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S. Jose Godoy, G. Bastías CORPORATE WARGAMING AND OTHER TECHNIQUES FOR TESTING E-HEALTH SOLUTIONS IN CHILE

CORPORATE WARGAMING AND OTHER
TECHNIQUES FOR TESTING E-HEALTH
SOLUTIONS IN CHILE

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КОРПОРАТИВНЫЕ ВОЙНЫ И ИНЫЕ
СПОСОБЫ ТЕСТИРОВАНИЯ РЕШЕНИЙ
ПРОБЛЕМ СИСТЕМЫ ЭЛЕКТРОННОГО
ЗДРАВООХРАНЕНИЯ В ЧИЛИ

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Abstract. As in many other OECD countries, the combination of longer life expectancies and the growth of senior populations in Chile is putting its health-care provision under considerable stress. The lack of a preventive focus means the system intervenes mostly to repair the deterioration of the body. With a growing number of ageing citizens accumulating, this is simply too expensive. To counteract this trend, we devised and tested an online communication prototype to foster health prevention and self-management among senior populations in Chile called Bienestando, based on an automated call centre and a specialized website able to track individual users. Bienestando took advantage of the country's relatively high levels of internet penetration and its prevalence as a source for health information among the target group.

Rather than focusing on the prototype and its effects, this article describes a procedure to foresee the likely performance of a strategy to massify Bienestando. The procedure combined a multi-stakeholder health communication approach with competitive intelligence techniques, notably a rare combination of corporate wargaming and scenario analysis. These two forward-looking techniques are normally used in business strategic planning; here they were used to devise plausible ways to massify the outcome of our research. This perspective is consistent with principles of implementation science, aimed to facilitate the adoption of scientific knowledge as a solution to specific problems -in this case, fostering health prevention around the ageing process in Chile.

Аннотация. Как и во многих других странах ОЭСР, система оказания медицинских услуг населению в Чили испытывает большое давление в связи с большой продолжительностью жизни и увеличением доли пожилого населения. Нехватка мер превентивного характера указывает на то, что система вмешивается лишь тогда, когда нужно устранить значительные проблемы со здоровьем. Задача является дорогостоящей из-за растущего числа пожилых людей. На основе данных автоматизированного колл-центра и специального интернет-сайта авторы статьи протестировали прототип онлайн-ресурса Bienestando по профилактике здоровья среди пожилых чилийцев. Сервис Bienestando родился благодаря тому преимуществу, что уровень распространения интернета в стране высок, а целевая группа широко пользуется им с целью получения информации о здоровье.

Данная статья — скорее попытка предвидеть то, как покажет себя стратегия популяризовать данный ресурс, нежели описать сам прототип и его эффект. Авторы использовали многосторонний подход к информированию населения по вопросам здоровья, комбинируя его с методами конкурентной разведки, а именно: редкое сочетание корпоративных военных игр и анализа сценариев. Обычно эти прогностические методики используются в стратегическом бизнес планировании. В данном исследовании они были применены для выработки правдоподобных способов обобщения результатов исследования. Такой подход согласуется с научными принципами, частью которых является установка на использование научного знания для решения

конкретных проблем; в данном случае в целях содействия профилактике здоровья в связи с процессом старения населения в Чили.

Keywords: Chile, health communication, corporate wargaming, competitive intelligence, Scenario Analysis, Ageing, Preventive Health

Ключевые слова: Чили, информирование населения в сфере здравоохранения, корпоративные военные игры, аналитическая разведка, анализ сценариев, старение, профилактика здоровья

Introduction

As in many other OECD countries, the combination of longer life expectancies and the growth of senior populations in Chile is putting the mainly curative healthcare system under considerable stress: curing a growing number of aging citizens from preventable ailments is simply too expensive. Promoting healthy ageing and prevention is therefore important for a more efficient use of scarce resources.

We therefore devised and tested *Bienestando*, an online communication prototype to foster health prevention and self-management among senior populations in Chile. It arose from the applied research projects “Design of a Health Communication System for the Elderly and their Networks of Support” (Fondecy Ca13i10210) and “Projective dynamic simulations to devise massive intervention scenarios in strategic health communication” (VRI N°08/2013) taking advantage of the country’s relatively high levels of internet penetration (82% in 2019¹) and its prevalence as a source for health information among the target group. The prototype combined a specialized website able to track individual users with an automated call center [Condeza et al., 2016; Godoy, 2018, Godoy et al., 2015].

Rather than focusing on the prototype itself, this article describes the process of applying competitive intelligence techniques to help envisage ways to massify the prototype once the research funds were finished: scenario analysis and corporate wargaming. Both are future-oriented techniques, and are useful to devise plausible situations for, in this case, deploying an innovation outside the laboratory. This is consistent with principles from implementation science as well as social marketing. We applied these techniques from a strategic health communication perspective, i. e., considering the likely reaction of multiple stakeholder groups engaged with an organization and/or an issue.

Scenario analysis was applied in an initial stage of the project, when both the prototype and its hypothetical market were not completely clear. Wargaming was used in final year of the study to test a concrete deployment strategy after the prototype was in shape, had a registered name (*Bienestando*), and a clearer context into which it could be implemented. The funding agency required this strategy to consider either

¹ Source: Hootsuite (2019): Digital 2019 Chile (January 2019) Report. <https://es.slideshare.net/DataReportal/digital-2019-chile-january-2019-v01> (accessed 29.10.2019).

a commercial deployment or a not-for-profit one. We tested both alternatives, always assuming *Bienestando* would compete against other solutions.

While there are many cases of scenario analysis in health, this combination of techniques is extremely rare -even in business strategy, their most common field of application. Indeed, we could find no example of corporate wargaming applied to health topics.

This article starts by summarizing the main theoretical bases of this complex, multi-disciplinary project involving health communication, public health, ageing and prevention, and competitive intelligence. It then describes the project and the execution of the two techniques, focusing on the wargame. Results are then presented, followed by the conclusions.

Theoretical Framework

1.1. Health communication and its strategic implications

Health communication can be defined as “the way we seek, process, and share health information” [Kreps, Thornton, 1992]. It is a complex, multi-disciplinary term developed since the 1960s that deals with the process of sharing meanings and mutual understanding between engaging parties around a health issue. Aside from the biomedical knowledge, it requires cultural sensitivity and empathy. From an instrumental, descriptive perspective, it involves studying the publics involved, message creation, and selection of the most adequate communication channels. Communication is not separated from health care, but “is therapeutic in itself. It is also the vehicle through which people (both professionals and patients) learn about health and reach agreement about what’s wrong and what should be done [Du Pré, 2014].

The literature also points that the concept surpasses the traditional biomedical model of health as lack of disease within a hierarchical relationship between a knowledgeable physician and an ignorant, passive “patient”. Thus, it is consistent with the biopsychosocial model which acknowledges that health depends on biology, psychology (i.e, thoughts and beliefs) and social factors and expectations.

The non-biological factors around health have been summarized by the Social Determinants Model (SDM). SDM considers three successive layers, from the macro-social-environmental ones down to the person’s social links to his/her lifestyle (Ibid.).

SDM deals with macro-variables adequate for the scope of action of its main proponent, the World Health Organization (WHO)², yet for studying individual behaviors it is more useful a more specific approach at the micro level. In particular, the one provided by the Health Belief Model (HBM), a theoretical framework initially developed by social psychologists of the U.S. Public Health Service in an effort to explain the failure of population to participate in health prevention programs [Rosenstock et al., 1994]. Although HBM has been studied for more than three decades, it has been used to develop many successful health interventions targeting variables related to individual health messages [Sohl, Moyer, 2007]

² WHO [July 24, 2015]; Global health estimates: deaths, DALYs, YLL and YLD, by cause, age, sex and regional grouping, 2000—2012 2013 URL: http://www.who.int/healthinfo/global_burden_disease/en (accessed: 10.10.2019).

According to HBM, an intervention aimed to modify health behaviors requires addressing individual perceptions about a health risk, a set of external modifying factors, and a balance between perceived benefits minus perceived barriers to preventive action. This focus can be complemented by Social Marketing. To avoid confusions, Edgar et al. argue that health communication deals with messaging and shared meanings (and therefore its outcomes are described in terms of informing, understanding, creating awareness, and/or change attitudes), while social marketing focuses on changing behaviors [Edgar et al., 2011]. Besides, health communication in general is a trans-discipline in which different scientific approaches generate a new body of knowledge, while social marketing is rather a tool and/or framework for influencing behavior- although it relies on science and theory [Ibid.].

While strategic communication is mostly associated with the corporate and business field [Argenti, 2009; Caywood, 2012; Godoy, Opazo, 2015], health communication is also strategic in the sense it relies on strategic planning and is a core ingredient of effective interventions aimed to generate long-lasting behavioral and social changes [Schiavo, 2014]. Besides, it deals with the relations with key stakeholder groups who have both an interest and power over an organization or an issue [Ibid.; Godoy, 2018]; these groups are essential for any corporate or health communication strategy.

Ageing and Preventive Health Communication

People worldwide are living longer. Today, for the first time in history, most people can expect to live into their sixties and beyond. By 2050, the world's population aged 60 years and older is expected to total 2 billion, up from 900 million in 2015. Today, 125 million people are aged 80 years or more. By 2050, there will be 434 million worldwide. By 2050, 80% of all older people will live in low- and middle-income countries. [Dey, 2017] By then, Chile, China, Iran and the Russian Federation will have a proportion of seniors similar to Japan, where 30% of the population is already over 60 years old³. All these nations face significant challenges to ensure that their health and social systems are ready to make the most of this demographic shift.

There is, however, little evidence to suggest that older people today are experiencing their later years in better health than their parents. While rates of severe disability have declined in high-income countries over the past 30 years, there has been no significant change in mild to moderate disability over the same period [Avendano et al., 2009]. Common conditions in older age include sensory impairments, back and neck pain, chronic obstructive respiratory disease, depressive disorders, falls, diabetes, dementia, and osteoarthritis [Ibid.]. Furthermore, as people age, they are more likely to experience several conditions at the same time.

Although some of the variations in older people's health are genetic, much is due to people's physical and social environments — including their homes, neighborhoods, and communities, as well as their characteristics — such as their sex, ethnicity, or socioeconomic status [Molinsky, Forsyth, 2018]. These factors start to influence the

³ United Nations, Department of Economic and Social Affairs, Population Division (2017). World Population Ageing 2017 — Highlights (ST/ESA/SER.A/397).

aging process at an early stage. The environments where people live as children — or even as developing fetuses — combined with their characteristics, have long-term effects on how they age [Kirkwood, 2008; Hernandez, Blazer, 2006]⁴. It is in this environment where there is room for prevention.

Preventive health communication requires avoiding evitable health hazards associated with aging. The role of communication is especially important here, because both theory and practice reveal that perceived risk is even more powerful than the “objective” risk itself [Heath, O’Hair, 2009]. Indeed, people are prone to optimistic bias, consisting on underestimating the chances of being at risk, and thus dismiss evidence due to the anguish and stress involved in recognizing a hazardous situation. Overcoming those unrealistic judgments is one of the main challenges of risk communication.

Scenario Analysis and Wargaming

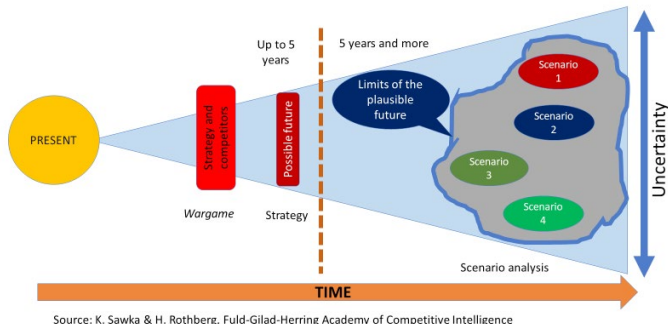
The logic of applying scenario analysis and corporate wargames to a research project in health communication is related to their contribution to massify its results in “real life”. According to implementation science, the overwhelming majority of scientific and technological innovations never go beyond laboratory tests, and those that do so take some 17 years to reach the general population [Brownson et al., 2012]. Although there are many reasons for this, both techniques help understand the dynamics of competitive environments and the likely reactions of the stakeholder groups involved. Both seek to anticipate conditions that involve risk and uncertainty, although with different emphasis and time frames.

Wargaming is a forward-looking strategic technique aimed to uncover the future dynamics of specific industry focusing on the likely actions and counteractions between an organization and its competitors. It therefore tackles the *intrinsic* uncertainties within a defined competitive environment [Schwarz et al., 2019]. It is also a realistic and structured simulation of a competitive market tailored to a particular organization, to support its strategic formulation process, particularly to test a strategic plan [Ioia, 2014; Gilad, 2009; Oriesek, Schwartz, 2008; Fleisher, Bensoussan, 2007]. This is done through a structured role-playing representing the likely reaction of competitors, substitutes and other market players. Insights are generated from the interaction of the participants [Oriesek, Schwartz, 2008].

Meanwhile, scenario analysis configures a repertoire of plausible situations within a period that can go from three to twenty or more years in the future. The underlying objective of this technique is more profound than that of the war game: it explores the viability of a firm’s business model in the long term and therefore goes beyond adjusting a corporate strategy (which normally do not look beyond three years), anticipate what could happen with the launch of a new product, or the likely reaction of a rival or a new entrant to the market. Figure 1 represents the projection of both methods from the current moment, from which events can evolve very differently, which is illustrated as a cone that is expanding.

⁴ See also: World Health Organization. (2015). World report on ageing and health. Geneva, Switzerland: World Health Organization. URL: http://apps.who.int/iris/bitstream/10665/186463/1/9789240694811_eng.pdf?ua=1 (accessed: 10.10.2019)

Figure 1. Time scope of scenario analysis and wargaming

Figure 1. Time scope of corporate wargames, strategy and scenario analysis⁵

These methods rely on market, financial, and other quantifiable data (which can be processed with very sophisticated software), but they are mostly qualitative exercises. That is, the relevant insights arise from the collective discussion in which the participants interpret the available information and project its implications. When dealing with the evolution of unstructured events involving human interaction, this procedure is not inferior to computer programs or mathematical models, which deliver unrealistic results [Gilad, 2009]. The discussion of participants is based on structured rules and high analytical rigor in which, also, the assumptions on which the analysis is based must be made explicit. Based on the principles of Behavioral Economics, these techniques also try to minimize the biases of decision making through a series of successive group iterations [ibid.].

Scenario Analysis in health-related topics

The use of scenario analysis in health is related to the fact that public policy decisions in the field can have wide repercussions that extend far beyond the present time. They should be based on a solid understanding of the processes causing the current situation and some reasoned analysis of the role that these and other factors are likely to play in the future [Leufkens et al., 1994].

Nowadays rapid changes are stressing healthcare and public health systems, among them population aging⁶. Health systems and services must move forward to respond quickly and appropriately to meet these challenges before they become too critical. Scenario analysis offers a complementary approach to traditional strategic planning. Despite its potential, its use is infrequent compared to other methods such as the Delphi technique [Rowe, Wright, 2011]. Its methodological complexity may explain why it is seldom applied [Vollmar et al., 2015].

A recent review on the use of scenario analysis in health matters revealed that the main themes differed widely [Armstrong et al., 2011]. Most of them addressed problems associated to mental health and cancer, and comparatively less dealt with

⁵ Source: K. Sawka & H Rothberg, Fuld-Gilad-Herring Academy of Competitive Intelligence.

⁶ World Health Organization. (2015). World report on ageing and health. Geneva, Switzerland: World Health Organization. URL: http://apps.who.int/iris/bitstream/10665/186463/1/9789240694811_eng.pdf?ua=1 (accessed: 10.10.2019)

infectious and cardiovascular diseases [Schreuder, 1988; Schaapveld, Cleton, 1989; Suk, Semenza, 2011]. Others addressed public health issues from an organizational perspective, such as management of human resources in the health sector [Neiner et al., 2004; Leufkens et al., 1994]. Eight projects addressed technology and biotechnology issues, three concerned the pharmaceutical industry and drug development [Bezold, Peck, 2005; Leufkens et al., 1994], one dealt with the food industry, and one focused on aging. Eleven scenario projects originated in the northern hemisphere. More than half were published in the last ten years, eight between 1995 and 2004 and nine before 1995 (of which six were part of a national effort in the Netherlands). Not a single article combined scenario analysis with other projective techniques such as wargames, Delphi or others.

Methodology

2.1. Project structure

Figure 2 shows how the wargame fit into the project's whole timeframe.

Figure 1. Time diagram of the project

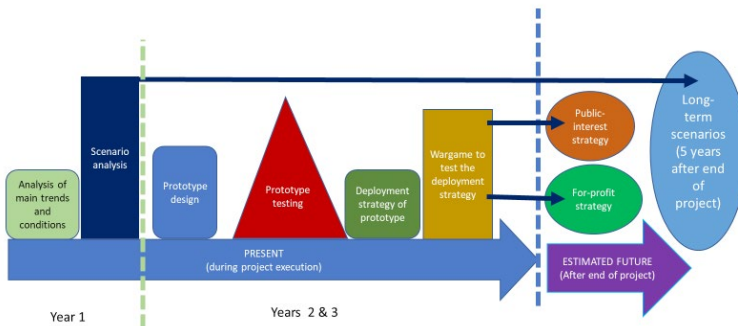


Figure 2. Time frame of the project

At the beginning of the project, the multi-disciplinary team of communicators, public health specialists and sociologists were just beginning to work together for the first time. Based on a combination of experience and literature review, we wanted to create a tailored health information service aimed to foster preventive conducts among seniors. Contents were original health news, as this format is likely to reduce patient reactance [Quick, Stephenson, 2008; Brehm, Brehm, 1981; Brehm, 1966].

Yet the prototype's characteristics were not fully defined, and its effectiveness had not been tested. It also was far from clear whether it could be sustainable after the end of the research funding four years later. The funding agency required considering two alternatives: a commercial development or, alternatively, a public-interest one sustained by a government agency or other nonprofit institution. In consistence with social marketing principles [Lefebvre, 2013; Lee, Kotler, 2011], both alternatives

assumed that the prototype would have to *compete* against other products, services or substitutes provided either by commercial operators or by the public sector.

The project started with the analysis of the conditions, trends and variables affecting the process of ageing in Chile as a public health concern. This was followed in the second half of year 1 by a scenario analysis aimed to visualize plausible environments into which the new service would fit. One of the outcomes of this exercise was the prototype's name, *Bienestando*, a game of words with the Spanish term for well-being (*bienestar*), deliberately avoiding a reference to healthcare because it was unattractive for potential users.

These two initial analyses shaped the design of *Bienestando*, which was finally structured along a purpose-built website complemented by an automated call centre able to personalize outgoing and incoming messages. This arrangement was supposed to be enriched by additional "contact points" in the future, such as mobile applications and media firms with whom content-production agreements could be negotiated. At the beginning of year 3, the prototype's effectiveness was measured by means of a four-month long proof of concept in which the reactions of an experimental group were contrasted with those of a control group unaware of its existence [Condeza et al., 2016; Godoy et al., 2015; Godoy, 2018].

Once *Bienestando* got a tangible form and its impact was evaluated, in the second half of year 3 a two-tier deployment strategy was designed for both a commercial and a nonprofit development. Usually R&D projects in Chile end here. We went further and tested this strategy with a corporate wargame, aimed to foresee the likely reaction of relevant stakeholders in a more precise competitive environment.

Execution of the scenario analysis

The project started with the need to uncover the determinant factors influencing health prevention among senior citizens in Chile and how to take advantage of the internet so to create a preventive communication service. There were many questions to address at that initial stage. Health prevention was needed from a public health perspective, but effective demand for it (i. e., someone willing to pay for it) was less clear. Would this be the case in the next five or more years? Was there any opportunity for a preventive health information service aimed to the ageing process? What other alternatives and technologies could emerge as alternatives?

Scenario analysis would provide a set of plausible settings around these questions, and therefore deal with broader exogenous uncertainties [Schwarz et al., 2019] in a moment in which neither the service/product was completely defined nor the industry it would fit into. The exercise had three additional advantages. First, it would help shape the prototype and its contents. This in turn would allow outlining a deployment strategy around a tangible product. Finally, the research team could be strategically aligned around the project's objectives.

We applied an industry-centered version of the method such as the one developed by Herman Kahn at the RAND organization, later refined by Royal Dutch/Shell to foresee the long-term evolution of the energy business and ensure the company's competitive advantages [Schwarz et al., 2019; Augier et al., 2018; Chermack, 2011; Sawka, Rothberg, 2013; Fleisher, Bensoussan, 2007]. Its aim was to outline the likely

evolution of the health communication and technologies market and assess whether *Bienestando* could be adopted by the beneficiaries.

The starting point was stating the problem to tackle: the lack of an adequate service of preventive health information in Spanish language for Chilean elders in the media system. From a public health perspective, the potential gains of prevention were so overwhelming compared to the current situation, that we needed to explore all opportunities that could emerge from the future environment. After defining the relevant stakeholders, we formulated the guiding question, essential for defining the scenarios:

“Six years from today, will there be a demand for the multiplatform preventive health communication service for the elderly we want to develop?”

During two weeks, the team discussed in a series of structured exchanges a set of drivers able to answer the question-guide in the future. Their precision, clarity, relevance and explanatory capacity was refined through the successive iterations until only the four most pertinent were left. With those drivers, four scenarios were drawn in a single morning session by the research team with the collaboration of selected senior citizens and outside experts in ageing.

Execution of the corporate wargame

After the scenario analysis and the prototype’s proof of concept, it emerged both the name *Bienestando* (subsequently registered as a trademark) and its massification strategy. Its most plausible funding model was a B2B one, a service free of charge for the user and paid by a third party (a company, public institution or media outlet). The B2C alternative paid by the user was not considered realistic in the short term.

Bienestando’s two-tier B2B deployment strategy consisted, on the one hand, on a “public interest” initiative to be developed in agreement with a nonprofit entity and, on the other hand, on a for-profit one. In both cases, the service would be paid by an organization interested on keeping healthy one or more segments of ageing people who could be their employees, clients, affiliates, voters, and/or a certain population within a territory or any other relevant segmentation criteria. The service would serve Chileans in a first stage, and could expand afterwards throughout Latin America in order to maximize its reach and potential attractiveness.

The viability of the two-tier deployment strategy for *Bienestando* was evaluated by means of a corporate wargame as described by [Oriesek, Schwarz, 2008; Gilad, 2009; Schwarz et al., 2019]. We sought to discover the weaknesses and opportunities of our strategy and identify the likely consequences of it. It required role-playing the possible reaction of competitors and other relevant stakeholder groups within the estimated competitive environment and simulate the dynamics faced by the proposed strategy within a timeframe of approximately 3 years in the future.

Figure 3 illustrates the method’s execution during the second half of the third year. The game was prepared in four weeks and included the following aspects:

- A definition of *Bienestando* as tangible service to be deployed within an updated, realistic health communication environment;
- A preliminary definition of *Bienestando*’s business model based on the CANVAS structure [Osterwald et al., 2014];

- A two-tier massification strategy (i. e., non-profit and for-profit);
- A definition of the relevant stakeholder groups to role play by the wargaming exercise, including an updated description of their most relevant traits;
- A definition of new external participants to include in the exercise for a more realistic and thorough role-playing including experts and practitioners;
- Preparation of a 30-page manual for the game's participants, including all this information.

Figure 2. *Bienestando's* wargaming structure

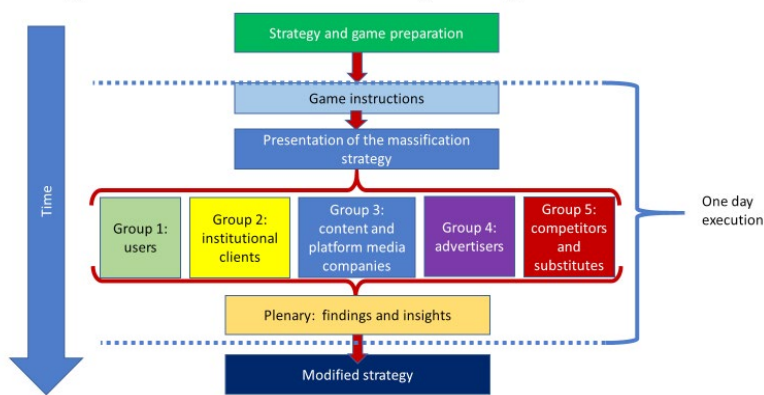


Figure 3. Wargame structure for *Bienestando*

As with the scenario analysis, execution itself was done in a single day involving the research team, research assistants, and a fresh set of selected guests external to the project. The project leader conducted the process.

The game started with a presentation of the massification strategy, after which the 26 participants were divided into five groups representing different stakeholder groups. Their likely reaction was oriented by a set of open questions representing their respective interests and main facilitators and hindrances. Each group's conclusions were presented in a plenary session at the end of the day, followed by a discussion about how to modify the tested strategy. All this information was boiled down into a refreshed version of the massification strategy, which also marked the project's termination. The following groups were represented in the wargame:

- **Group 1, users:** constituted by users of *Bienestando*, defined as healthy (the technical term is autonomous) people aged 50 years and more and their support networks, such as family and friends.
- **Group 2, prospective client institutions.** They constituted the most likely funding source for the service. They were organizations interested on keeping one or more segments of potential users healthy, such as the National Service for the Elderly SENAMA (partner of the project), clinics and hospitals, private and public health insurance providers (*isapres* and FONASA, respectively), pension fund administrators (both the private AFPs and the public IPS), municipalities

that had programs aimed to senior citizens, health and safety cooperatives, and big companies with ageing workforces in sectors such as mining.

- **Group 3, content and platform media**, such as broadcast TV, radios, newspapers, and online platforms delivering information and entertainment content to the prospective users, relying mostly on advertising income. Most of the health contents published in these media were related to national contingencies and had very little to do with ageing and health issues, and even less about health prevention. We estimated this represented an opportunity, and that in incoming years these topics would gain considerable importance.
- **Group 4, advertisers**: companies selling products and services consumed by the service's potential users. An overall market analysis concluded that most consumer companies aim for a much broader public; only a reduced group of firms targeted seniors specifically.
- **Group 5, Competitors and Substitutes**: any entity able to satisfy the same need or demand addressed by *Bienestando*, either by offering a similar product (competitors, such as a clinic's communication platform) or by different means and business models (substitutes, such as mobile applications, traditional media, and others).

Results

3.1. Results from the scenario analysis

As said before, the scenario analysis was aimed to envisage future opportunities for the online-based communication prototype when the team was beginning to work together and the service's features and industry context were not completely clear. Therefore, it had an exploratory character and was unable to provide quantifiable estimates of factors such as costs, income, growth rate or market share that are essential in other cases.

Despite this weakness, and although we did not expect the described scenarios to effectively occur in the future as such, the analysis generated several valuable insights. Particularly when playing with eventual changes of one of the four drivers, the retirement age, we suddenly realized we were inadvertently assuming that health prevention should start from the legal definition of seniority at 60 years of age used by our institutional partner, SENAMA [Godoy S. 2018].

The ensuing discussion suggested that prevention gets increasingly ineffective as people become older, and that we were starting too late. Yet it did not make sense to go for very young populations because they are generally healthier and do not feel at risk (except around very specific health problems, such as STDs, motor accidents, smoking, alcohol or drug consumption). Then we decided to modify our self-imposed starting point down to 50 years of age, when health begins to show some problems and a motivation to stay healthy becomes more likely. Since at that age people are still active, we could approach organizations employing big numbers of people to help them stay healthier -such as mining companies, public offices, and others. Besides, we could take advantage of their own corporate communication systems to install *Bienestando*.

The different scenarios, in turn, also suggested that making alliances with public and private entities was highly advisable. The future environment could become very competitive and unstable, and an academic research team could not easily pair the agility or the resources of technological and media firms. Yet it had the credibility and the expertise required for tackling the problem. This also meant that *Bienestando* needed to be flexible: the configuration of these alliances would determine very different set of alternatives of content delivery and user engagement. For instance, an alliance with a big mining company aimed to their middle-aged employees would be very different from, say, the network of senior residences operated by the National Service for the Elderly, or a clinic attending high-income groups.

Finally, the purpose of helping to delineate the characteristics of the prototype, explore the possibilities of massifying it through commercial and “public interest” ways and “aligning” the team of researchers around the project was completely fulfilled.

Results from the corporate wargaming

The wargame outlined opportunities and difficulties in the two alternatives posed by the deployment strategy, the public interest and the commercial one. In both cases it was confirmed that the B2B option was the most viable, although there were some interesting alternatives of possible direct payments from the beneficiaries when they, obviously, belonged to high income groups. Another conclusion was the need to make the benefits of *Bienestando* as tangible as possible and avoid using the word “health” because it caused rejection as it was associated with diseases, clinics and hospitals. On the other hand, the acceptance among users could be increased by associating the service with well-being, quality of life and feeling good in general — the same as health, but with other words. Perhaps surprisingly, users were deemed disposed to pay a moderate amount for *Bienestando* provided it was associated with shop or pharmacy discounts and other benefits, and complemented by a dedicated call center and a print magazine issued regularly.

In the “public interest” alternative, it emerged that only a fraction of those institutions that could potentially pay for the service were potentially interested in *Bienestando* and its benefits. Perhaps unsurprisingly, those with a high interest addressed explicitly senior populations, such as specialized public services, senior residences, and some NGOs. A wider array of apparently approachable entities turned out to be, at best, mildly interested on health prevention for seniors: health insurers, health and safety cooperatives (*cajas de compensacion*), and private pension funds (AFPs).

Going to the commercial alternative, media companies were deemed too cash-starved to pay for an affiliation to *Bienestando*. Within a context of excess supply of contents, limited attention times of the publics, and dwindling advertising revenues, they were likely to charge for carrying the contents -unless a third party could finance the operation (as it happened with some existing co-production arrangements in different media, only one related to health topics- specifically, cancer). Furthermore, addressing an audience of 50 years of age and more seemed very difficult for because it was considered too heterogeneous as a target group within the logic of media companies.

As for consumer-oriented companies who could eventually pay for the service as a way to reach this type of public, possibilities were restricted due to the low priority that

older adults represented as clients within the whole body of consumers. It emerged that this dismissal was in great deal based on widespread prejudices about this population among managers, who tended to regard seniors as semi-incapacitated beings within a paternalistic yet well-intentioned vision.

However, the game outlined an unexpected opportunity: instead of associating *Bienestando* with the sale of products for the elderly, it was far more attractive to associate it with corporate social responsibility programs (CSR), which were quite considerable in some cases. It transpired that many firms were looking for “good causes” to support, able to generate tangible benefits for society. Competition for these funds were much lower than competition for marketing budgets, and operated with a different logic under different departments.

Conclusions

The focus of this project is different from a huge corpus of scenario analyses related to healthcare, epidemiological and public health subjects, such as the evolution of cardiovascular diseases [Stevanovic et al., 2014], chronic diseases [Neiner et al., 2004], HIV prevention [Holtgrave, 2002], influenza [van Genugten et al., 2003], lung transplantations [Al et al., 1998], smoking [Doran et al., 1998], airborne pathogen concentrations [van Leuken et al., 2016] or the need for healthcare professionals [Danon-Hersch, Paccaud, 2005]. These cases do not focus on the chances of massifying a product/service within an industrial, competitive context. Using different types of statistical estimations, they instead shape plausible future situations about a public health problem, unrelated to market or competitive considerations. In contrast, our prototype would compete against other information products.

As explained before, the purpose of the scenario analysis was to visualize the possible demand for an internet-based preventive health information system that was in the design stage. We wanted to visualize the context faced by our prototype within five to six years ahead: would there be the same need for preventive health information as then? Would other similar alternatives emerge? Would older adults remain invisible to the rest of society and to governments? Would any public or private entities be interested in financing a service like this one? Would there be any other suitable technological solution for the users' needs? Would there be any regulatory change about senior citizens and retirement age and that could favor the adoption of such a system?

We were able to generate a set of plausible scenarios that helped us shape the prototype and think seriously about a strategy to deploy it in realistic conditions, trying to secure its viability after the research funds were over. One of the most valuable conclusions of the exercise was the need to lower the starting age of health prevention from 60 to 50 years of age. This allowed more room for improving health and wellbeing, as well as generated more opportunities to deploy *Bienestando* since users would still be active.

Four years after the scenario analysis, several of its insights emerged. First, there is greater visibility of senior citizens in the media and in government policies, discussions about modifying the retirement age are becoming widespread. Finally, concerning what we called “killer app”, an initiative called Digital Hospital was announced by the

Ministry of Health in 2018 aimed to make healthcare more efficient by integrating patient records and other procedures all across the nation, taking advantage of the internet. Yet Digital Hospital faces the resistance of several interest groups that benefit from the existing curative and fragmented care model, among other difficulties. At the same time, pensions remain low: the need to promote self-care and prevention to alleviate the costs of staying healthy is as valid as when we began the design of *Bienestando*.

On the other hand, the war game outlined opportunities and difficulties to massify *Bienestando*, both as a public-interest and as commercial venture. In both cases it emerged that the B2B option was the most viable, with some possibility for direct payments by high-income seniors, and that we needed to make alliances with other institutions as the future looked unstable and competitive. We realized that for a public-interest massification we needed to team up with highly-interested institutions, while for a commercially-oriented venture we could associate the service with CSR initiatives rather than seek for advertising support.

Combining these two forward-looking competitive intelligence methods within a health communication project was not only extremely unusual, but also particularly useful to envisage how a scientific innovation may be adopted by taking advantage of the internet as a means of contacting vulnerable populations via the internet with relevant information for their wellbeing.

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