



Effect of Online Training Price and Price Perception on Quality and Benefit Perception in France

Jean-Christophe Sakdavong¹ · Hélène Larrieu¹ · Annabel Levert² · Laurent Dedieu² · Gail Tidey²

Received: 18 September 2022 / Accepted: 22 April 2023 / Published online: 19 May 2023
© The Author(s), under exclusive licence to Springer Nature Singapore Pte Ltd 2023

Abstract

With the health problem, digital training has assumed a major role in our society. Some of the numerous online training opportunities are free, allowing the user to learn without having to pay, but occasionally we may question about the worth of these training opportunities—do they provide the same quality as the paid ones? Our two studies, which gathered information from 245 and 114 individuals, demonstrates that a free course can have the same value and interest as a paid course and that the cost of an e-learning course does not always affect the value that the user attributes to it. We found that free training is an important deciding factor because it provides the training with an advantage over the identical paid service that goes beyond simple cost savings. As a result, free training may appear to the user to offer more overall benefits than expensive training. We also found that a price perceived as “a fair price” appear to the user as giving more benefits than an “expensive one”.

Keywords Free · Online training · Value · Quality · Benefit · Price perception

Introduction

The idea of free commodities carries the hallmark of sharing, is associated with non-market and humanistic values, and humanity has survived for ages without consistently attempting to assign a value to goods and services. However, since the term “market” no longer connotes a gathering of a few vendors in a village square on a Sunday morning, the

notion of the commons—belonging to no one—has diminished to a trickle. A paradise with open access? According to Heyman and Ariely [1], there is a “social market” where gifts, friendships, and social ties exist in addition to the money market. However, when the two markets—monetary and social—coexist, the former unavoidably tends to supplant the latter [1].

When money is involved, the donation’s value immediately decreases and what is left of free turns into something suspect. This explains why we are so suspicious of the word “free” in consumer society because we find it challenging to expand the social market beyond the confines of family or friends. So, depending on the situation, it can be advantageous to utilize the word “free” or, on the other hand, one might try to hide it—to allay suspicion—by focusing more on the idea of freedom in the proposition than the lack of a price.

Our study concerns the free aspect of online training, and in this field, the Internet has contributed in recent years to restoring a place for free by opening up access to a large number of unpriced services in the field of knowledge and training: collaborative online encyclopedia (Wikipedia), open source software, freemiums, MOOCs (although payment is sometimes made on the certificate), videos and tutorials on YouTube, etc.

This article is part of the topical collection “Computer Supported Education” guest edited by James Uhomoibhi and Beno Csapó.

✉ Jean-Christophe Sakdavong
jean-christophe.sakdavong@univ-tlse2.fr

Hélène Larrieu
helene.larrieu@etu.univ-tlse2.fr

Annabel Levert
Annabel@mytrainingbox.com

Laurent Dedieu
Laurent@mytrainingbox.com

Gail Tidey
gail@mytrainingbox.com

¹ CLLE CNRS UMR 5263, University of Toulouse, 5 allée Antonio Machado, Toulouse, France

² My Green Training Box, 3 rue de la Boucherie, Nailloux, France

However, what value can one attribute to this free access? Wikipedia has long suffered from its free nature, with a reputation for being a low-quality product with inaccurate material that should definitely be distrusted, and still suffers from this today, despite its widespread use and acceptance by the scientific world [2]. The same holds true for free online training courses: they may inspire mistrust because they were created with funding other than that provided by users and with aims that were not always obvious.

If the market value is not measured by an explicit price and the value itself—in terms of quality and possible benefit for the user—is not readable as a result, how can the public, used to evaluating the quality of items via the lens of the money market, choose quality products?

Therefore, we will examine how much price can affect a user's decision-making process while deciding between paid and unpaid e-learning in this study. Can a user perceive a free course to be equally valuable and interesting as a premium course? Is the availability of free training a deciding factor when selecting a course?

First, we will review the different articles in the literature related to the notion of free training, in the purchase decision processes and in the links that can exist with e-learning. We will then present two studies trying to answer hypothesis about the relationship between price, price perception and the perceived benefits and quality of free training. For each article, we will discuss the results obtained, their significance, and the new studies that could be carried out to enrich this theme.

Literature Review

A Plurality of Representations of Free Access

State of the Art

Taking stock of the state of free access in our society entails assessing the economic, social, ethical, and political sustainability of non-market interactions in our society.

When the Universal Declaration of Human Rights (1948) was being written, Caillé and Chaniel [3] note that this concern was a significant one, notably in relation to access to knowledge, education, health, and protection against unemployment. Equal opportunity for all people is seen as the hallmark of unwavering human dignity; as such, it must be non-market and hence free, serving as the foundation of a society based on the concept of human progress.

However, Caillé and Chaniel [3] believe that this idealistic discourse, which seeks to re-enchant the world in the aftermath of a barbaric conflict, is now undermined by “the splintering of the discourse on free access into three totally disjointed, if not opposed and contradictory, blocks”:

- The first discourse focuses on the idea that nothing is free in the natural world, and that we can no longer rely on nature because of global warming. Therefore, there is a disagreement between those who seek to profit from the depletion of natural resources, such as through the use of “rights to pollute”, and those who believe that negative growth is necessary on a global scale.
- Since the 1980s, a second discourse has been put forward by the proponents of neo-liberalism and *homo aeconomicus*, sweeping away centuries of economic and social functioning centered around the notion of non-profitable exchanges (peasant cooperatives, hospitals administered by religious people, etc.): there is no longer any place for free services in this world, and public services themselves are destined to give way to a generalized subjugation to the principle of financial assets. There is no area where privatization has not extended its reach: education, health, pensions, insurance, energy, mail, personal services, etc. The spirit of efficiency and profitability has penetrated into unsuspected areas, for example through fee-for-service pricing in French hospitals or the analytical and normative accounting of the number of daily reports drawn up by police officers. Money is no longer a simple means, but the means “par excellence” and therefore an end in itself, the universal regulator of human relations. Caillé and Chaniel [3] quote Georg Simmel in 1987: “Money, the absolute means and therefore the meeting place of innumerable teleological series, has a significant relationship, psychologically speaking, with the idea of God... The profound essence of the divine thought is to unite in it all the diversities and contradictions of the world”.
- A concluding argument is based on the Internet's push for universal free access. There are many services that are available for free and without charge, including search engines, open source software, information (articles, research, databases, and photographs), and cultural services. Is the internet the ideal platform for grassroots opposition to capitalism's globalization and the creation of a commons-defined public space that is open to all? There is no question that, according to Anderson [4], a proponent of free software, “we are entering an era where open access will be regarded the standard and not an oddity”.

On the Scarcity of Free?

According to Grassineau [5], this unique and inherent existence of free on the Internet calls into question the widely held belief that free is an uncommon and aberrant phenomenon. Free access, in contrast, challenges the veracity and dependability of the orthodox market economy's guiding principles in his eyes, reversing the Copernican paradigm.

He initially suggests a descriptive taxonomy of the several sorts of gratuity: natural, constrained, networked, and commercial in his analysis on the instance of the Wikipedia project. In the latter scenario, the economic model is three-sided, as in the case of free newspapers, for instance: “Advertisers pay for the media to reach consumers, who will make advertisers live” [4].

Gratuity, according to Grassineau [5], calls into question how we view our commitment to work or even the entire economy: if intrinsic motivations are the norm in collaboration networks on the Internet (many Internet users spend hours contributing to the operation of Wikipedia without receiving any payment), why does the labor market of the entire society not follow this model?

Free Versus Gratuities

The magazine *Vacarme*, in its issue devoted to free (n°50, 2010) [5], stresses that we are not dealing with the general idea of free, but with different gratuities, which can be classified according to the different methods of production:

- Free as the production of a non-market sphere in the economy, conquered thanks to socialized financing: this is the model of the school, libraries, hospital, and the very definition of public services.
- Free access as a refusal of individuals to submit to the laws of the market—piracy, free software, cooperative work—“all forms that creep into the folds of capitalism, develop spaces or undermine it from within”.
- Free as an element of the consumer society and its sales techniques: free products calling for paid versions, or financed by advertising or derivative products.

Free of Charge and Price: Non-monetary Costs

Free does not always mean detached from the idea of a price; what one does not pay with money can still be considered a cost. Examples include the time invested in a task, regardless of its nature, the mental or physical labor required, the necessary sacrifices or compensations, and a host of other non-monetary costs that the modern economy finds difficult to measure and fully account for.

For example, [6] studied the impact of the lack of pricing at the entrance to museums, and the obstacles that prevent a massive attendance subsequent to this offer, as it is in the United Kingdom in National museums, or in France on the first Sunday of each month or on heritage days: “Other non-monetary efforts are reinforced, even created, by gratuity (...). In this context, the free entrance fee represents only the elimination of one of the direct monetary efforts of the visit: an absence of an entry price within an overall price”.

If we do not contribute monetarily to a benefit we receive, we always pay with a part of ourselves: our time, our attention, our energy.

Free and Digital Industries: Beliefs and Mistrust

This notion of non-monetary exchanges is at the heart of certain digital uses—peer to peer, for example—and it is interesting to note that following the advent of consumer computing, several technical, ethical and/or ideological movements have been promoting this type of contemporary bartering since the 1980s. This concern for sharing and mutualisation was the spearhead of the so-called ‘free’ computer culture.

By distinguishing two of the dominant ideologies of this movement, Oliveri [7] inscribes their precepts in a Maussian definition of the social act of giving, an act that is structured in three stages: giving, receiving, and giving back, and tempers the first vision of a “technological gift”, totally disinterested and therefore free, requiring no return.

An anonymous and free contribution could thus call for a notion of counter-giving, of “duty to give in return”. This idea of reciprocity between the parties is part of the origin of the free movement. Its founder, Richard Stallman, quoted by [7] gave a precise definition, according to which anyone can, in return for their use, redistribute a revised and enriched software, and thus give back, in return for their use, improved knowledge to the community.

According to Stiegler [8], the digital tool, like any technical object, would be a “pharmakon”, remedy, poison and scapegoat at the same time. Certain digital spaces are said to rely on the same springs as those of drive capitalism. This argument was developed in relation to the Facebook platform, whose interactions are said to be “calls to release one’s libidinal energy in favor of spontaneous and emotional reactions [...]. In exchange for which we offer data about our likes and dislikes, our friends, to receive the most targeted advertising and content, those closest to our desires...”.

It is not difficult to admit in this particular case that the terms of the exchange, more or less explicit, are enough to give rise to a certain distrust of free access. The terms of this technological counter-gift remain quite opaque in the majority of uses.

According to Grassineau [5], this mistrust is reflected in users’ choice of software; for equivalent functionalities, free solutions are abandoned in favor of paid solutions.

Link Between Gratuity and Value

It is difficult not to associate the notions of price, cost and gratuity, with the concept of value... Gratuity is often perceived as an indication of the intrinsic lack of value, but the latter term can seem complex to define precisely.

Exchange Value and Use Value

According to [9], value analysis must be viewed from the consumer's point of view. It is approached in marketing from two perspectives, global or analytical, which correspond to the traditional dichotomy of economists between Exchange Value and Use Value:

- Exchange value: this is what Zeithaml [10] defined as “the total appraisal of a product's usefulness based on perceptions of what is received and offered”. What is given is seen as a set of sacrifices, financial costs, and/or cognitive costs; what is received is seen as a benefit or a profit. The link between benefits and perceived sacrifices is important because evaluation contrasts the benefits of consumption with the accompanying sacrifices [11]. Value is seen differently depending on rewards and sacrifices. Neoclassical economics holds that the “rational” buyer will select the offer whose value provides the best compromise because they are good calculators.
- Use value: it refers to “a relative preference (comparative, personal, situational), characterizing the experience of an individual interacting with an object” [9]. Extensive experience reduces perceived risk and limits the search and processing of information. The consumer will then trust his routines. On the other hand, a weak experience will lead him to look for information to cope with uncertainty.

According to more pragmatic and interactionist theories, value is neither intrinsic to the good itself—not consubstantial in a way—nor totally subjective, even if there are undeniably variations from one subject to another. It is simply “updated during an interaction with a subject” [12].

For Baudrillard in 1972, quoted by Poels and Hollet-Haudebert [13], “once exchange value is neutralized in a process of giving, free access, profligacy, expenditure, use value itself becomes elusive”.

As a result, when there is free, the dual relationship Exchange Value/Use Value disappears to be replaced by the relationship Sign Value/Symbolic Exchange Value. The latter can, in the context of free visits to museums or monuments, be understood as the social meaning devolved to a good or service (Bourgeon-Renault et al. [17, 18]): society speaks through the individual.

Free of Charge and Offer Devaluation

Studies show that a free offer will be perceived as having less value than the same offer in its paid version because the word “free” frequently has a depreciative connotation [14]. Utilizing the free service can result in a person's impression of themselves being devalued as well Prottas [15].

For this purpose, Poels and Hollet-Haudebert [13] conducted an exploratory study on free newspapers distributed in the subway, which are generally considered of lesser quality than those purchased on newsstands are. Their survey, based on observation and interviews, shows that readers of these free newspapers hold a depreciative discourse on the content, having few expectations of the quality of the articles; they handle the object itself unceremoniously, throwing it away very quickly or abandoning it on a seat. Conversely, paying for a traditional newspaper marks a commitment and recognition of the work of others.

More generally, the interviews show that the social image interferes and that there is a “contamination” between the newspaper and its readership: reading only free newspapers is considered very insufficient by the respondents. However, these reading media are widely used, and the authors highlight the paradox of never really including oneself in the readership of free newspapers despite the uses.

Against all odds, the most interesting advantages identified by the authors are not played out from the point of view of individuals, but more generally from a social point of view: “The use of free newspapers gives opportunities for social exchange, thanks to easy access to information, it is a lever for social inclusion and enhancement of the social image”. Reading free press makes it possible to maintain a minimum degree of information necessary for exchanges around the coffee machine. In addition, leaving the newspaper on the subway seat allows other transit users to read it, creating invisible connections between people.

Additionally, from a social perspective, the interviews reveal that people place a high value on the culture of open access, with the newspaper serving as an example in the same way that other cultural products like music and movies do (which are themselves the subject of collective reappropriations that are not always legal).

The “devaluation” of the free offer can therefore be compensated, in the end, by its ability to become a rewarding marker of a positive social model, based on the right to information, the democratization of access to cultural goods and on the notion of sharing.

Impact of Free Access on Behavior and Decision-Making Processes

The Irrational Force of Free Access

Free access simply has more appeal than just financial savings, and some writers have demonstrated that when free access interferes, the standard economic theory that holds that consumers “rationally” select the alternative with the greatest cost–benefit difference is ineffective.

Thus, Shampanier et al. [16] conducted a study to show the quasi-magical effect of free: during an experiment

conducted on students who are offered a quality chocolate (Lindt) at 15 cents and another of lower quality (Hershey's) at 1 cent, 73% of individuals opt for quality at the expense of the financial economy; on the other hand, if we maintain the same difference between the two chocolates (of the order of 14 cents), but the second is free, 69% of individuals will choose the latter to take advantage of the windfall of free, paradoxically willing to eat a chocolate recognized as inferior and which they did not want in the first experience.

For the authors, when an object is free, the perception of losses and sacrifices disappears, along with the rationality of *homo oeconomicus*: faced with a choice, people do not simply subtract the costs of the benefits, but rather perceive the benefits associated with free products as higher. The zero price of a good not only cancels out its cost, but also adds to its benefits.

Reduction of Perceived Risk and Authorisation of Error

Free admission can also remove certain physical and psychological barriers that hitherto inhibited action, for example in a museum context: for some visitors, the process of crossing the doors of a cultural establishment can be facilitated by the absence of pricing, and free access thus intervenes in the decision-making process [17, 18]. The public concerned feels that there is little “risk” of making a mistake when entering a museum if it is free, and the negative consequences of a bad choice are reduced anyway: “Free would act as a stimulus to the consumer's exploratory trend. Regardless of the probability of error that may remain high, this right to trial allows you to enter a museum or monument simply out of curiosity” [17, 18].

However, regarding the link between free admission and museum attendance, all authors of the literature agree that, without educational and cultural support, making museums free is not enough to bring the most culturally distant audiences to this very specific universe. Free access alone cannot change the decision-making process in this context.

Value and Training

Since our study seeks to analyze the impact of free education on the decision-making process in a training context, it is necessary to recall here what makes it possible to measure, according to the literature, the value of training.

Bourgeois [19] in his study on engagement in training refers to the paradigm of expectancy value developed since the 1970s: “The individual will be all the more willing to engage in training, to consent to its costs, that on the one hand, he is sufficiently convinced that the training envisaged will actually bring him benefits (and that these are sufficiently important, for him), and that on the other hand, he

considers his chances of success in the company sufficiently high”.

The estimation of the value of a training strongly depends on the benefits perceived by the user for his life, at a given moment in his trajectory. Let us recall the four categories of motivations listed by Biggs and Moore in 1981 to qualify these perceived benefits, cited by Bourgeois [19]: extrinsic/social/related to self-fulfillment/intrinsic motivations.

The reputation of a training institution can help create a positive expectation and increase the value that can be attributed to training, to minimize uncertainties during the upstream evaluation process. Thus, the public is still interested in the many judging devices—such as the Shanghai ranking—that compare and prioritize educational institutions with each other, to infer a “value” of the training offered, even if it is clear that the classification operation has itself become a commercial institution [20].

In reality, how can one presume the value of a proposed training, especially if one does not have information on the context or on the reputation of the training organization that delivers it?

Faced with a new offer, we can think that the user will use his imagination—subject to many influences, and constantly reconfigured—to make a value judgment according to the possibilities of action of a good (its updatable performance) and the sacrifices it implies.

Rivière [21] demonstrates, however, in a quantitative study conducted among 828 individuals on the public's perception of new offers in the automotive sector, that upstream of the adoption process, the perceived value of a novelty is only influenced by its perceived benefits: it is not affected by the perception of the sacrifices to be made. The glare caused by novelty seems to stand in the way of considerations perceived as unpleasant, and reason has difficulty interfering when seduction operates (which intuitively, one would tend to consider as generalizable beyond the simple field of the automotive sector...).

Overview

It is difficult to find in the literature studies on the perception of the quality of free online training, because the concept of free training is sometimes considered as the prerogative of the public sector (and the question of free training is quickly evacuated as self-evident), and sometimes closely associated with marketing strategies in the private sector (freemiums, loss leaders and samples), which is not the model proposed by the company concerned by this research, as the user of the training is never financially solicited.

On the other hand, some of the studies dealing with the notion of price in online education concern university models that involve collaborative practices between students, which are rewarding and which therefore lead students to

consider that content and interactions are more important than price. Again, this is not the model we propose to study, since the company in question here offers individual training with very limited interaction.

Moreover, studies on free education often concern objects, and more rarely services. It is therefore very difficult to consider training as a consumer good like any other, since the non-monetary costs of any training are at least as important as the monetary costs: training requires effort, or even a total commitment on the part of the user; there is no such thing as “passive” consumption. Buying a course is just giving oneself the opportunity to start the learning process.

Finally, the problem of uncertainty remains a thorny one in the decision-making process: how can a course be evaluated before the course itself has been experienced? The user’s perception of training courses (free or paid) and of the value he or she may attach to them (and therefore of his or her future commitment to learning) is based on subjective criteria and previous experiences, and the user’s evaluation often consists of trying to compensate for the uncertainty as best he or she can, by betting that his or her choice is judicious.

To measure the relationship or influence that the price may have on one’s perception of this training from the point of view of its quality and the benefits that one can anticipate from it, it therefore seems necessary to take an interest in this evaluation upstream of the training, which the future user undertakes.

We will now present two studies trying to improve our knowledge free online training and value perception in France. The first one as already been presented in the CSEDU 2022 conference [22], and then, according to the critics and proposals from the reviewers, we have designed a complementary study in 2022.

Study #1

Research Hypotheses

First of all, since free of charge can have a depreciatory connotation and a zero-price offer can be perceived as having less value than the same offer in its paid version [13, 14], we will try to verify the influence of the price in the qualitative evaluation made by the user in the context of the decision-making process of a training choice.

We therefore put forward an initial hypothesis as follows: the more expensive a training course is, the more it is considered as qualitative by the user (H1).

In this hypothesis, the factor is the price, and the Dependent Variable (DV) is the quality appreciated by the user. The factor and DV will be varied according to ordinal scales.

Furthermore, we have seen in the literature review that the zero price exerts an irrational force in the purchasing

decision process [16]. Since this effect leads to the benefits associated with free products considered higher than when they are paid for, we will try to verify that this effect can be exerted in the same way when the user evaluates the hypothetical benefits of a training course. In the context of visits to museums or monuments, free access impacts the decision-making process for some visitors, for whom the negative consequences of a bad choice are reduced when entry does not incur a monetary cost [17, 18] and would have a beneficial influence on the social behavior of visitors [13]. Could this tendency be transposed to the engagement in a training course and have a beneficial influence on the social behavior of visitors?

We therefore put forward a second hypothesis as follows: when the price of a training course is equal to zero, the benefit can be considered by the user as higher than that of a paid training course, even a cheap one (H2).

In this hypothesis, the factor is the price, and the Dependent Variable (DV) is the benefit assessed by the user. The factor and DV will be varied according to ordinal scales.

Method

To verify these hypotheses which are about the quality and benefit of a training course in the context of the decision-making process i.e., without having done the course yet, we could either.

- (a) Carry out a qualitative study over the perception of the training quality and benefits of a training according to its price (free, cheap and high) as Bourgeon-Renault & al did in [18] with 52 participants or Poels & Hollet [13] did with 19 participants,
- (b) Carry out an experimental study (as Shampanier & al. in their experiment 2 [16]),
- (c) Carry out a survey where participants would have to evaluate quality and benefits of training courses (with varying prices) as Shampanier & al. did in their experiment 1 [16] asking participants to make a hypothetical choice.

We did not choose the solution (a) because it would not give us answers to our questions but would only lead to understand better the involved factors, elements that we already had thanks to [13, 16–18]. We did not choose (b) because we wanted to have a wide representation of participants and we could not have enough participants showing up in our laboratory. Another factor which made us to avoid (a) and (b) was the COVID pandemic. So, we chose the solution which allowed us to have a large number of participants by having them come in person and which allowed us also to propose a variety of training courses as we will see in “[Extended set-up](#)”.

Participants

To collect sufficient data to achieve our research objectives, an internet survey was conducted among a population that does not have an account on the company's platform *My Green Training Box* (from which the videos used were taken) and therefore cannot recognize the online video trainings used in the survey, so as not to be influenced in their answers.

The survey was conducted via the internet through *LimeSurvey* during July 2021. More than 500 people were contacted by email or social networks. No selective recruitment was carried out. 143 women and 102 men responded to the survey.

Participants were informed of their freedom to participate in the survey whenever they wished and of the anonymity of the data they provided in a detailed individual consent.

Data is securely and anonymously stored on the *LimeSurvey* server at the University of Toulouse, in compliance with the General Data Protection Regulation.

Experimental Set-up

Basic Set-up

After the usual questions on the identification of participants (gender, age, socio-professional category, experience of online training) and individual consent to take part in

this survey anonymously, the system offers to watch a one-minute video presented as an extract from an online video training course.

Underneath the video is a description of the complete training course, consisting of a general presentation, 10 video modules of 3–4 min each, accompanied by PDF files and podcast contents, and an end-of-course assessment, leading to a certificate (see Fig. 1). The price of the training is mentioned below, chosen among these three values: 0 € (free training), 20 € (cheap one), 150 €.

Two compulsory questions follow this presentation, one on the perception of the quality of the proposed training, the other on the general benefit (personal, financial, etc.) for the user of attending this training.


For each question, the participant is asked to give his or her opinion on a 5-point Likert scale as presented in Fig. 2.

The basic set-up is summarized in Fig. 3.

Extended Set-up

To obtain more data and to avoid the results being dependent on a single training video, the basic set-up is repeated three times for each participant. Three different video extracts of equal quality and length are used from online training courses offered by the company *My Green Training Box* on sustainability-related topics (water, habitat, health), with all identifying marks (logos) removed.

Fig. 1 Description of the course



This is a one-minute extract from an online video training course.

The complete training course consists of the following elements:

- A general presentation of the course : identity of the trainers and pedagogical objectives.
- 10 online video modules of 3 to 4 minutes each, with a specific pedagogical objective for each video.
- PDF and podcast contents.
- An end-of-course assessment, leading to a certificate.

Price of the complete training course : ...€

Fig. 2 Scales for quality and benefit

According to these criteria, what is your perception of the quality of this training? Very low quality training / Low quality training / Correct quality training / High quality training / Very high quality training.
 In your opinion, what can be the general benefit (personal, financial...) for the user to follow this training? No benefit / Low benefit / Moderate benefit / High benefit / Very high benefit.

For each of the three training courses, the price varies according to the three values (0 €, 20 €, 150 €) corresponding to the general modalities chosen for the experimentation (free/cheap/expensive training). The order effect is counterbalanced.

This results in the example of an extended scheme for one participant below (Fig. 4). The example used in Fig. 4 corresponds to combination 1 in Table 1.

All answers are compulsory, but participants can go back in the questionnaire and change their previous answers, once they have understood that the price varies from one course to another.

Since the three videos are considered equivalent, the data obtained from the three training courses will be aggregated for the analysis after checking (a) that there is no influence of the training video on the perceptions, (b) that the order of presentation on the videos or price have no influence on the perceptions which will also allow to ensure that the first video is not more relevant than the two other ones.

Results

Sample

Of the 500 participants approached, 245 people completed the survey. From this sample, a profile can be drawn up with the following characteristics.

A majority of women responded to the survey, 143 versus 102 men. The average age of the participants is 52 years (50.5 years for women, 54.5 years for men).

The most represented socio-professional category is managers and professionals (32%), followed by retirees (24%) and employees (16%).

In the sample, half of the participants have never taken online training, although the proportion is lower for women (45%, compared to 57% for men).

Descriptive Processing of Data

The price factor and has three values/modalities (150 € = expensive/20 € = cheap/0 € = free); the DVs are called “Training Quality” and “Training Benefit”; each has 5 modalities, coded from 0 to 4 for the statistical analyses.

It can be seen initially that the median for the three price groups is at the level of the intermediate modality 2 (Correct Quality/Moderate Benefit), as can often be seen in a 5-point Likert scale (Min 0–Max 4). When in doubt, participants often respond with a value that is not binding on them and that they consider neutral.

When we look at the frequencies (Tables 2 and 3), we can see that the perception of the quality of a training course does not systematically lead to a perception of the benefit according to the same modality: thus, while the perception of the quality of the training courses presented is mostly perceived as *correct* (and therefore centered

Fig. 3 Basic set-up

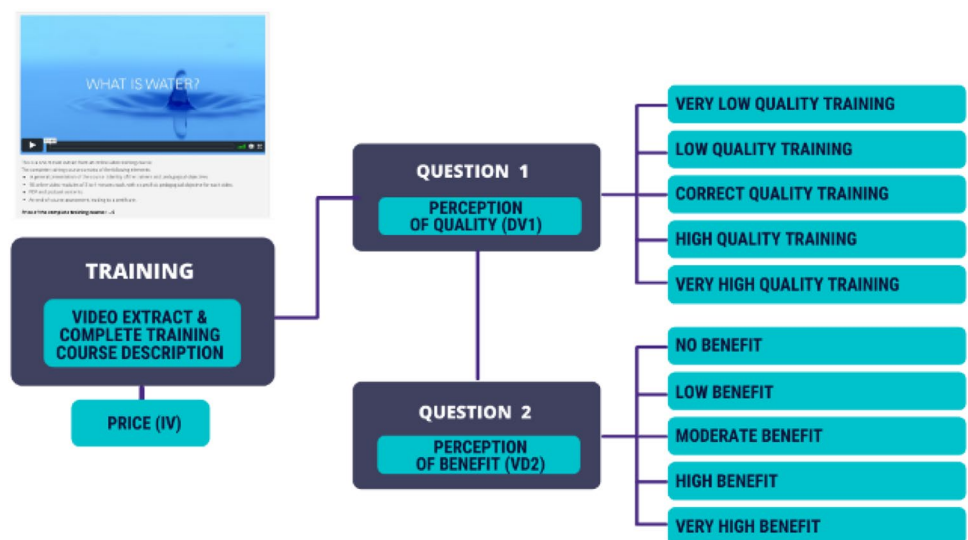
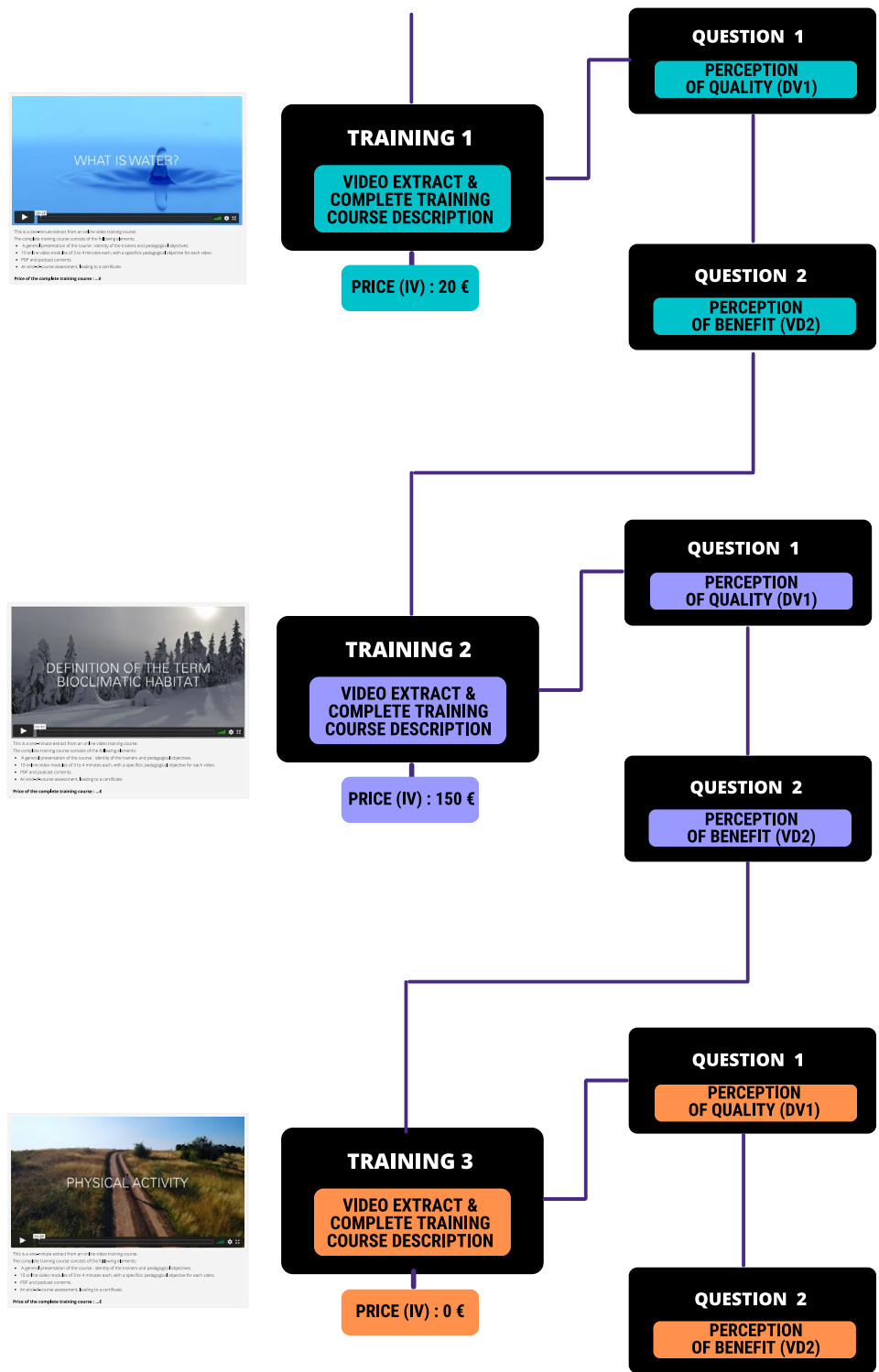


Fig. 4 Example of extended set-up



around modality 2—*Correct quality*—of the DV Training Quality), the responses concerning the benefit provided by these same training courses are more dispersed over modalities 2 (*Moderate benefit*) and 3 (*High benefit*).

This suggests that a training course judged to be *correct* (modality 2) may provide a greater benefit than moderate (modality 2), whereas intuitively one might think that there is a systematic correlation between the perception of quality

Table 1 Combinations

Combinations	Training 1	Training 2	Training 3
1	0 €	20 €	150 €
2	0 €	150 €	20 €
3	150 €	0 €	20 €
4	150 €	20 €	0 €
5	20 €	0 €	150 €
6	20 €	150 €	0 €

Table 2 Frequencies of training quality choices

Training quality	Price		
	0	20	150
0	3	6	5
1	33	32	49
2	135	139	117
3	61	55	64
4	13	13	10

Most frequent responses are highlighted in bold

Table 3 Frequencies of training benefit choices

Training benefit	Price		
	0	20	150
0	8	6	6
1	30	39	57
2	95	105	95
3	94	81	76
4	18	14	11

Most frequent responses are highlighted in bold

and the benefit that can be expected from it (the greater the quality, the greater the expected benefit).

The dispersion of values increases as the price of the training increases. In our sample, the price does not appear to be a guarantee for the participants, either in terms of quality or in terms of general benefit.

Inferential Statistics

To evaluate our hypotheses and to generalize the results of our sample to the whole population, we carry out a rank comparison test between the groups 0 € / 20 € / 150 €, which correspond to the 3 modalities of the main factor.

Since all the variables are ordinal and the 3 groups can be considered as independent, we carry out a non-parametric ANOVA with the Kruskal–Wallis test. The ANOVA is one-sided, since we assume the existence of a difference in one

Table 4 Non-parametric ANOVA about price over training quality and benefit

	χ^2	df	p	ϵ^2
Training quality	1.36	2	0.506	0.00185
Training benefit	8.56	2	0.014	0.01166

Most frequent responses are highlighted in bold

Table 5 Pairwise comparison test about price over training benefit

Price	Price	W	p
0	20	- 2.14	0.284
0	150	- 4.08	0.011
20	150	- 2.09	0.303

Most frequent responses are highlighted in bold

direction only (an effect of price on the perception of quality and expected benefit). We are looking for the ratio between the inter-group variance and the intra-group variance.

Since the three groups are considered independent samples, independence is respected within the groups, and the measurement scale is ordinal, the conditions for using the test are respected.

Care is taken to check that the training course (whose content is identified by a number) and the order of presentation have no effect on perceived quality and benefit, also by means of a non-parametric ANOVA, to aggregate the data from the three training courses.

The following results are in Table 4.

There is a significant effect of price over the Training Benefit measure ($p=0.014$). On the Training Quality, there is no significant effect ($p=0.506$).

The strength of the experimental effect is measured by the proportion of variance in the benefit explained by the price and is denoted by the epsilon squared, which is 0.01166 here. We can conclude that the effect of the price on the perceived Training Benefit is “weak” [23], but it does exist.

The sample pairs are compared for the DV Training Benefit using the Dwass-Steel-Critchlow-Fligner test (Table 5).

The effect of the price on the perception of the Training Benefit is visible and generalizable between the values 0 € and 150 €.

The hypothesis is partially verified for the Training Benefit, which allows us to confirm the first part of H2: When the price of a training course is equal to zero, the benefit can be considered by the user as higher than that of a paid training course.

The second part of H2 (When the price of a training course is equal to zero, the benefit can be considered by the user as higher than that of a paid training course, even a cheap one.) cannot be verified here: there is no significant

difference in the perception of benefit between training courses at 0 € and 20 €, nor between training courses at 20 € and 150 €.

Detailed analysis not exposed here make it possible to identify more precisely the factors that influence the general result, thus confirming our hypothesis H2. Women over 50 years of age, not belonging to the category of executives and higher intellectual professions, attach the most importance to the difference in price between paid training, even if it is not very expensive, and free training, when it comes to measuring the general benefit that this may represent for the user.

Discussion

The results of experiment #1 show that there is no evidence of a significant influence of the price of a training course on users' perception of the quality of an online training course: it is not because a training course is presented as expensive that it is perceived as more qualitative than a training course presented as free; a free training course does not therefore seem to be perceived as less qualitative than a paid course. In the sample itself, the statistics even tend to show the opposite effect. In this sense, our first hypothesis is not verified: it cannot be said that price has a clear influence on the value attributed to a training course; it is not because a training course is expensive that it is necessarily considered as qualitative by the user.

As regards the general benefit that a user can expect to derive from an e-learning course, our study shows the presence of a slight effect of price on this perception of benefit for the future learner: if the e-learning course is presented as expensive, the general benefit appears to be less important. A free course is more interesting from this point of view for the user, which allows us to verify a large part of our second hypothesis: when the price of a course is equal to zero, the benefit can be considered by the user as greater than that of a paid course.

However, the existence of the “zero effect” cannot be verified by comparison with a low price, as described by Shampanier [16]. It seems that the perception of benefit for the online courses proposed here is based more on the contrast between the free courses and the more expensive ones: the “zero effect” only works in this context, as far as our study is concerned.

Various explanations can be found for the fact that free education does not seem to influence the perception of quality in e-learning, contrary to what can be found in the literature on the devaluation suffered by e.g., free newspapers [13].

It is assumed that part of the public is used to learning on the internet, for example by looking for a way to perform a specific task by watching a free tutorial on social

networks. Online resources offer the possibility to develop one's knowledge and skills in an unlimited and independent way, without considering direct monetary costs (one still has to pay to access the internet). Price may not be an important factor in the decision-making process of Internet users when choosing an online resource to learn how to perform a task or obtain specific information.

We can also consider that the study itself—proceeding by iteration—has induced a form of “levelling”: the same training format having been offered three times to each participant (since we only vary the price), one can consider that the 3 successive training courses are similar and thus no longer pay attention to the price. Moreover, the 5-point Likert scale often leads to choose the middle option as a “neutral” solution, to avoid having to make a clear statement. The solution would be to ask participants about a single course (instead of 3), still with a random price, with a 4 or 6 point Likert scale, to avoid this repetition and levelling effect.

We could also check the participants' level of knowledge about the topic addressed in each video, as well as the impact that this video may have on this specific knowledge: both elements could have an influence on the two DVs. In this direction, we could also choose training courses more known by most of the participants*.

As far as the perceived benefit is concerned, our hypothesis H2 is partially verified and goes in the direction of the literature, which considers that there is an additional and irrational benefit consubstantial with free access. However, we can recognize that the effect is small for our study and seems to be limited to one category of people, women over 50 years old and non-managers: are they less used to online training? Are they more sensitive to spending money wisely? One can also wonder whether the perception of “cheap”/“expensive” varies according to socio-professional categories**.

Furthermore, the way in which the questionnaire was conducted—via the Internet—only allows it to be addressed to a category of people who are used to using this method of communication. It should also be remembered that the questionnaire was not fully completed by some of the people contacted. We had less than 2% of students and less than 0.5% of workers in our survey***.

Readers should also keep in mind that this study was conducted in France and therefore should not be generalized to other countries without analysing cultural differences.

Study #2

This second study aims at answering to the following weaknesses of the first study:

- Measuring the participants' level of knowledge about the training course subject and adding a training course that may be more known by most of the participants. *
- Measuring the perception of a price (from too cheap to too expensive) which can be different for different socio-professional categories. **
- Having a more representative sample of all socio-professional categories and non-frequent internet users. ***

New Hypotheses and Operationalisation

We will keep hypotheses H1 and H2 from study #1 but will change the operationalisation by replacing the second training by a new better-known training subject: "What is children's development?"

As a consequence of measuring the perceived price, we will have H3 et H4 which will be a transposition of H1 and H2 with the perceived price (from cheap to expensive) replacing the price (0 € to 150 €) as independent variable:

The more a training course is perceived as expensive, the more it is considered as qualitative by the user (H3).

When the price of a training course is considered as very cheap, the benefit can be considered by the user as higher than that of an expensive one (H4).

As we will measure, H4 is slightly different from H2 because it included the idea of the zero effect which cannot be kept when you have a scale from "too cheap" to "too expensive". We will nevertheless consider this effect, since it seems to induce in a museum context a social and non-monetary benefit [13].

In these hypotheses, the factor is the perceived price, and the Dependent Variables (DV) are the value and the benefit assessed by the user. The factor and DVs will be varied according to ordinal scales.

Participants

Participants were selected the same way as for study #1 but an effort was made to have a better representativeness of our sample: more students for instance and also people who are not often connected to the Internet: we proposed the survey in the public space with a tablet.

The survey was conducted via the internet through *LimeSurvey* during June and July 2022. More than 600

people were contacted by email or social networks. No selective recruitment was carried out. 89 persons responded to the survey. We also had 26 persons from the public space.

These 115 participants were composed of 73 women and 42 men.

Data is securely and anonymously stored on the *LimeSurvey* server at the University of Toulouse, in compliance with the General Data Protection Regulation.

Experimental Set-up

Set-up

The set-up was the same as experiment #1 with the following differences:

- The second training course was about child development which is a more commonly known subject (more than the three previous subjects). It replaces the "habitat" training.
- At the end of each of the three training courses, there were two questions about the perception of the price of this course and about the familiarity with its subject (Fig. 5) to control the effect of these variables.
- After the three training courses there were two self-evaluation questions about digital skills (Fig. 5).

Results

Sample

Of the 600 + 26 participants approached, 89 + 26 people completed the survey. From this sample, a profile can be drawn up with the following characteristics.

A majority of women responded to the survey, 73 versus 42 men. The average age of the participants is 45 years (43.7 years for women, 51 years for men).

The most represented socio-professional category is managers and professionals (26,96% vs 32% in experiment #1), followed by employees (12.17% vs. 16%), retirees (12.17% vs. 24%), students (11.30% vs. 2%) and workers (13.6% vs. 0.4%). It is important to note that we reach our goal of a more representative sample having much more students and workers answering the survey.

Fig. 5 Scales for price perception, familiarity with the subject, digital skills

Does the price of this training (n€) seem to you? Too expensive / Expensive but acceptable / Fair / A good deal / Very cheap.
 What was your familiarity about the subject of this training before watching the sample? I did not have any knowledge about the subject / I had some knowledge about the subject / I mastered the subject.

I am able to search information effectively on the Internet.
 Completely agree, agree, neither agree nor disagree, disagree, completely disagree
 After doing a search on the Internet, I am able to evaluate how much the information found is useful or answer my needs.
 Completely agree, agree, neither agree nor disagree, disagree, completely disagree

Table 6 Frequencies of DVs on price

	Price		
	0	20	150
Frequencies of Training quality			
Training quality			
0	7	5	2
1	20	25	32
2	55	57	58
3	28	20	20
4	4	6	3
Frequencies of Training benefit			
Training benefit			
0	5	6	0
1	17	21	33
2	40	43	46
3	47	39	32
4	5	4	4

Most frequent responses are highlighted in bold

In the sample, 41% of the participants have never taken online training. About gender: 39% for women (vs. 54% in experiment #1), and 43% for men (vs. 57% in experiment #1).

About the distinction between free training and paid training, 51.30% have never taken online free training and 70.43% have never taken paid online training.

Descriptive Processing of Data

The frequencies of quality and benefit on price (Table 6) are very similar to the ones from experiment #1: the perception of the quality of a training course does not systematically lead to a perception of the benefit according to the same modality: thus, while the perception of the quality of the training courses presented is mostly perceived as *correct* (and therefore centered around modality 2—*Correct quality*—of the DV Training Quality), the responses concerning the benefit provided by these same training courses are more dispersed over modalities 2 (*Moderate benefit*) and 3 (*High benefit*).

Table 7 shows show a good correspondence between the price and our new variable measuring the price perception of a training (from 0—*Too expensive* to 4—*Very cheap*): The 150 € price has the highest frequency of “Too expensive” and the 0 € price has the highest frequency of Very cheap.

Table 8 shows the frequencies of quality and benefit on price perception are very similar to Table 6 which makes sense.

Finally, Fig. 6 shows a similar knowledge about the three trainings.

Table 7 Frequencies of price perception on price

Price perception	Price		
	0	20	150
0	3	9	63
1	4	12	17
2	28	37	16
3	22	11	3
4	57	44	16

Most frequent responses are highlighted in bold

Table 8 Frequencies of DVs on price perception

	Price		
	0	20	150
Frequencies of training quality			
Training quality			
0	7	5	2
1	20	25	32
2	135	139	117
3	28	20	20
4	4	6	3
Frequencies of training benefit			
Training benefit			
0	5	6	0
1	17	21	33
2	40	43	46
3	47	39	32
4	5	4	4

Most frequent responses are highlighted in bold

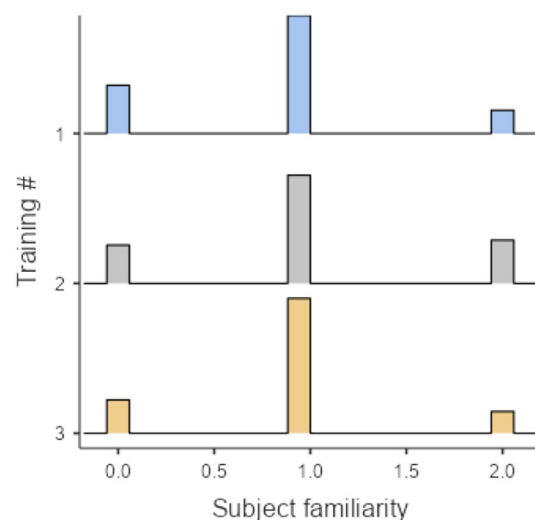


Fig. 6 Familiarity with the subject between 0 and 2

Table 9 Non-parametric ANOVA about price on quality and benefit

Kruskal–Wallis				
	χ^2	<i>df</i>	<i>p</i>	ϵ^2
Training quality	1.58	2	0.453	0.00465
Training benefit	4.40	2	0.111	0.01291

Table 10 Non-parametric ANOVA about price on price perception

Kruskal–Wallis				
	χ^2	<i>df</i>	<i>p</i>	ϵ^2
Price perception	103	2	<0.001	0.301

Inferential Statistics

We will process a non-parametric ANOVA for H1 et H2 as we did in experiment #1.

Care is taken to check that the training course (whose content is identified by a number) and the order of presentation have no effect on perceived quality and benefit, also by means of a non-parametric ANOVA, to aggregate the data from the three training courses. Indeed, we find a weak to moderate effect of the order of presentation on the training quality measure between the order 20-0-150 and the 20-150-0, we will keep it in mind for the discussion.

As we measured the subject familiarity, we also checked that there is no effect of familiarity on the DVs with a non-parametric ANOVA, which is confirmed ($p = 0.131$ for Training quality and $p = 0.568$ for Training benefit).

As all the controls were good, we processed the non-parametric ANOVA about price on quality and benefits. The results presented in Table 9 show there is a no significant effect of price on the training benefit measure while it was significant in experiment #1. On the Training Quality, there is also no significant effect as in experiment #1.

The correspondence between the price perception according to the price has to be checked. We proceed a non-parametric ANOVA as shown in Table 10. The results show a significant effect ($p < 0.001$) with a relatively strong effect $\epsilon^2 = 0.301$ (Rea and Parker [23]) as shown in Table 10. The perception of the price by the participant is therefore consistent with the price shown for each course: the higher is the price, the more expensive it is considered by the participant. This result is summarized in Fig. 7.

The new hypothesis H3 and H4 will be checked with another non-parametric ANOVA as shows in Table 11.

These results in Table 11 show that H3 is not verified but that the statistical test showing the price perception has a significant effect on the training benefit is verified

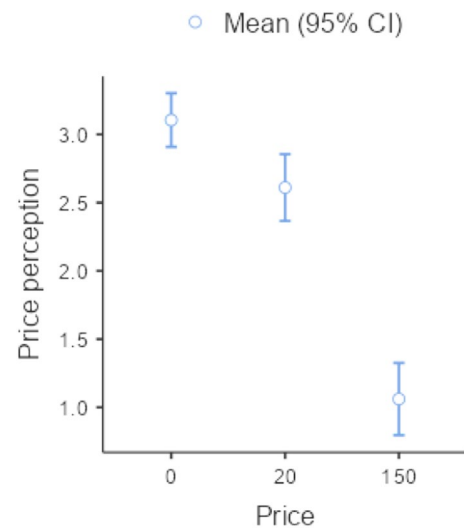


Fig. 7 Distribution of price perception by price (from 0—“too expensive” to 4—“very cheap”)

Table 11 Non-parametric ANOVA about the DVs on price perception

Kruskal–Wallis				
	χ^2	<i>df</i>	<i>p</i>	ϵ^2
Training quality	3.58	4	0.466	0.0105
Training benefit	10.54	4	0.032	0.0309

Table 12 Dwass-Steel-Critchlow-Fligner pairwise comparison test about price perception on training benefit

Pairwise comparisons—Training benefit			
		<i>W</i>	<i>p</i>
0	1	1.983	0.626
0	2	4.592	0.010
0	3	1.585	0.796
0	4	2.982	0.216
1	2	1.684	0.757
1	3	−0.334	0.999
1	4	0.389	0.999
2	3	−2.117	0.565
2	4	−1.634	0.777
3	4	0.831	0.977

($p = 0.032$). The Table 12 shows sample pairs compared for the DV Training Benefit using the Dwass-Steel-Critchlow-Fligner test.

According to this, the effect of the price perception on the perception of the Training Benefit is visible and generalizable only between price 0 (“too expensive”) and price 2 (“fair”).

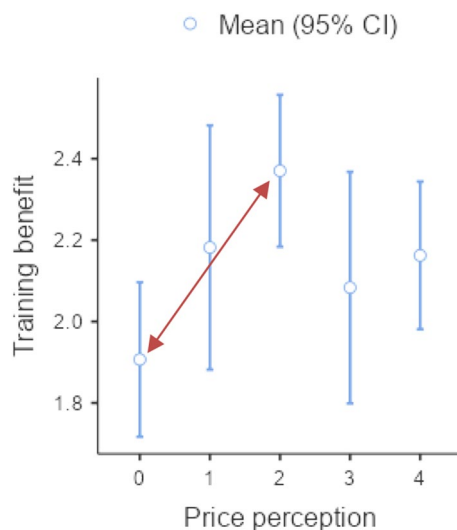


Fig. 8 Distribution of benefit by price perception (from 0—“too expensive” to 4—“very cheap”)

The Fig. 8 summarize this effect and emphasize on the only significant one: when a price of a course is considered as a “fair price”, the benefit is considered by the user as higher than “too expensive” one. This finding is show that the hypothesis H4 (When the price of a training course is considered as very cheap, the benefit is be considered by the user as higher than that of an expensive one) is partially verified.

The effect on women over 50 years of age, not belonging to the category of executives and higher intellectual professions found in experiment #1, was not found in experiment #2.

As a last control, we wanted to check if the familiarity with the training content had not an effect on its perceived quality or benefit. This control was done using the Med-Mod (mediator-moderator <https://blog.jamovi.org/2017/09/25/medmod.html>) module of Jamovi and checking if the familiarity was a moderator variable. Both tests indicate that there is no effect of the familiarity on either of the DVs.

Discussion on the Two Experiments

Experiment #2 was designed to improve and consolidate the results from experiment #1 by:

- Measuring the participants’ level of knowledge about the training course subject and adding a training course that may be more known by most of the participants*.
- Measuring the perception of a price (from too cheap to too expensive) which can be different for different socio-professional categories**.

- Having a more representative sample of all socio-professional categories and non-frequent internet users***.

Having increased the spectrum of participants (more students and workers, more people selected from outside the Internet sphere) has not changed the result on H1 (not verified) but it resulted in disappearance of the partial result we had on H2 with experiment #1.

Measuring the perception of the price has allowed: (1) to confirm a consistent effect of the proposed price on price perception; (2) to verify that H3 was not verified but H4 was partially verified: when a price of a course is considered as a “fair price”, the benefit is considered by the user as higher than “too expensive” one. This finding is consistent with the idea that price, or the perception of a high price, does not increase the hypothetical benefit that the user expects to gain from a course.

Measuring the participant’s level of knowledge about each training content has not shown that knowledge was moderating how they evaluate the quality or benefit of the training.

As a small improvement to avoid any order effect in our results, we should make an experiment with more people but only one online training presented to avoid any effect of the order of the presentation (we found a the weak to moderate effect of the order of presentation on the training quality measure between the order 20-0-150 and the 20-150-0 in experiment #2).

As a general remark, we could regret that there are few studies on the impact of free access on the decision-making process for digital training. However, there is no doubt that online training is becoming increasingly important due to the health crisis, and to be trained, one has to make a choice among all the proposals.

Whether we like it or not, free education is closely associated with the notion of training: state schools have instilled the legitimacy of access to knowledge in us at a very early age. Lifelong learning is therefore a right, and free education is an important modality, which research will certainly explore in the years to come.

Conclusion

Our two experiments have shown that the price of an e-learning course does not necessarily influence the value that the user attributes to it, and that a free course can have the same value and interest as a paid course.

Moreover, experiment #1 has shown that free training is a significant marker in the decision-making process: free training confers an additional benefit to the training, which

goes beyond the simple monetary savings made compared to the same paid offer. As a result, free training can give the user the perception of a greater general benefit than paid training.

Experiment #1 has shown that a price considered as fair gives the perception of a greater benefit than a too expensive one. Experiment #2 has shown that shown the same idea using the “perception of the price” instead of the “price”. These two results imply that training providers should give a great care to avoid too expensive prices for their training sales, and to try to give a “fair price”.

Thus, to determine more precisely the impact of the monetary cost of a training course on the learner's decision-making process, understanding the parameters operating in the perception of this price seems to be an essential question, making it possible to ensure the coherence of the offer in relation to the target audience.

It is therefore tempting to say that there is no reason to doubt the “value of free training” in digital training, and that it may be an interesting development model for companies not to make their users pay the online training courses they create.

Faced with the multiplication of online training offers, it remains now to convince the financiers of the interest to contribute to a social model based on the foundation of a free education or accessible to the greatest number so that these new forms of learning are a vector of equality. A benefit that would take the form of a supplement of soul.

As this study was carried out in France, it should not be generalized to other countries but should promote similar studies in other countries.

A direct application of this study can be seen in promoting training actors to continue to offer free training without fear of being misjudged.

Data availability Data available upon request.

Declarations

Conflict of Interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

References

- Heyman J, Ariely D. Effort for payment a tale of two markets. *Psychol Sci.* 2004;15:787–93. <https://doi.org/10.1111/j.0956-7976.2004.00757.x>.
- Hu M, Lim E-P, Sun A, Lauw HW, Vuong B-Q. Measuring article quality in wikipedia : Models and evaluation. *Proceedings of the sixteenth ACM conference on Conference on information and knowledge management.* (2007); 243 252. <https://doi.org/10.1145/1321440.1321476>
- Caillé A, Chaniel P. Présentation. *Revue du MAUSS*, n° 35(1), 5 44. <https://www.cairn.info/revue-du-mauss-2010-1-page-5.htm>. (2010)
- Anderson C. Free: the future of a radical price. *Choice Rev Online.* 2009. <https://dl.acm.org/doi/abs/10.5555/1594370>.
- Grassineau B. Rationalité économique et gratuité sur Internet: Le cas du projet Wikipédia. *Revue du MAUSS.* 2010;n° 35(1):527–39 (**Vacarme 50 2010**).
- Gall-Ely M, Urbain C, Gombault A, Bourgeon D, Petr C. Une étude exploratoire des représentations de la gratuité et de ses effets sur le comportement des publics des musées et des monuments. *Recherche et Applications Marketing.* 2007. <https://doi.org/10.1177/076737010702200202>.
- Oliveri N. Logiciel libre et open source: une culture du don technologique. *Quaderni.* 2011;76:111–9. <https://doi.org/10.4000/quaderni.139>.
- Stiegler B. Digital studies : Organologie des savoirs et technologies de la connaissance. In *Digital studies organologie des savoirs et technologies de la connaissance.* Entretiens du nouveau monde industriel. (2014)
- Aurier P, Evrard Y, N°Goala G. Comprendre et mesurer la valeur du point de vue du consommateur. *Recherche et Applications en Marketing.* 2004;19(3):1–20.
- Zeithaml VA. Consumer perceptions of price, quality, and value: a means-end model and synthesis of evidence. *J Mark.* 1988;52(3):2–22. <https://doi.org/10.2307/1251446>.
- Grewal D, Monroe KB, Krishnan R. The effects of price-comparison advertising on buyers' perceptions of acquisition value, transaction value, and behavioral intentions. *J Market.* 1998;62(2):46–59. <https://doi.org/10.2307/1252160>.
- Marion G. La formation de la valeur pour le client: interactions, incertitudes et cadrages. *Perspectives Culturelles de la Consommation.* 2013;3(13):46.
- Poels A, Hollet-Haudebert S. Valeur(s) et pratiques associées à la consommation de journaux gratuits. *Revue française de gestion.* 2013;N° 230(1):119–35.
- Gorn GJ, Tse DK, Weinberg CB. The impact of free and exaggerated prices on perceived quality of services. *Mark Lett.* 1991;2(2):99–110. <https://doi.org/10.1007/BF00436031>.
- Protas JM. The cost of free services: organizational impediments to access to public services. *Public Adm Rev.* 1981;41(5):526–34. <https://doi.org/10.2307/976263>.
- Shampanier K, Mazar N, Ariely D. Zero as a special price: the true value of free products. *Mark Sci.* 2007;26(6):742–57. <https://doi.org/10.1287/mksc.1060.0254>.
- Bourgeon-Renault D, Gombault A, Le Gall-Ely M, Petr C, Urbain C. Gratuité et processus de prise de décision dans le domaine culturel : Le cas des musées et des monuments|Association Française du Marketing. (2006)
- Bourgeon-Renault D, Gombault A, Le Gall-Ely M, Petr C, Urbain C. Gratuité des musées et valeur perçue par les publics. *La Lettre de l'OCIM.* 2007;111(31):39. <https://doi.org/10.4000/ocim.764>.
- Bourgeois É. Apprentissage, motivation et engagement en formation. *Éducation Permanente.* 1998;n° 136:1998–3.
- Mignot-Gérard S, Sarfati F. Dispositif de jugement sur la qualité ou instrument de construction de la réputation ? *Terrains travaux.* 2015;N° 26(1):167–85.
- Rivière A. Vers un modèle de formation de la valeur perçue d'une innovation: le rôle majeur des bénéfices perçus en amont du processus d'adoption. *Rech Appl Mark.* 2015;30(5):27. <https://doi.org/10.1177/0767370114549908>.
- Tidey G, Dedieu L, Levert A, Sakdavong J. Free Online Training and Value Perception in France. In *Proceedings of the 14th International Conference on Computer Supported Education—CSEDU,*

ISBN 978-989-758-562-3, (2022); 1:38–48. DOI: <https://doi.org/10.5220/0010977700003182>

23. Rea LM, Parker RA. Designing and conducting survey research: a comprehensive guide. San Francisco: Jossey-Bass Publishers; 1992.

Springer Nature or its licensor (e.g. a society or other partner) holds exclusive rights to this article under a publishing agreement with the author(s) or other rightsholder(s); author self-archiving of the accepted manuscript version of this article is solely governed by the terms of such publishing agreement and applicable law.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.