless, we have chosen binary variables for this research because they allow us to capture the subjectivity of the informants by simplifying it in order to move towards an objective understanding of the notion of proximity.

Table 2: Variables and their conditions

Variables	Explanations	Terms and conditions	
LOCAL_SHOP	The shop is close to the individual's home	=0, No	=1, Yes
FEAR_CONTAMIN	The individual is afraid of being contaminated while shopping using ICT.	=0, No	=1, Yes
TRUST	By making their purchases via ICTs, individuals are confident or wary of being contaminated in spite of everything.	=0, Distrust	=1, Trust
ICT	During the health crisis, people bought from a distance using digital tools.	=0, No	=1, Yes
DIST_IN-SITU	The individual's preference to buy remotely using ICT or to buy in-store.	=0, Shop	=1, Distance
PHYSICAL	During a health crisis, if people buy or plan to buy from a distance using ICTs, they feel physically close to the business they are soliciting.	=0, No	=1, Yes
PSYCHOLOGICAL	During a health crisis, when people buy remotely or plan to buy remotely using ICTs, they feel psychologically close to the business being solicited.	=0, No	=1, Yes
SOCIAL	During a health crisis, if people buy or plan to buy remotely using ICTs, they feel socially close to the business they are soliciting.	=0, No	=1, Yes
VIRTUAL	During a health crisis, if people buy or plan to buy remotely using ICTs, they feel virtually close to the business they are soliciting.	=0, No	=1, Yes

4. MODELLING RESULTS: BINARY LOGISTIC REGRESSION

The variable explained in the Logit model is the probability that an individual will buy remotely during the health crisis using ICTs (explained variable $Y = \text{ICT} = 1$).

$$\text{ICT} = \text{Ln}\left(\frac{P_i}{1 - P_i}\right) = + 3.749 * \text{DIST_IN-SITU} - 0.798 * \text{LOCAL_SHOP} - 1.100 * \text{FEAR_CONTAMIN} + 1.744 * \text{PHYSICAL} + 0.763 * \text{PSYCHOLOGICAL} - 0.536 * \text{SOCIAL} + 1.227 * \text{VIRTUAL} + 1.292 * \text{TRUST} - 4.766$$

The model is validated because $\text{LR}=78.66$ and $\text{p-value}=0.000$ allow it. However, McFadden's $R^2 = 0.48$ appears limiting and some explanatory variables are not significant with the current sample size of 160 individuals because their p-value is greater than 10%.

The use of ICTs for distance purchasing or online ordering increases the probability of distance purchasing by 98%, the perception of physical proximity increases this probability by 85%, the perception of psychological proximity increases this probability by 68%, the perception of virtual proximity increases this probability by 77% and trust in the shop if the choice was to buy in-store in person increases the probability of distance purchasing by 78%. On the other hand, frequenting local shops reduces the probability of using ICTs to buy remotely by 31%. Fear of being infected reduced the probability of distance purchasing by 25%, and the perception of social proximity reduced this probability by 37%.

In normal times, i.e. when there is no health crisis, the probability of using ICTs for distance purchasing falls by 1%. Finally, we find that using ICTs during a health crisis increases the probability of distance purchasing. In addition, it contrasts virtual proximity with social proximity because the signs of the coefficients of these variables in the Logit model are opposite. On the other hand, the use of ICTs reconciles virtual proximity with physical, psychological and emotional proximity because the coefficients of these variables in the Logit model have the same positive sign. We can therefore confirm or refute the four research hypotheses set out above (see [Table 3](#)).

Table 3: Decisions on research hypotheses

Hypotheses	Decisions	
H1: "The use of ICT promotes virtual proximity but reduces physical proximity between customers and companies".	Infirmination	Conciliation
H2: "The use of ICT promotes virtual customer-business proximity but reduces psychological proximity".	Infirmination	Conciliation
H3: "the use of ICT promotes virtual customer-business proximity and increases social proximity".	Infirmination	Antagonism
H4: "the use of ICT promotes virtual customer-business proximity and increases emotional proximity".	Confirmation	Conciliation

The use of ICTs during a health crisis reconciles virtual proximity with physical, psychological and emotional proximity. But it pits virtual proximity against social proximity.

[Delaye-Habermacher \(2020\)](#) highlights the negative link between the modalities "Use of ICT" and "Physical proximity" when he hails the advent of the new digital momentum and the massive use of avatars during a crisis, which will lead to a lack of (physical) proximity and a gradual breakdown in social ties.

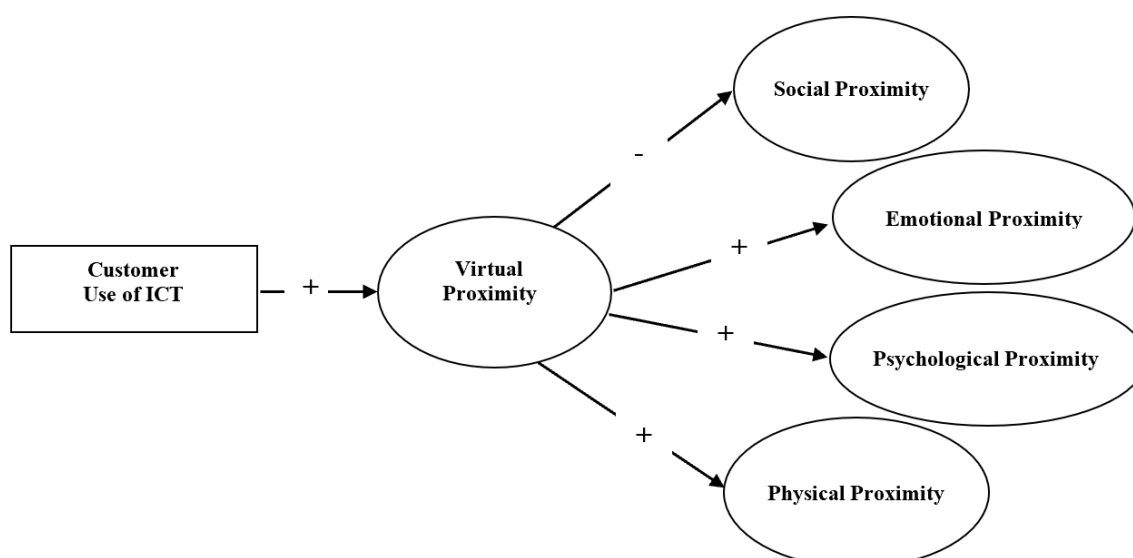


Figure 3: Theoretical model of proximity in the B-to-C relationship in times of health crisis

5. DISCUSSIONS AND CONTRIBUTIONS OF THE RESEARCH

We discuss the results on the opposition and reconciliations of proximities in the B to C relationship and present the managerial contributions of the research.

5.1. Comparison of results with the literature

We discuss the effect of ICT use during the health crisis that contrasts virtual proximity with social proximity.

The result on virtual proximity versus social proximity contradicts [Nkwenka Nyanda & al. \(2019\)](#) who find positive effects of proximity of social contacts and ICT use. It also contradicts [Canivenc & Cahier \(2021\)](#) who find that a social bond, once established, can persist through virtual exchanges. Our result contradicts [Jézégou \(2018\)](#) who argues that the networked environment is a social place. On the other hand, our result is in agreement with [Marcotte \(2020\)](#) and [Mabrouki & al. \(2022\)](#). As for the use of ICTs during the health crisis, which reconciles virtual proximity with physical, psychological and emotional proximity.

- With regard to the reconciliation of virtual and physical proximity, this result can be explained by customers who buy by both methods, remotely and/or online, and in person without distinction. This is the case of cross-channel customers. It is increasingly explained by the installation of self-checkouts so

that customers can make their payments alone, avoiding queues at the checkout. The counter-examples are teleworking, e-learning and e-commerce. This result is in line with [Gomez & al. \(2011\)](#), [Bouزيد & Vanheems \(2014\)](#), [Konus & al. \(2008\)](#) and [Heitz-Spahn \(2013\)](#) who support the idea that the customer can move from the virtual space of a store to its real space (the shop). This result is also in line with [Pourquier \(2020\)](#) and [Pozza & Texier \(2017\)](#) who believe that remote working using ICT shifts the managerial posture from physical to virtual.

Our result contradicts [Bataoui & Giannelloni \(2019\)](#), who see e-commerce as "humanising" merchant sites, favouring virtual proximity over physical proximity. These sites are virtual places of life and action where direct inter-human relationships are absent. Our result is at odds with the culture of *pre-sen-téisme* that we borrow from [Scaillez & Tremblay \(2016\)](#), who point out that an actor only really gets involved in face-to-face interaction. Our result disagrees with [Wourou-Houndedon \(2020\)](#) who finds that in a pandemic context, proximity management must inevitably give way to remote management. It also disagrees with [Jézégou \(2018\)](#) in the case of e-learning.

- As for the reconciliation of virtual proximity and psychological proximity, this result is in line with [Fortin \(2017\)](#) who shows that, in a teleworking context, psychological proximity is a determining factor for the manager's e-leadership towards his employees who work remotely. This result is in line with [Pozza & Texier \(2017\)](#) who believe that a successful remote relationship is based on the fact that promised commitments are kept. This is a dimension of psychological closeness. Our result also agrees with [Jézégou \(2018\)](#) but opposes [Taskin \(2006\)](#) and [Alaoui & Cova \(2021\)](#) in the context of telework and supply uncertainty respectively.

- The reconciliation of virtual proximity and emotional proximity can be explained by customers who buy remotely and who can communicate negative emotions such as anger or disappointment, if there is an error in the delivery of the product; or positive emotions such as surprise, joy or satisfaction if the product ordered conforms to the one delivered. This result is in line with [Usova Goetsch \(2020\)](#) who believes that a virtual merchant site can be perceived as "a place of life and action", which can provoke emotions and create an attachment in consumers. He agrees with [Audigier \(2014\)](#), who argues that the online relationship is a key factor in the success of the communication strategy of companies, which must and will have to manage their relationship with the notion of image and the emotional added value of their brands.

From all the preceding discussions, which show the opposition and agreements between the different proximities mobilised in the use of ICTs during a health crisis, we can conclude that the debate on proximities has not yet been settled. We can also assume that a consensus is still far from being reached. We therefore agree with [Talbot \(2015\)](#) that the proximity approach is more of a heuristic than a theory.

5.2. Managerial and theoretical contributions

In the post-crisis period, we need to learn from the health crisis, which has turned the business world upside down. Businesses and customers will no longer be in the normal situation they were in before the health crisis. Customers and businesses have adopted new behaviours and have new expectations. Both parties need to find the right balance in managing their relationships, as proposed by [Berbou \(2020\)](#). We therefore suggest that managers and practitioners, especially marketers, also incorporate distance as a strategy for capturing customers and building loyalty.

We suggest that they no longer pit proximity against distance, but consider them as complementary, particularly in times of health crisis when restrictions are imposed. Our findings can be used as a warning to the authorities and managers, so that they can take precautions and prepare strategies in the event of future health crises that still require confinement, the wearing of masks, compliance with barrier measures, and so on. Particular emphasis needs to be placed on the use of NICTs in B-to-C relations, to explore all the richness of virtual proximity, which goes hand in hand with the richness of psychological and emotional proximity.

Managers should develop strategies linking e-marketing to sensorial marketing to integrate customers' emotions in order to get to know them better. Finally, our results show that there is a large field of research in marketing on the links between proximity. It requires more empirical investigation in several contexts.

The reconciliations and paradoxes that emerge from the confrontation of proximities will provide new avenues for defining new strategies in customer relationship management.

Our theoretical contribution is the theoretical model of B-to-C proximities during a health crisis that requires the use of ICT, summarised in [Figure 3](#). It shows the antagonisms and reconciliations of proximities.

6. CONCLUSION

This research follows on from the work of [Frimousse & Peretti \(2020\)](#) and other researchers reported in the special issue 30 of the journal *Question(s) de management*, dealing with the reconciliation of distance and proximity in the context of the Covid-19 crisis. We studied the effects of practices induced by a respiratory health crisis, in particular the wearing of masks and the use of ICTs, on the B-to-C proximity relationship. We asked ourselves "what are the effects of practices induced by a health crisis on the B-to-C relationship? We selected two practices: wearing a mask and using ICTs, and physical, virtual, social, psychological and emotional proximity. We explored the literature on these proximities to arrive at ten research hypotheses. Our methodological approach was quantitative, adopting an explanatory approach and a hypothetico-deductive logic. The research data were primary and derived from a questionnaire administered to 160 customers randomly interviewed in the streets of Libreville and Owendo. The data were processed using Eviews software, using binary

logistic regression (Logit) to model the practices of wearing masks and using ICTs in order to identify signs of the effects of these proximities.

The results of these two models, precisely the signs of the coefficients of the variables or the elasticities, enabled us to test the research hypotheses selected. We were able to confirm five hypotheses and reject three.

Finally, the results of the research indicate that during a health crisis, the practices of wearing a mask and using ICTs, in the B to C relationship, pit physical proximity against social proximity and virtual proximity against social proximity.

In particular, the practice of wearing a mask during a crisis contrasts physical proximity with virtual, psychological and emotional proximity in the B-to-C relationship. The use of ICTs during a crisis, on the other hand, reconciles virtual proximity with physical, psychological and emotional proximity.

In addition, we obtained a result by serendipity, i.e. the practice of wearing a mask during the crisis, contrasts physical proximity in B to C (company-customer) with physical proximity in C to C (customer-customer) which requires further study.

We conclude from comparing our results with the literature that there are still agreements and disagreements which show that the issue of reconciling or antagonising proximity is still being debated.

We set out the limitations of this research in two points. The first point relates to the questionnaire. The 13 closed questions were binary, which meant that the operationalisation of the variables selected was binary. This conditioned the choice of the binary logistic regression statistical processing technique. In addition, the low level of overall Cronbach's alpha = 0.51 and of the Cronbach's alpha of each item (less than 0.7) is a consequence of the choice of the two-modality scale. We could have defined a 5-modality Likert scale for these questions in order to have a richness in the modalities of the informants' responses.

The second limiting point is the data processing technique chosen, binary logistic regression, which required us to carry out two treatments. One on the practice of wearing a mask and the other on the use of ICTs. Interpretation of the results was limited to the sign of the coefficients of the variables. We could have used the structural equation technique. In this case, we would have a single treatment taking into account all the variables at the same time. Structural equations give richer results, in particular the direct and indirect effects of the observed variables on each other. This processing technique makes it possible to include unobserved variables in the model. The prospects for this research are, on the one hand, to redo the questionnaire by adopting a 5-level Likert scale for richer and more nuanced responses and, on the other hand, to adopt the structural equations technique to obtain, ultimately, a single model giving richer results than those we obtained by comparing physical and virtual proximities with other proximities. The structural equations would have enabled

us to extend and generalise the comparisons between all the proximities used in this paper, taken in pairs.

CONFLICTS OF INTEREST

All authors declare that they have no conflicts of interest.

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