

## Elicitation Study Based on the Theory of Planned Behaviour that analyses the intention to Adopt Electronic Commerce in the Elderly

### Estudio de elicitación basado en la Teoría del Comportamiento Planeado que analiza la intención de adoptar el comercio electrónico por parte de personas mayores.

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#### Abstract

The adoption of electronic commerce has been widely studied through various theories. However, the elderly segment has been relatively excluded from these studies. Focusing on older people is relevant due to the significant increase in the aging of the world population and the digital divide that marginalises them from the benefits of technological advances. In this context, and based on the theory of planned behaviour, this study aims to build an instrument that measures older people's behavioural, normative, and control beliefs about electronic commerce. The instrument is developed through an elicitation study following a qualitative methodology. Thirty-four older Chilean people were interviewed based on a questionnaire of open questions associated with consequences, social referents, and obstacles to the use of electronic commerce. The 443 responses were examined through content analysis, which led to the determination of measures of behavioural beliefs, evaluation, normative beliefs, motivation to comply, control beliefs, and perceived facilitation. The measures determined are the basis for the proposal of a novel instrument that contains 66 items personalised to this age group. The findings of new variables obtained from the elicitation process highlight the importance of considering ad-hoc measurement scales in the development of public policies to promote the use of electronic commerce in older people. Future research could validate this instrument through a quantitative study in a sam-

#### Resumen

La adopción del comercio electrónico ha sido ampliamente estudiada a través de diversas teorías. Sin embargo, el segmento de personas mayores ha quedado relativamente excluido de estos estudios. Enfocarse en personas mayores resulta relevante por el significativo aumento del envejecimiento de la población mundial y la brecha digital que los margina de los beneficios de los avances tecnológicos. En este contexto, y en base a la Teoría del Comportamiento Planeado, el objetivo de este estudio es construir un instrumento que mida las creencias de comportamiento, normativas y de control de las personas mayores en relación con el comercio electrónico. El instrumento se desarrolla a través de un estudio de elicitación siguiendo una metodología cualitativa. Se entrevistaron a 34 personas mayores chilenas en base a un cuestionario de preguntas abiertas asociadas a consecuencias, referencias sociales y obstáculos del uso de comercio electrónico. Las 443 respuestas fueron examinadas a través de un análisis de contenido, cuyos resultados dieron paso a la determinación de medidas de creencias conductuales, evaluaciones, creencias normativas, motivación para cumplir, creencias de control y facilitación percibida. Las medidas determinadas son la base de la propuesta de un nuevo instrumento que contiene 66 ítems personalizados a este grupo etario. Los hallazgos de nuevas variables obtenidas del proceso de elicitación permiten relevar la importancia de considerar escalas de medida ad-hoc en

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ple of older people. The methodology followed can be replicated in this population to understand the use of other information technologies such as smartphones and social network sites, among others.

**Keywords:** Elicitation study, theory of planned behaviour, older people, Chile

el desarrollo de políticas públicas, con el fin de promover el uso del comercio electrónico en personas mayores. Futuras investigaciones podrían validar este instrumento a través de un estudio cuantitativo en una muestra de personas mayores. La metodología seguida puede ser replicada en esta población con el objetivo de entender el uso de otras tecnologías de información tales como smartphones, redes sociales, entre otras.

**Palabras Clave:** Estudio de elicitación, Teoría del comportamiento planeado, personas mayores, Chile

## ■ Introduction

The world is experiencing significant demographic change related to the rapid aging of the population. In 2019, there were 703 million people aged 65 and over in the world population, and by 2050, this is projected to reach 1.5 billion. On the other hand, between 1990 and 2019, the number of people aged 80 or over increased from 54 million to 143 million, and it is expected that between 2019 and 2050, this figure will reach 426 million (UN, 2019). Chile is not an exception to this growth phenomenon. The 2017 Chilean census showed that the number of older people totalled 2.9 million, positioning the country as one of the three most senior in Latin America. Similarly, projections indicate that the population over 60 will reach 31.2% at the national level in 2050 (6.9 million older people), and the country expects a structural modification since the number of people aged 80 and over will increase (CASEN, 2017).

In the recent worldwide context, information technology (IT) has provided innovative and efficient solutions to deal with the COVID-19 pandemic and ease confinement and social distancing measures. Unfortunately, however, the pandemic has also exposed the consequences and cost of the digital divide for older adults. Many people have not been able to take advantage of the benefits of digital technologies and, consequently, have been excluded from e-learning solutions and teleworking (OCDE et al., 2020). Furthermore, the available statistics regarding information and communication technologies (ICTs) in Latin America show that older people

constitute the age group most isolated from digital technologies, exposing a significant digital divide (Sunkel & Ullmann, 2019).

ITs, and particularly the use of the Internet, generate multiple benefits. These include knowledge and access to government services, access to health programs, new educational opportunities, and access to social or entertainment programs, among numerous other benefits that have meant changes in the social and economic development of countries (León et al., 2020). In particular, e-commerce has become an important economic sector and has consistently contributed to the economy of many developed and developing countries worldwide (Soho et al., 2020). However, in Chile, older people still show low participation in online transactions, whether in purchases or payments. This situation is worrying, given that online procedures are an advantage, especially for older people with mobility problems (Pinto-Fernández et al., 2018). On the other hand, the standardised instruments used in literature to study the phenomenon of e-commerce adoption globally do not seem to be the best for analysing a segment with very different characteristics from the general population. As Grandón & Mykytyn (2004) indicate, the development of sound theory-based instruments is crucial for developing the information systems area. Along these lines, the theory of planned behaviour (TPB) (Ajzen, 1991) proposes a procedure to elicit individuals' beliefs and thereby generate a basis for the generation of measurement instruments according to the population studied.

The TPB suggests that people's expectations and values regarding executing a behaviour form their behavioural, normative, and control beliefs. Such beliefs influence people's attitudes, subjective norms, and perceived behavioural control toward their intention, which in turn impacts their behaviour (Downs & Hausenblas, 2005). This theory inspired Grandon & Mykytyn (2004) to use the TPB to develop an instrument that determines these elements in managers of small and medium-sized companies in Chile, specifically towards electronic commerce (e-commerce). Later, Altobello et al. (2008) applied this instrument to predict e-commerce adoption in Chilean small and medium enterprises (SMEs) and analysed the results through regression and correlational analyses, revealing important findings.

The relevance of elicitation studies is based on the valuable information about the thoughts and feelings people express regarding a behaviour (Downs & Hausenblas, 2005). Since these will vary between different people, it is important to identify the most prominent beliefs related to adopting e-commerce by a group of older people. Through the elicitation study, it is possible to achieve a revealing understanding of the reasons why older people adopt certain behaviour under analysis. In this context, elicitation studies have been carried out on numerous topics. For example, Middlestadt (2012) developed an elicitation study to identify beliefs underlying specific eating and physical activity behaviours. Also, Lee et al. (2021) designed an elicitation study to obtain the most outstanding beliefs regarding sports participation among university students in South Korea. For their part, Dwyer et al. (2020) conducted an elicitation study within the TPB framework to identify the underlying beliefs surrounding exercise participation of adults with cystic fibrosis. On the other hand, Etika et al. (2021) identified salient beliefs underlying speeding behaviour among Nigerian commercial drivers.

Based on the TPB, this study aims to build an instrument that measures older people's behavioural, normative, and control beliefs about e-commerce. In this way, the findings of this research contribute to academic research as

it enhances our understanding of the specific beliefs that may influence an older person's decision to adopt e-commerce.

Furthermore, this instrument could be validated through a quantitative study in a sample of older people, which would determine the key predictors of the intention to adopt e-commerce. Thus, it is intended to contribute to appropriate decision making by institutions that work with e-commerce, and to the design of public policies that seek to mitigate digital exclusion and help the integration and well-being of this group.

## ■ Literature review

### ■ The Elderly and Adoption of Technology

In Resolution No. 1/2020, Pandemic and Human Rights in the Americas, The Organisation of American States (OAS), through the Inter-American Commission on Human Rights, refers to older people as a group in a situation of special vulnerability (CIDH/OEA, 2020). Older people experience higher risks of death and deterioration of physical and mental health from contracting COVID-19. In addition, the social isolation applied with the aim of reducing infections can negatively affect the well-being of this group (Cavagnaro, 2021).

In Chile, through the National Service for the Elderly, relevant public policies have been developed with the aim of meeting the needs of this group. However, the perception of a lack of preparation and conditions for the social integration of older adults still prevails (Thumala et al., 2015). Fernández et al. (2013) found that 25% of older people feel "excluded and isolated from others", while 40% feel "that they lack company". In this context, Pinto-Fernández et al. (2018) state that the adoption of technologies into the daily activities of the elderly has the virtue of enhancing their intergenerational relationships, as well as their social and citizen participation. In addition, greater social interaction generates a feeling of well-being that positively impacts the mental health of older people.

Other authors confirm these findings. For his part, Bianchi (2021) states that the adoption of internet services contributes to improving the well-being of the elderly, promoting autonomy and social connection, among other benefits. Escalona & Pinto-Fernández (2018) states that older people express their happiness regarding the benefits of technology use, highlighting the permanent contact with family members through these tools. In addition, Barrantes & Cozzubo (2019) state that the use of information technologies by the elderly represents a series of potential benefits in terms of entertainment and hobbies, communication and daily activities. Likewise, Cotten et al. (2012) examined the relationship between internet use and depression among retired older people, finding that internet use contributes positively to the mental well-being of these people by reducing depression rates.

On the other hand, many authors have studied the adoption of technologies by older people through behavioural theories, such as the unified theory of acceptance and use of technology (UTAUT) version 1 or 2 (Soh et al., 2020; Mukerjee et al., 2020; Hsu & Peng, 2021; Hanif & Lallie, 2021; Su & Tong, 2021; Talukder et al., 2020; and Macedo, 2017). For instance, Mukerjee et al. (2020) studied elders' intention to incorporate internet use in India by using the UTAUT theory. They identified social influence as the prominent factor in influencing behavioural intention. Hsu & Peng (2021) examined the determinants for using mobile apps by older people in Taiwan. The results suggest that, in addition to social influence, facilitating conditions impact the intention to use mobile apps in this segment of the population. Similarly, Hanif & Lallie (2021) studied the adoption of mobile banking by people older than 55 in Britain using the UTAUT model. In contrast to previous research, they found that social influence and facilitation conditions have little impact on behavioural intention in this context.

### | Electronic Commerce

Electronic commerce (e-commerce) refers to “using the Internet and intranets to purchase, sell, transport, or trade data, goods, or services” (Turban et al., 2015). E-commerce is a concept

that is linked to the use of ICT in a company's transactions, that is, with the help of technology, to offer and sell a company's products online.

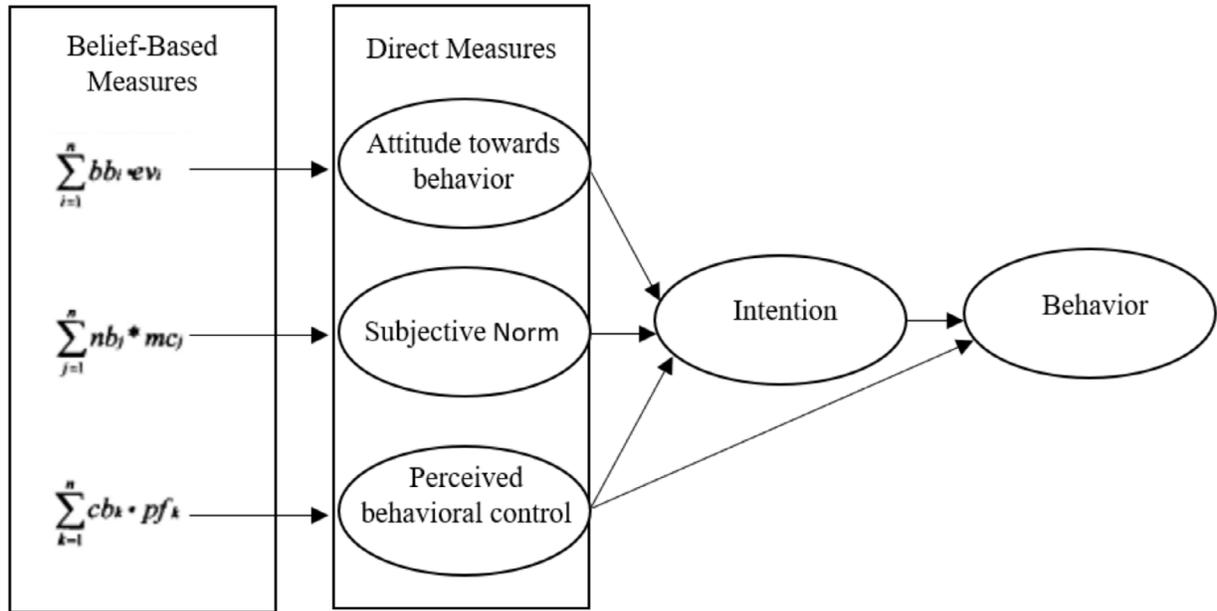
E-commerce provides multiple advantages in terms of time and money since it allows a greater search for information and comparison before purchase, achieving a better price when making the transaction. Thus, it helps to adapt the purchase to the needs and requirements of the client (Avilés et al., 2011). Zhao (2020) also indicates that the Internet and ICT generate a drastic reduction in transaction costs by bringing sellers and buyers closer to each other.

Relevant international evidence indicates the importance of focusing on older people's use of this technology. For example, Sukson (2018) indicates that older people are mostly retired, have a high purchasing power, and have credit cards. However, they are not users of e-commerce, despite using the Internet frequently. This fact configures them as a potential group of clients prepared for online shopping platforms (Sukson, 2018).

To reinforce this point, Peral et al. (2013) state that the elderly correspond to the demographic group with the highest growth in developed countries. They enjoy more free time and may have greater income availability than other segments of the population. They therefore represent an exciting market for ICTs. In fact, in Spain, there was an increase of 32.2% in the average annual expenditure through online purchases among those over 65 years of age in 2019, compared to 2018 (ONTSI, 2020).

### | Theory of Planned Behaviour

The theory of planned behaviour (TPB) was developed by Ajzen in 1985 and it is based on the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975), which proposes the hypothesis that the intention of an individual to carry out a particular behaviour is a determining factor of said behaviour. According to Ajzen, “intentions are assumed to capture the motivational factors that influence behaviour.” Therefore, the intention to perform a behaviour is determined by the individual's attitude toward the behaviour and the subjective norm (Ajzen, 1991). The behav-

**Figure 1:** TPB Model

Source: Ajzen (1991)

Intention is the most direct and closest element to the behaviour. It corresponds to the individual's positive or negative appreciation of the behaviour and is defined by the subject's beliefs about the results of the behaviour and their appreciation of these results (Duarte, 2016). On the other hand, the subjective norm accounts for the perceived social pressure to execute a specific behaviour or not.

In 1991, Ajzen added the construct of perceived behavioural control to the TRA. This construct aims to meditate on an individual's perceptions regarding the existence of personal or situational impediments to the execution of a specific behaviour. Thus, the TPB posits that perceived behavioural control indirectly influences behaviour through intentions, and directly when the person does not have complete control over that behaviour.

Belief-based or direct measures determine attitude, subjective norm, and perceived behavioural control. The majority of the studies carried out to date have used direct measures. However, belief-based measures have the advantage of providing insight into the cognitive basis underlying behavioural perceptions (Grandon & Mykytyn, 2004).

Belief-based measures are calculated by the cross-product of belief structures and other factors. For example, attitude is measured by the sum of behavioural beliefs that performing a behaviour will lead to a particular outcome, weighted by an evaluation of the desirability of that outcome. For example, in the context of the adoption of e-commerce by older people, an older person may believe that using e-commerce can decrease the possibility of catching COVID-19 and may consider this result highly desirable. On the other hand, the subjective norm is measured by the sum of normative beliefs relative to a particular referent, weighted by the motivation to comply with that referent. For example, an older person may believe their neighbours think they should use e-commerce, but complying with a neighbour's wishes may be relatively unimportant. Finally, perceived behavioural control is measured by the sum of the control beliefs, weighted by the perceived facilitation of the control belief in inhibiting or facilitating the behaviour. For instance, an older person may think that they do not have the knowledge to use e-commerce and that knowledge is fundamental in determining the intention to use it. Figure 1 shows the TPB model, including belief-based

and direct measures of attitude, subjective norm, and behavioural control.

The TPB has been studied in Latin-America, for example, Ramírez-Correa et al. (2020) analysed a sample of 489 consumers of specialty coffee from Brazil. They found a significant and positive relationship between the attitude towards specialty coffee and the intention to purchase this type of coffee. In addition, perceived behavioural control presented a positive and significant relationship with buying specialty coffees. However, the relationship between subjective norms and purchase intention was found to be non-significant. Also, Altobello et al. (2008) analysed the adoption of e-commerce by managers/owners of SMEs in Chile based on the TPB. Later, Grandón et al. (2011) compared the TPB and the TRA to determine which is a more parsimonious model to predict the intentions to adopt e-commerce by managers/owners of SMEs in Chile.

The TPB has been widely used in topics related to prediction and behaviour changes, including the use of technology (Ajzen, 2020). However, to the best of our knowledge, no studies have analysed the adoption of e-commerce by older people through the TPB. Some investigations have studied the adoption of e-commerce by older people but through other theories, such as those by Aguilar-Flores & Chiang-Vega (2020) and Soh et al. (2020). However, such studies have

not used belief-based measures. As an exception, Jung et al. (2017), through an elicitation study based on the TPB, obtained an in-depth understanding of the behavioural, normative, and control beliefs of low-income older adults associated with consuming fruits and vegetables.

## ■ Method

According to Ajzen's guidelines (1991), the first steps in developing the TPB instrument consist of identifying the population of interest, determining the behaviour of interest, and running an elicitation study to identify the specific elements of the questionnaire. This process generates the measures of attitude beliefs, subjective norms, and perceived behavioural control. The following table shows the methodological summary for obtaining the instrument, indicating the people involved in each step, as suggested by Ajzen.

For the elicitation process (step 3), five open questions are included in the survey, which are presented in the following table:

Based on the answers given to each question, content analysis is carried out in three stages, as shown in Figure 2:

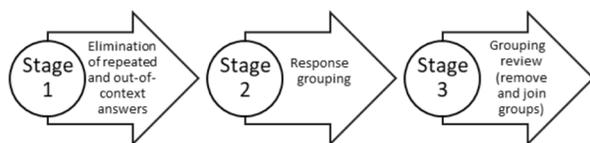
The first stage of the content analysis consisted of eliminating repeated answers for each question. The second stage consisted of grouping responses into items according to coherence. This stage was carried out through the consen-

**Table 1:** Steps to generate the instrument.

| Step | Description  | People involved |
|------|--|-----------------|
| 1    | Determination of the population of interest. In this case, older people in Chile.  | Researcher      |
| 2    | Determination of the behaviour of interest. In this case, the intention to adopt e-commerce by older people in Chile.  | Researcher      |
| 3    | Elicitation of the perceived consequences of adopting e-commerce, the social referents associated with it, and the possible obstacles and barriers to its adoption from an adequate subsample (between 20-30 people, according to Ajzen (1991)). | Older people    |
| 4    | Content analysis to identify the most frequent responses.  | Researcher      |
| 5    | Building measures of behavioural beliefs, evaluations, normative beliefs, motivation to comply, control beliefs, and perceived facilitation on the most cited responses.   | Researcher      |
| 6    | Development of TPB questions of intention, attitude, subjective norm, and perceived behavioural control.   | Researcher      |

Source: Ajzen 1991

**Figure 2:** Analysis stages



Source: Own elaboration

sus of three researchers. Finally, the third stage consisted of reviewing and improving each of the groups defined in the previous stage. The next section presents the results of the methodology application, along with a discussion.

## ■ Results and Discussion

For the purposes of this research, the older adult population is considered as people 60 years of age or older, a definition decreed in the Inter-American Convention on the Protection of the Human Rights of Older Persons (OAS, 2015). The data collection process was developed through a convenience sample using a printed survey that was answered by 34 older people. The surveys were distributed to the participants' homes, where the definition of e-commerce and the questions were explained. Then, the completed surveys were collected after an average of four days.

Table 3 shows a summary of the demographic information of the participants.

The behavioural, normative, and control beliefs are presented in detail, which were analysed individually and then jointly by the researchers to agree on the results. Tables 5, 6,

and 7 show the summary of the results of each step defined in Figure 2.

## ■ Behavioural Beliefs

Based on question No.1, the study initially found 103 advantages. In the first stage, those advantages were refined, removing duplicates and out-of-context answers, yielding 72 advantages. In the second stage, they were grouped according to their type, obtaining 7 groups. In the third stage, no modifications were made, so the 7 groups now make up the 7 items associated with the questionnaire. These are: time saving, comfort and efficiency in delivery, comfort and quality in the purchase process, avoiding the COVID-19 contagion, cost reduction, safety by not walking around with cash, and the wider variety of products.

The most cited advantage (22.2%) is saving time. This saving is perceived through not having to stand in line at stores to complete transactions, avoiding trips to stores, and the freedom to make purchases from one's home. The second most cited advantage (20.8%) corresponds to the comfort and quality of the purchase process, highlighting the ease of making the purchase and ease of making collections and payments. The variety of products is located as the third most cited advantage (15.3%). At this point, some participants stood out, mentioning the feasibility of "buying outside of Chile" and "greater access to commercial pages" with a wider variety of products. The fourth advantage is safety, seen as not carrying cash (11.1%) and convenience and efficiency in delivery (11.1%). Regarding safety, most

**Table 2: Questions included in the survey.**

| No. | Question  |
|-----|---|
| 1   | What are some advantages of incorporating e-commerce into your day-to-day activities over the next year?                        |
| 2   | What are some disadvantages of incorporating e-commerce into your day-to-day activities over the next year?                     |
| 3   | Who are the people or groups that would approve of you incorporating e-commerce into your daily activities over the next year?  |
| 4   | Who are the people or groups that would disapprove of you incorporating e-commerce into your daily activities in the next year? |
| 5   | What are some obstacles related to incorporating e-commerce into your daily activities during the next year?                    |

Source: Ajzen (1991)

**Table 3:** Demographic information of the sample.

| Gender                       | Percentage |
|------------------------------|------------|
| Male                         | 41%        |
| Female                       | 59%        |
| Area of residence            |            |
| Urban                        | 85%        |
| Rural                        | 15%        |
| Age                          |            |
| 60-64                        | 41%        |
| 65-74                        | 38%        |
| 75-84                        | 18%        |
| >85                          | 3%         |
| School level                 |            |
| Complete elementary school   | 15%        |
| Incomplete elementary school | 24%        |
| Complete high school         | 28%        |
| Incomplete high school       | 18%        |
| Complete college             | 9%         |
| Incomplete college           | 6%         |

Source: Own elaboration

participants alluded to avoiding theft of cash, and concerning convenience, participants mentioned the advantage of obtaining the product directly to their home and the reduced waiting periods for the arrival of the product. In fifth place is the reduction of costs (9.7%) and the avoidance of COVID-19 (9.7%). The decrease in costs is manifested through not having to incur expenses in transportation and by accessing exclusive offers online. Regarding avoiding COVID-19, the participants referred to “not leaving home”, “safety of buying without being exposed to the pandemic”, “avoiding crowds”, and “no exposure to the pandemic”.

From question No.2, the study initially yielded 96 disadvantages. In the first stage, these disadvantages were refined, eliminating the duplicates and out-of-context answers, obtaining 76 disadvantages. In the second stage, they were grouped according to their type, obtaining 10 groups. Finally, in the third stage, the researchers validated a content analysis, obtaining seven negative consequences of adopting e-commerce. These are impulse purchases, distrust due to

system security issues, shipping errors or wrong product selection, lack of training in the use of technology, sedentary lifestyle, inefficiency in post-sale service, and impersonal service.

The most cited negative consequence (34.9%) corresponds to mistrust due to system security issues. This mistrust is related to situations such as card cloning, fraud, purchased products not arriving, data theft and scams, among others. The second most cited negative consequence corresponds to the lack of training in the use of technologies (26.9%). In this aspect the participants mention “lack of knowledge”, “lack of training”, “not having the ability to technology”, “little handling of cards”, and “dependence on third parties”. The third most cited disadvantage corresponds to shipping errors or wrong product selection (17.5%). At this point, the participants mention factors such as “loss of the product”, “another product may arrive”, and “sizes arrive different”, among others. The fourth most cited disadvantage corresponds to the inefficiency in the post-sale service (11.1%), referring to problems related to the exchange and return of products and the delay in reimbursement after purchase cancellation. On the other hand, as less cited negative consequences, impulsive buying stands out (4.8%), and impersonal service (3.2%) alludes to not being able to see the person from whom you are buying. Finally, only one person mentioned the increase in sedentary lifestyle as a negative consequence (1.6%).

### Normative Beliefs

Based on question No.3, the elicitation study yielded 89 positive referents. In the first stage, these referents were refined eliminating duplicates, obtaining 44 referents. In the second and third stages, they were grouped according to their type. Then, the groups were eliminated and/or joined through a content analysis, obtaining nine groups or items for the questionnaire. These are social groups, friends, family, neighbours, people who work in SMEs or large companies that use e-commerce, younger generational groups, people with physical limitations, people who appreciate the practicality of e-commerce, and co-workers.

The most cited positive social reference corresponds to people who work in SMEs or large companies that use e-commerce (32.6%). As for SMEs, the participants mention people who work in “spare part stores”, “paint shops”, “fairs”, “entrepreneurs”, and as for large companies, the participants mention people who work in “retail”, “banks”, “commercial houses”, and “supermarkets”. The second most cited positive social reference corresponds to family (27.9%), where children, grandchildren, and siblings, among others, stand out. In third place are people who appreciate the pragmatism of e-commerce (9.3%) and co-workers (9.3%). Regarding the first, the participants mention “those who like comfort”, “those who do not want to waste time”, “people who do not have time”, and “people who avoid crowds” as positive social references. As for co-workers, the participants mention “bosses”, “secretaries”, “purchasing department”, and “customers and suppliers” as positive social referents. The fourth most cited social reference corresponds to social groups (7.0%); participants mention “elderly adult club”, “neighbourhood association”, and “elderly adult headquarters”. Sharing fourth place, the younger generational groups are positioned (7.0%). Only one person mentioned neighbours (2.3%), friends (2.3%), and people with physical limitations (2.3%).

Based on question No.4, the elicitation study yielded 62 negative referents. In the first stage, these referents were refined, eliminating duplicates and those out-of-context, obtaining 37 referents. In the second and third stages, they were grouped according to type through content analysis validated by the researchers, obtaining six groups or items for the questionnaire. These

are social groups, friends, family, neighbours, people with previous bad experiences in e-commerce, and people without knowledge or access to technological tools.

The most cited negative social reference corresponds to family (33.3%). The second most mentioned negative social reference corresponds to people with previous bad experiences with e-commerce (30.0%). This item refers to those people who have lost their jobs due to the widespread use of e-commerce, for example cashiers, vendors, and stockers. The third most cited negative social reference is related to people without knowledge or access to technological tools (20.0%). In particular, the respondents refer to people who do not dominate the PC, do not handle technology, illiterate people, or people with less education. Friends are in fourth place (10.0%), and in fifth place are social groups (3.3%) and neighbours (3.3%).

It is worth noting that some social referents, such as social groups, friends, family, and neighbours, were mentioned as both positive and negative social referents. This situation could be explained through human cognition, understood as to how each person perceives and interprets themselves and their external environment (Chiavenato, 2009). This could therefore cause each of the entities mentioned above to express a positive or negative perception regarding adopting e-commerce, and influence others subject to their conception regarding the behaviour studied.

### Control Beliefs

From the question No.5, the elicitation study yielded 93 answers. In the first stage, these

**Table 5:** Summary stage 1 - Elimination of repeated responses

|                             | Number of responses                |                                       |                    |                    |           |
|-----------------------------|------------------------------------|---------------------------------------|--------------------|--------------------|-----------|
|                             | Positive consequences (advantages) | Negative consequences (disadvantages) | Positive referents | Negative referents | Obstacles |
| Initial number of responses | 103                                | 96                                    | 89                 | 62                 | 93        |
| Number of deleted answers   | 31                                 | 20                                    | 45                 | 25                 | 22        |
| Final number of responses   | 72                                 | 76                                    | 44                 | 37                 | 71        |

Source: Own elaboration

**Table 6: Summary stage 2 – Grouping**

| Initial Items | N° of answers per item             |                                       |                    |                    |           |
|---------------|------------------------------------|---------------------------------------|--------------------|--------------------|-----------|
|               | Positive consequences (advantages) | Negative consequences (disadvantages) | Positive referents | Negative referents | Obstacles |
| 1             | 16                                 | 1                                     | 3                  | 1                  | 3         |
| 2             | 8                                  | 3                                     | 1                  | 3                  | 30        |
| 3             | 15                                 | 22                                    | 12                 | 10                 | 11        |
| 4             | 7                                  | 11                                    | 4                  | 4                  | 3         |
| 5             | 7                                  | 1                                     | 3                  | 5                  | 13        |
| 6             | 8                                  | 17                                    | 1                  | 6                  | 8         |
| 7             | 11                                 | 1                                     | 1                  | 7                  | 3         |
| 8             |                                    | 7                                     | 4                  | 1                  |           |
| 9             |                                    | 11                                    | 10                 |                    |           |
| 10            |                                    | 2                                     | 4                  |                    |           |
| 11            |                                    |                                       | 1                  |                    |           |
| Total         | 72                                 | 76                                    | 44                 | 37                 | 71        |

Source: Own elaboration

obstacles were refined eliminating duplicates, obtaining 71 obstacles. In the second and third stages, they were grouped according to their type through a content analysis validated by the researchers, obtaining five groups or items for the questionnaire. These are low motivation to learn, lack of training in the use of technologies, not having the technical resources that allow purchasing, insecure and unreliable systems, and health problems.

The most cited obstacle corresponds to the lack of training in using technologies (43.5%). At this point, the following comments from the participants stand out: “little electronic or technological preparation”, “little knowledge of technology”, “little use of technological means”, “lack of learning”, and “little use of digital platforms”. The second most cited obstacle corresponds to not having the technical resources that allow the purchase to be completed (30.4%), highlighting comments such as “not having internet”, “not hav-

**Table 7: Summary stage 3 - Review of the grouping**

| Item  | Positive consequences (advantages) | Negative consequences | Positive referents | Negative referents | Obstacles |
|-------|------------------------------------|-----------------------|--------------------|--------------------|-----------|
| 1     | 16                                 | 3                     | 3                  | 1                  | 3         |
| 2     | 8                                  | 22                    | 1                  | 3                  | 30        |
| 3     | 15                                 | 11                    | 12                 | 10                 | 11        |
| 4     | 7                                  | 17                    | 1                  | 9                  | 21        |
| 5     | 7                                  | 1                     | 14                 | 6                  | 4         |
| 6     | 8                                  | 7                     | 3                  | 1                  |           |
| 7     | 11                                 | 2                     | 1                  |                    |           |
| 8     |                                    |                       | 4                  |                    |           |
| 9     |                                    |                       | 4                  |                    |           |
| Total | 72                                 | 63                    | 43                 | 30                 | 69        |

Source: Own elaboration

**Table 8:** Outstanding consequences, social referents, and obstacles in adopting e-commerce.

| Consequences      |  |
|-------------------|--|
| 1                 | Time saving  |
| 2                 | Comfort and efficiency in delivery                             |
| 3                 | Comfort and quality in the purchase process                    |
| 4                 | Avoid COVID-19 contagion                                       |
| 5                 | Costs reduction  |
| 6                 | Safety by not carrying cash                                    |
| 7                 | Variety of products  |
| 8                 | Impulsive purchase   |
| 9                 | Mistrust due to system security issues                         |
| 10                | Errors in shipping or wrong selection of products              |
| 11                | Lack of training in the use of technologies                    |
| 12                | Encourages a sedentary lifestyle                               |
| 13                | Inefficiency in the post-sale service                          |
| 14                | Impersonal service   |
| Social References |  |
| 1                 | Social groupings   |
| 2                 | Friends  |
| 3                 | Family   |
| 4                 | Neighbours   |
| 5                 | People with previous bad experiences in the use of e-commerce  |
| 6                 | People without knowledge or access to technological tools      |
| 7                 | People who work in SMEs or large companies that use e-commerce |
| 8                 | Younger generation groups                                      |
| 9                 | People with physical limitations                               |
| 10                | People who appreciate the convenience of e-commerce            |
| 11                | Co-workers   |
| Obstacles         |  |
| 1                 | Low motivation to learn  |
| 2                 | Lack of training in the use of technologies                    |
| 3                 | Not having the technical resources to make the purchase        |
| 4                 | Insecure and unreliable system                                 |
| 5                 | Health problems  |

Source: Own elaboration

ing a credit card”, not having a smart cell phone”, “not having a computer”, “the poor quality of the internet signal” and “the malfunction due to frequent drops in the internet signal”. Insecure and unreliable systems appeared as the obstacle in third place (15.9%). In this item, the participants commented on “fear of being scammed”, “misleading offers”, and “data risk”, among others. In fourth place, health problems are positioned as an obstacle (5.8%), highlighting those of an ophthalmological nature (vision). Finally, the low motivation to learn was the least mentioned obstacle (4.3%).

The following table summarises outstanding final items associated with behavioural, normative, and control beliefs.

Finally, we proceeded to create measures of behavioural beliefs, evaluations, normative beliefs, motivation to comply, control beliefs, and perceived facilitation of the most cited answers (step 5 in Table 1) and the development of TPB questions of intention, attitude, subjective norm, and perceived behavioural control (step 6 in Table 1). The proposed instrument shown in Appendix A presents the results of these steps.

Based on the information available in the literature, this study represents the first to qualitatively explore older people’s perceptions of adopting e-commerce using the TPB. This study allowed for the identification of relevant and unique factors of behavioural, normative, and control beliefs relating to the adoption of e-commerce by this segment in Chile.

## Conclusion

The current study developed an instrument to study older people’s adoption of e-commerce following the methodological bases proposed by Ajzen (1991). The instrument was developed from an elicitation study applied through a survey of 34 Chilean participants. The elicitation study allowed for the discovery of older people’s behavioural, normative, and control beliefs regarding the adoption of e-commerce.

The study revealed that the most prominent control belief corresponds to the lack of training in using technologies. Therefore, address-

ing this type of need is a recommendation for developing effective training programmes that contribute to the well-being, independence, and autonomy of the elderly. In addition, saving time was found to be one of the most highly valued behavioural beliefs of older people. In other words, older people value optimizing their time; e-commerce would represent a means to achieve this objective.

Our findings contribute to academic research since they enhance our understanding of the specific beliefs that may influence an older person's decision to adopt e-commerce. In addition, considering Chilean culture is similar to the culture of other countries in Latin America, it is expected that the findings from this study can also help other countries to determine older people beliefs toward e-commerce adoption. These results have important implications for the business sector, specifically for those companies that already work with e-commerce. Companies that plan to implement e-commerce in the short term could also be interested in these results, as they could create commercial strategies that focus on the specific beliefs that may influence e-commerce adoption by older people.

Even though this study followed a well-defined procedure, it is not without limitations. Older people residing in urban areas predominated in the sample under analysis. Therefore, the results may not be generalized to older people living in rural areas. In addition, the highest percentage of respondents are between 60-74 years old with secondary education or less. Based on this point, we suggest that future research incorporate people over 74 years of age and with higher education. Likewise, although it cannot be considered a limitation, it is recommended that future research analyse an equal number of men and women to determine if there are differences in their perceptions according to gender. Finally, future research could focus on validating the instrument generated in this research through a quantitative study applied to a sample of older people. Furthermore, the methodology followed could be replicated in this population in order to understand the use of other information technologies such as smart-

phones, health monitors, and social networking sites, among others.

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## Appendix A. Proposed Instrument to Measure Older People's Incorporation of Electronic Commerce.

### Adoption of Electronic Commerce by Older People

Electronic commerce is defined as “the process of buying and selling products or services through the electronic transmission of data through the Internet and www.” Payment for the products or services you purchase is also deemed to be made electronically.

### Instructions

Please put an “X” in the place of the scale that best describes your opinion.

### Social Factors

How strongly would each of the following people or groups of people approve or disapprove of incorporating e-commerce into their daily activities this year?

|  | Strongly disapprove | Slightly disapprove | Neutral | Slightly approve | Strongly approve |
|--|---------------------|---------------------|---------|------------------|------------------|
| Social groups to which I belong                                |                     |                     |         |                  |                  |
| Friends  |                     |                     |         |                  |                  |
| Relatives  |                     |                     |         |                  |                  |
| Neighbours   |                     |                     |         |                  |                  |
| People with previous bad experiences in use of e-commerce      |                     |                     |         |                  |                  |
| People without knowledge or access to technological tools      |                     |                     |         |                  |                  |
| People who work in SMEs or large companies that use e-commerce |                     |                     |         |                  |                  |
| Younger generation groups                                      |                     |                     |         |                  |                  |
| People with physical limitations                               |                     |                     |         |                  |                  |
| People who appreciate the convenience of e-commerce            |                     |                     |         |                  |                  |
| Co-workers   |                     |                     |         |                  |                  |

In general, how important is it for you to comply with what the following people or groups of people think?

|  | Very unimportant | Slightly unimportant | Neutral | Slightly important | Very important |
|--|------------------|----------------------|---------|--------------------|----------------|
| Social groups to which I belong                                |                  |                      |         |                    |                |
| Friends  |                  |                      |         |                    |                |
| Relatives  |                  |                      |         |                    |                |
| Neighbours   |                  |                      |         |                    |                |
| People with previous bad experiences in use of e-commerce      |                  |                      |         |                    |                |
| People without knowledge or access to technological tools      |                  |                      |         |                    |                |
| People who work in SMEs or large companies that use e-commerce |                  |                      |         |                    |                |
| Younger generation groups                                      |                  |                      |         |                    |                |
| People with physical limitations                               |                  |                      |         |                    |                |

(Continúa)

|   | <b>Very unimportant</b> | <b>Slightly unimportant</b> | <b>Neutral</b> | <b>Slightly important</b> | <b>Very important</b> |
|---|-------------------------|-----------------------------|----------------|---------------------------|-----------------------|
| People who appreciate the convenience of e-commerce |                         |                             |                |                           |                       |
| Co-workers  |                         |                             |                |                           |                       |

### ■ Possible Obstacles and Barriers

How likely are you to have the following items to incorporate e-commerce into your daily activities this year?

|   | <b>Very unlikely</b> | <b>Slightly unlikely</b> | <b>Neutral</b> | <b>Slightly likely</b> | <b>Very likely</b> |
|---|----------------------|--------------------------|----------------|------------------------|--------------------|
| Motivation to learn   |                      |                          |                |                        |                    |
| Training in the use of technologies                         |                      |                          |                |                        |                    |
| Technical resources that allow the purchase to be completed |                      |                          |                |                        |                    |
| Reliable and secure system                                  |                      |                          |                |                        |                    |
| Good health   |                      |                          |                |                        |                    |

How relevant is each of the following elements to incorporating e-commerce into your daily activities this year?

|   | <b>Very irrelevant</b> | <b>Slightly irrelevant</b> | <b>Neutral</b> | <b>Slightly relevant</b> | <b>Very relevant</b> |
|---|------------------------|----------------------------|----------------|--------------------------|----------------------|
| Motivation to learn   |                        |                            |                |                          |                      |
| Training in the use of technologies                         |                        |                            |                |                          |                      |
| Technical resources that allow the purchase to be completed |                        |                            |                |                          |                      |
| Reliable and secure system                                  |                        |                            |                |                          |                      |
| Good health   |                        |                            |                |                          |                      |

### ■ Opinion

For you, incorporating e-commerce into your daily activities this year would be:

|             | <b>Extremely</b> | <b>Slightly</b> | <b>Neutral</b> | <b>Slightly</b> | <b>Extremely</b> |
|-------------|------------------|-----------------|----------------|-----------------|------------------|
| Bad         |                  |                 |                |                 | Good             |
| Harmful     |                  |                 |                |                 | Useful           |
| Negative    |                  |                 |                |                 | Positive         |
| Ineffective |                  |                 |                |                 | Effective        |
| Fool        |                  |                 |                |                 | Wise             |

For you, incorporating e-commerce this year would be:

|                          | <b>Extremely</b> | <b>Slightly</b> | <b>Neutral</b> | <b>Slightly</b> | <b>Extremely</b>    |
|--------------------------|------------------|-----------------|----------------|-----------------|---------------------|
| Difficult                |                  |                 |                |                 | Easy                |
| Out of my control        |                  |                 |                |                 | Under my control    |
| Complicated to carry out |                  |                 |                |                 | Simple to carry out |

## ■ Future Consequences

How likely are the following consequences of incorporating e-commerce into your daily activities?

| Consequences   | Very unlikely | Slightly unlikely | Neutral | Slightly likely | Very likely |
|--|---------------|-------------------|---------|-----------------|-------------|
| Timesaving   |               |                   |         |                 |             |
| Increased convenience and efficiency of delivery             |               |                   |         |                 |             |
| Increased convenience and quality of the purchasing process  |               |                   |         |                 |             |
| Reduction of COVID-19 contagion                              |               |                   |         |                 |             |
| Costs reduction  |               |                   |         |                 |             |
| Increased security by not walking around with cash           |               |                   |         |                 |             |
| More variety of products                                     |               |                   |         |                 |             |
| Increase in impulse buying                                   |               |                   |         |                 |             |
| Increased mistrust due to system security issues             |               |                   |         |                 |             |
| Greater number of shipping errors or wrong product selection |               |                   |         |                 |             |
| Increased training in the use of technology                  |               |                   |         |                 |             |
| Increased sedentary lifestyle                                |               |                   |         |                 |             |
| Post-sale service worsens                                    |               |                   |         |                 |             |
| Increases the impersonality of the service                   |               |                   |         |                 |             |

## ■ Attributes

In general, how good or bad are the consequences associated with using e-commerce indicated below for you?

|   | Extremely bad | Slightly bad | Neutral | Slightly good | Extremely good |
|---|---------------|--------------|---------|---------------|----------------|
| Timesaving  |               |              |         |               |                |
| Increased convenience and efficiency of delivery              |               |              |         |               |                |
| Increased convenience and quality of the purchasing process   |               |              |         |               |                |
| Reduction of COVID-19 contagion                               |               |              |         |               |                |
| Costs reduction   |               |              |         |               |                |
| Increased security by not walking around with cash            |               |              |         |               |                |
| More variety of products                                      |               |              |         |               |                |
| Increase in impulse buying                                    |               |              |         |               |                |
| Increased mistrust due to system security issues              |               |              |         |               |                |
| Greater number of shipping errors or wrong products selection |               |              |         |               |                |
| Increased training in the use of technology                   |               |              |         |               |                |
| Increased sedentary lifestyle                                 |               |              |         |               |                |
| Post-sale service worsens                                     |               |              |         |               |                |
| Increases the impersonality of the service                    |               |              |         |               |                |

Please answer the following questions according to the scale that best expresses your opinion:

|  | <b>Strongly disagree</b> | <b>Slightly disagree</b> | <b>Neutral</b> | <b>Slightly agree</b> | <b>Strongly agree</b> |
|--|--------------------------|--------------------------|----------------|-----------------------|-----------------------|
| Incorporating e-commerce into my daily activities this year would be good                          |                          |                          |                |                       |                       |
| Incorporating e-commerce into my daily activities this year would be positive                      |                          |                          |                |                       |                       |
| Incorporating e-commerce into my daily activities this year would be effective                     |                          |                          |                |                       |                       |
| Incorporating e-commerce into my daily activities this year would be detrimental                   |                          |                          |                |                       |                       |
| Incorporating e-commerce into my daily activities this year would be silly                         |                          |                          |                |                       |                       |
| Most of the people who are important to me think that I should incorporate e-commerce this year    |                          |                          |                |                       |                       |
| Most of the people who influence my behaviour think that I should incorporate e-commerce this year |                          |                          |                |                       |                       |
| People whose opinions I value would prefer that I introduce e-commerce this year                   |                          |                          |                |                       |                       |
| Incorporating e-commerce this year would be easy   |                          |                          |                |                       |                       |
| Incorporating e-commerce this year would be under my control                                       |                          |                          |                |                       |                       |
| Incorporating e-commerce this year would be simple to carry out                                    |                          |                          |                |                       |                       |
| I will try to incorporate e-commerce this year   |                          |                          |                |                       |                       |
| I have some plans to incorporate e-commerce this year  |                          |                          |                |                       |                       |
| I have a strong commitment to incorporate e-commerce this year                                     |                          |                          |                |                       |                       |
| I use e-commerce frequently  |                          |                          |                |                       |                       |
| I have purchased a significant number of products or services through e-commerce in the last year  |                          |                          |                |                       |                       |