How do equity crowdfunding investors choose their investments? An analysis based on personal values

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Revue de l'Entrepreneuriat Review of Entrepreneurship

How do equity crowdfunding investors choose their investments?

An analysis based on personal values

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This work analyzes the importance of personal values in equity crowdfunding investment choice. Employing a theoretical framework borrowing theories from the fields of finance, marketing, and psychology, our model proposes several antecedents for investment choice and focuses on the congruence between the investor's personal values and the values promoted by the startup during its fundraising campaign. The results of our laboratory experiment, based on real-life campaign material, suggest that the investor's personal values and interest in the project are more important than the perceived signal quality of the project in explaining the decision to invest. Furthermore, two opposed values emerge from the study—"Universalism" and "Power"—in line with the typical two-way classification of SRI investors into value-based and value-seeking investor groups.

— *Keywords: Equity crowdfunding, investment choice, personal values, value congruence, affective reactions, ethics*

1. Introduction

Equity crowdfunding (ECF) is a recent financing channel for small business entrepreneurs that represents an alternative to traditional bank borrowing, business angels, and venture capital investments. This new tool is important for businesses looking to find early-stage financing from a pool of investors, the crowd, via an online platform (Ahlers *et al.*, 2015). However, unlike business angels and venture capital investors, a proportion of the crowd is composed of unsophisticated investors (Dorff, 2014). It is therefore important that entrepreneurs understand the rationale of these investors. Knowledge of investor psychology is useful for designing an ECF campaign with genuine impact that will enable the business to collect more resources. Understanding crowdfunders' rationale encompasses the central question of project screening and can be formulated as follows, "How do ECF investors choose one project rather than another on a platform?" For most researchers, especially in the entrepreneurial finance literature, the appropriate lens for explaining investment choices is signaling theory (Akerlof, 1970; Spence, 1973). Signaling theory is primarily concerned with reducing information asymmetry between two parties, where the better-informed party sends a signal to the less-informed party. The signaler is an insider who possesses private information about a person or an organization. According to signaling theory, a signal must fulfill two conditions to be effective: first, the signal needs to be observable to be perceived by the receiver and second, the signal must be costly. Information asymmetry is particularly strong within the ECF framework since projects are at the seed stage. In this context, potential investors seek to interpret the available information about a project to detect quality signals (Ahlers *et al.*., 2015). Beyond signaling theory, empirical evidence shows that some weaker and costless signals have an effect on ECF investor choices: the social interactions on the platform (Freedman and Jin, 2014; Iurchenko *et al.*, 2021, Bouaiss *et al.,* 2021), the kinetics of the campaign (Hornuf and Schwienbacher, 2015b), and the completion rate of the fundraising target (Agrawal *et al.*, 2014). Updates posted by the entrepreneur (Block *et al.*, 2018) and comments of other crowd investors (Hornuf and Schwienbacher, 2018) also affect investors' decisions. This kind of social information leads investors, if they are not competent to judge the appropriateness of investments on their own, to imitate by mimicry, an approach that is at the origin of herd behavior.

In addition, a growing number of studies in the entrepreneurial literature explore the non-analytic determinants of project choice in crowdfunding. The affective reaction elicited by the entrepreneur's pitch has been the main focus in recent years. The rational is as follows: since there is no objective evidence of project quality at seed stage, prospective funders also rely on a shortcut decision-making heuristic based on perceived elements of the pitch (Maxwell *et al.*, 2011). The importance of an entrepreneurial narrative is increased in a crowdfunding context since it is conducted on the internet (Fischer and Reuber, 2014) and influences crowdfunders' attitudes and decisions (Wuillaume *et al.,* 2018). With regard to the reward-based model, the entrepreneur's passion as expressed in the pitch and perceived by the backer elicits an affective reaction that is positively related to the success of the crowdfunding campaign (Allison *et al.*, 2017 ; Allison *et al.*, 2022). Some ECF research has begun to address the link between investors' affective states and their investment choices, highlighting the effect of the entrepreneur's rhetoric and the use of a persuasive pitch (Johan and Zhang, 2020; Xiang *et al.*, 2019, Vitanova, 2023).

Focusing on ECF, the most profit-oriented crowdfunding family, these various research streams depict a complex decision-making process not exclusively based on

classic financial rationality (Bouglet *et al.*, 2021), where signals, costly or not, can counteract information asymmetry, but where affective reactions related to the project's characteristics or the persuasiveness of the entrepreneur's pitch play a role in decision making. In this vein, we conducted an initial exploratory study on a large qualitative dataset collected on the ECF platform Wiseed.com[1], composed of 3,020 real-life ECF investor testimonies explaining their reasons for investing in a specific startup. We observed that personal values were a recurrent determinant, whereas they are almost absent from the literature. More precisely, the concept that emerged from the corpus was the compatibility of the investor's personal values with the values conveyed by the company seeking financing.

To the best of our knowledge, works studying personal values in ECF are scarce, whereas they have been studied in the field of socially responsible investment (SRI). According to Michelson *et al.* (2004), the integration of personal values in the decision-making process, along with social and economic considerations, is at the heart of the SRI. For Dembinski *et al.* (2003), ethical investment refers to personal values and convictions. Several works provide evidence for the importance of personal values in the SRI decision-making process (Pasewark and Riley, 2010; Diouf *et al.*, 2016). Note that the non-financial dimension of personal values contradicts the selfish investor model defined by rational decision theorists since it introduces inefficiency by reducing investment options (Hofmann *et al.*, 2008). Ethical investors hence go beyond the risk/return paradigm and aim to ensure that their financial choices are consistent with their personal values and convictions in order to achieve "peace of mind". The SRI literature also explains that investment choices are rarely purely ethical, but instead depend on mixed motivations, financial and non-financial, even in the case of ethical investors (Dembinski *et al.*, 2003). Ethical investors are neither devils nor saints, they are simply human. They are interested in the financial performance of their investments in the same way as non-ethical investors, but they also want to support the causes they believe in (Lewis, 2001). At this stage, little is known about the importance of investors' personal values on their project choice in an ECF context. Our exploratory research therefore emphasizes this concept, which is already central in the SRI literature. According to Fassin and Drover (2017), the role of values may be facilitated by investors' direct contact with entrepreneurs at the nascent stage of projects on ECF platforms. Our article therefore addresses the following question: *To what extent are investors' personal values important in their ECF investment choices?*

To answer this research question, we developed a theoretical framework borrowing theories from the fields of finance, marketing, and psychology, and built an explanatory structural equation model in order to integrate the complexity of several factors involved in the ECF decision-making process. In particular, we have attempted to quantify the role of the congruence between investors' personal values and the values conveyed by the projects in question. We focused our research on the virtual case of a funder who is isolated with no social interactions, in a laboratory experiment designed to capture the effect of personal values, with a focus on personal appraisal.

Our study contributes to the theory and the literature in several ways. First, our results show that the congruence between investors' personal values and the values conveyed by the startup is a highly relevant factor in understanding ECF investment decisions. This is true whether the value is altruistic (societal focus) or selfish (personal focus). Also, whatever the

1. Created in 2008, Wiseed is the leading French ECF platform. As of 2022, a total of €347M had been collected via the platform.

value, the model shows that the quality signal of the project matters. This point allows us to make another analogy with SRI investors, whose motivations are generally mixed and combine financial and non-financial aspects. These complex motivations allow us to go beyond the opposition between self-interest and altruism in ECF, as André *et al.* (2017) did with reward-based crowdfunding. Second, our model provides a new insight into investors' affective reactions by offering a complementary explanation for the generation of these reactions. To the best of our knowledge, our study is the first to investigate the concept of value congruence in ECF. While the entrepreneurial literature focuses on entrepreneurial passion, persuasion, and the contagion effect, in our case, value congruence and other variables (notably interest) are seen as the inputs of an appraisal: they generate affective reactions.

The article is structured as follows: theoretical framework (Section 2), model and hypotheses (Section 3), method and data (Section 4), results (Section 5), and conclusions (Section 6).

2. Theoretical framework

This study takes into account McKenny *et al.* (2017)'s comment regarding the potential of multidisciplinary work to further our knowledge of crowdfunding phenomena, and the call to integrate crowdfunding research and marketing literature from Pollack *et al.* (2021). The theoretical framework used for this research thus relies on two models borrowed respectively from the consumer theory in the marketing field and from emotion theory in psychology. The first model is the advertising persuasion model the second is the appraisal, this latter enabling us to make a link between affective reactions and personal values. In this section, we will also explain why there is a close relationship between these two aspects.

2.1. Advertising persuasion model

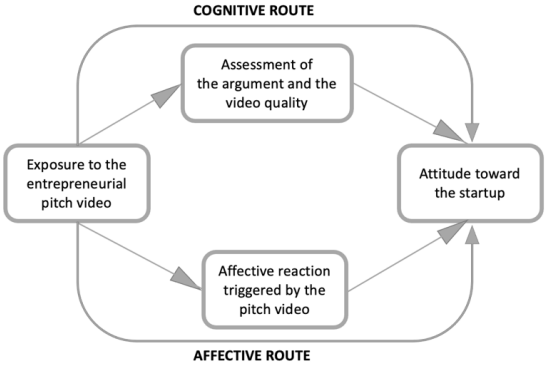
Some researchers have noted the marketing dimension of crowdfunding. Gerber and Hui (2013) propose consumer theory as an appropriate framework for analyzing crowdfunders' motivations. Bessière et Stéphany (2014) explain that crowdfunders react more like consumers than investors because of their lack of financial expertise and because of the scarce information available regarding the early-stage startups that typically leverage crowdfunding. Recent crowdfunding research also borrows theories from marketing, with the integration of consumption value theory (Jiang *et al.*, 2021), for instance. In addition, given that consumer theory appears relevant, we mobilize the literature stream on the notion of affect in consumer theory, since the equity crowdfunding context fulfills the four conditions required to justify the role of affect in consumer behavior (Cohen *et al.*, 2008):

- The personal motivation to analyze the information is weak: the amounts invested in equity crowdfunding campaigns are often low;
- Investors have little time to decide: a study of a real-life investment platform (FundedByMe) shows that more than 72% of equity crowdfunders spend less than 10 minutes making their choice;
- The information is ambiguous and scarce: this is the case with startups at the seed stage; and
- The consumer is not an expert: the crowd is heterogeneous.

The advertising persuasion model belongs to the consumer theory literature stream and is relevant because the inducer takes the form of an advertisement, here the video pitch for the campaign, whose objective is to persuade people to invest in the project. Mollick (2013) shows that videos are the most important factor explaining the success of a crowdfunding campaign. This is in line with the recent finding of Patel *et al.* (2021), who show that funding success is more positively related to image-based rhetoric than to concept-based rhetoric.

The advertising persuasion model explains consumer attitudes toward advertising and toward the brand using two antecedents: firstly, the assessment of advertising characteristics (sales pitch and video quality), which is known as the "cognitive route"; and secondly, mediation of the affective reaction triggered by the advertising (Derbaix and Filser, 2011), which is referred to as "the affective route". Consumer attitudes toward advertising are also an antecedent of the attitude toward the brand. In our context we simplify the original marketing model by replacing the attitude toward the advertising and the attitude toward the brand by one unique variable: the attitude toward the startup. Figure 1 shows the adaptation and simplification of this model to the ECF context.

Figure 1. Advertising persuasion model, simplified and adapted to the ECF context

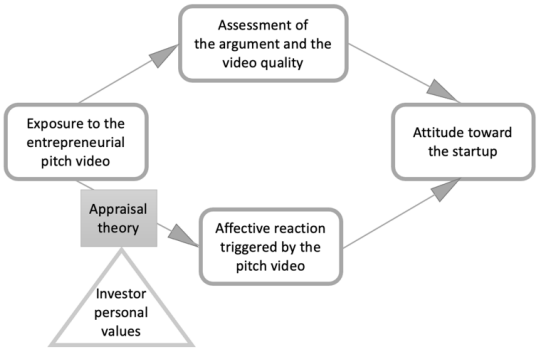


2.2. Appraisal theory

To clarify how affective reactions are generated, we apply the appraisal model, from the psychology of emotions field, whose aim is precisely to describe the antecedent variables for affective reactions. This model—first proposed by Lazarus (1966)—posits that an event generates an emotion only if it can have an impact on the person's goals. The consequence of the event on the person's goals determines the emotion triggered. A positive emotion is generated when the event facilitates the achievement of a goal, in the opposite case, a negative emotion is triggered. Appraisal theory has subsequently been refined to identify the evaluation variables (called the "individual evaluation structure") that trigger and determine the type and intensity of the emotions felt (Scherer, 2000). For example, in their "OCC Model", Ortony *et al.* (1988) define individuals' goals, standards (i.e., the social and personal norms they respect), and preferences as evaluation variables. It is worth noting that goals can be identified with personal values according Schwartz (1996), thereby creating a link with personal values, the central concept of this research.

With appraisal theory, we can explain the affective reaction triggered by the entrepreneurial pitch video in the advertising persuasion model. The affective reaction is triggered by several psychological variables, activated by viewing the video. Figure 2 combines the advertising persuasion model, appraisal theory, and investors' personal values.

Figure 2. Combination of the advertising persuasion model, appraisal theory, and investors' personal values



3. Model and hypotheses

In our model, the "Investment choice intensity" variable is the explained variable. It measures the intensity of the investment in an asset A, calculated as the ratio of the amount invested in asset A to the total amount to be invested in equity crowdfunding by one investor. Investment intensity is the result of a process that integrates both a cognitive route and an affective route.

3.1. The cognitive route: information asymmetry and trust

In an agency relationship, investors try to collect quality indicators or signals from entrepreneurs to reduce the information asymmetry (Manigart *et al.*, 1997). The need to reduce information asymmetry is strong in an ECF context since some investors are unsophisticated and are unable to perform a financial analysis. For this reason, managers have an incentive to send funders clear signals about the value of their business (Ahlers *et al.*, 2015). As already mentioned, in an ECF context, costless and low cue validity can also act as a quality signal. This is specifically the case with the business plan. We define the perceived signal quality variable as a psychological variable based on an analysis of a mix of high and low cue validity (business plan and entrepreneurial team characteristics). Formally, we hypothesize:

Hypothesis H1. Perceived signal quality impacts positively the trust (in the management team).

Research on venture capital emphasizes the importance and necessity of establishing a trust relationship between investors and entrepreneurs (Bammens and Collewaert, 2014), the latter having to prove their trustworthiness by revealing accurate and honest information about the prospects of their business. In their exploratory study on crowdfunding, Gerber and

Hui (2013) identify trust in entrepreneurs as a motivation for investing. Furthermore, an empirical study confirms the causal relationship between trust and equity crowdfunding investment decisions (Cholakova and Clarysse, 2015). Formally, we hypothesize:

Hypothesis H2. Trust (in the management team) impacts positively the investment choice intensity.

3.2. The affective route: antecedents and effects of affective reactions

3.2.1. Affective reaction antecedents

Schwartz (2006) explains that the activation of individual's values by an event automatically generates an emotional response. This emotion will be stronger when the individual's values are subjectively more important. The mechanism is based on the close relationship between values and affects (Maio and Olson, 1998). The appraisal model explains the association between activating values and generating emotions if we consider values as desirable goals, according to Schwartz (1996)'s definition. In the SRI field, Michelson *et al.* (2004) explain that some investors choose to put their money in investments that are consistent with their personal values, even if they have poor performance expectations, just to feel good, i.e., to achieve a positive affective reaction. Works in the marketing field also show that personal values can induce emotions, for example with advertising (Holbrook and O'Shaughnessy, 1984). As previously explained, it seems appropriate to compare the entrepreneur's video pitch with advertising. Formally, we hypothesize:

Hypothesis H3. Value congruence impacts positively the affective reaction.

In his experiment on the subliminal exposure of objects to subjects, Zajonc (1968) shows evidence of the correlation between affect and exposure frequency. This mechanism, the "mere exposure effect", explains the preference for what is familiar. The more frequent the exposure to a stimulus, the stronger the preference. Preferences are classified as affective reactions (Derbaix and Pham, 1989), meaning that familiarity (frequent exposure) induces an affective reaction (the preference). A meta-analysis by Bornstein (1989) of more than 200 studies published between 1968 and 1987 on the exposure-affect relationship supports this hypothesis. Thus, in an ECF context, an investor who is familiar with at least one characteristic of the startup (management team, sector of activity, geographical area, and so on)[2] will feel a preference (affective reaction) towards it. Formally, we hypothesize:

Hypothesis H4. Familiarity impacts positively the affective reaction.

In line with the seminal work of Hidi and Baird (1988), we chose to conceptualize interest via two dimensions, situational interest and individual interest, since this dichotomy corresponds to our observations of the qualitative data from the Wiseed.com platform. Also, in our paper, interest measures both interest in the startup (situational interest) and interest in the startup industry sector (individual interest). With this two-dimensional concept, interest is both a cognitive and an affective variable. For Schiefele (1991), there is a causal relationship

2. The importance of familiarity in crowdfunding has been noted by several researchers (Agrawal *et al.*, 2011; Gerber and Hui, 2013; Mollick, 2013) but only in terms of the link with the management team. We extend the concept, based on a preliminary qualitative study using our data set. In our study, familiarity measures the investor's familiarity with the attributes of the startup (see Appendix 1 for more details).

between individual interest and a set of positive emotions, such as the joy felt when in contact with the object of interest. This can be explained by the very nature of individual interest: a stable preference for a domain, a subject, or an activity. It is the encounter between the object of interest and the individual that triggers a positive affective reaction. Hidi (2000) also explains the association between interest in an object and the affective reactions it triggers, such as joy. Formally, we hypothesize:

Hypothesis H5. Interest impacts positively the affective reaction.

The intuition for this hypothesis initially came from our exploratory study of the Wiseed qualitative corpus. After having identified the theme of "personal values" as recurrent by a simple reading, we analyzed the corpus by thematic coding to ensure the real importance of this theme using the open source lexicometry tool TXM.[3] We counted the occurrences of lemmatized forms related to the values theme (3% of the corpus) then computed the lexical intensity resulting from a count of words related to the concept of value (11%). In a second step, we tried to define this variable more precisely by using the co-occurring words located near the "value" lemma. Three of the four most frequent co-occurring words were verbs ("adhere", "share", and "match"), suggesting that investors link their own values to those of the project because of its congruence. A return to the text by concordance confirmed this interpretation as shown by the verbatim quotations provided below (section 4.1), leading us to define the concept of "value congruence" to express the intensity of the correspondence between the values of the company and those of the investor.

After this inductive step, we came back to the theory and found support in the literature. For theorists, the concept of value includes a motivational force that guides behavior (Rokeach, 1973; Feather, 1995; Schwartz, 2006). The literature on equity crowdfunding implicitly mentions the role of certain values as a motivational determinant, in particular the values of "stimulation", "power", "benevolence", and "universalism" from Schwartz (1992)'s typology. The reference is implicit, because although the authors refer to motivations rather than values, these motivations express the will to achieve goals that are identifiable with values. For example, Gerber and Hui (2013) identify the altruistic motivation of investors driven by the desire to help entrepreneurs whose project goal they share. This motivation can be associated with the value of "benevolence". Symmetrically, the work of Cholakova and Clarysse (2015) highlights a primarily utilitarian and financial motivation on the part of investors that corresponds to the value of "power" through financial resources. Formally, we hypothesize:

Hypothesis H6. Value congruence impacts positively the investment choice intensity.

The importance of familiarity with an object for the choices made about it is known as familiarity bias. This bias is verified when an individual chooses one option over another simply because it is more familiar (Heath and Tversky, 1991). This cognitive bias is well known in the field of financial markets. For example, Frieder and Subrahmanyam (2005) show that individual investors tend to choose companies whose brand is known, in other words, familiar. The literature on crowdfunding also identifies familiarity, notably with the entrepreneur's relatives or the startup's geographical region, as a determinant of fundraising campaign success (Gerber and Hui, 2013; Lin and Viswanathan, 2015). Formally, we hypothesize:

3. Lexicometry analysis performed with TXM, a free and open-source text/corpus analysis tool (https://sourceforge.net/projects/txm/).

Hypothesis H7. Familiarity impacts positively the investment choice intensity.

The literature on equity crowdfunding emphasizes interest (in the startup project) as a motivational determinant of investment. Schwienbacher and Larralde (2010) argue that investors are not only guided by profitability, but also need to be interested in the project. Ryu and Kim (2016) also identify interest as a motivational variable that can be used to explain investment choice. For these authors, interest drives attention to projects that match investors' preferences. Formally, we hypothesize:

Hypothesis H8. Interest impacts positively the investment choice intensity.

3.2.2. Affective reaction effects

Affective reactions are involved in individuals' decisions. One explanation is given by the affect heuristic (Slovic *et al.*, 2002), where individuals base their judgments of the benefits and risks associated with an object on their emotional feelings, without relying on cognitive reasoning. Adapted to a risk/benefit decision-making context such as a financial investment situation, the affect heuristic enables us to understand the phenomenon of an inverted correlation between risk and perceived benefits (Lichtenstein *et al.*, 1978). Slovic *et al.* (2002) also closely link images and affect heuristics. In an ECF context, the emotional inducer is a video. Finally, in the literature on crowdfunding, several authors mention affective reactions as a determinant of investor choice (Milovac *et al.*, 2015; Davis *et al.*, 2017). Formally, we hypothesize:

Hypothesis H9. Affective reactions impacts positively the investment choice intensity.

Like Bessière et Stéphany (2014), we believe that, in ECF, the holistic and immediate nature of the affective reaction alters the perceptions that form the investor's judgments. Trust is a variable composed of beliefs about the managers of the startup being evaluated. These beliefs are shaped by perceptions regarding the project team. The halo effect describes a contagion of judgments about all of a person's characteristics from the judgment of a single characteristic (Thorndike, 1920). The affective halo effect, studied in the field of marketing, is a variant of the halo effect, describing the influence of the affective on consumer perceptions (Wilkie, 1990). In the case of ECF, the positive affective reaction (pleasure felt) of discovering that a member of the startup management team is a friend, leads to a positive overall perception of the management team, which hence benefits from a favorable initial perception and from the investor's trust. Formally, we hypothesize:

Hypothesis H10. Affective reactions impacts positively the trust (in the management team).

According to Schiefele (1991), personal values orient individuals towards objects of interest, whether for personal development or to understand important issues. One of the two sub-dimensions of individual interest refers to the value of the object of interest, in other words, the subjective and intrinsic importance of the object of interest for the individual, which is connected to personal values. Thus, the activation of an individual value by encountering an object may be a reason for the individual's interest in the object. Krapp (2005) and Fenouillet (2016) also make individual values the antecedent of interest. Formally, we hypothesize:

Hypothesis H11. Positive value congruence impacts positively the interest.

Figure 3 shows all of the hypotheses in our explanatory model. The integration of the model into our conceptual framework is shown in Figure 4.

Figure 3. Equity Crowdfunding explanatory model

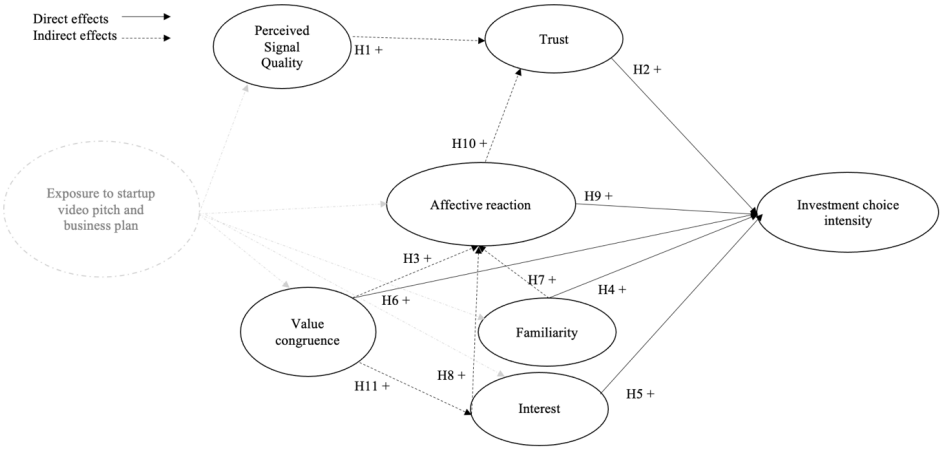
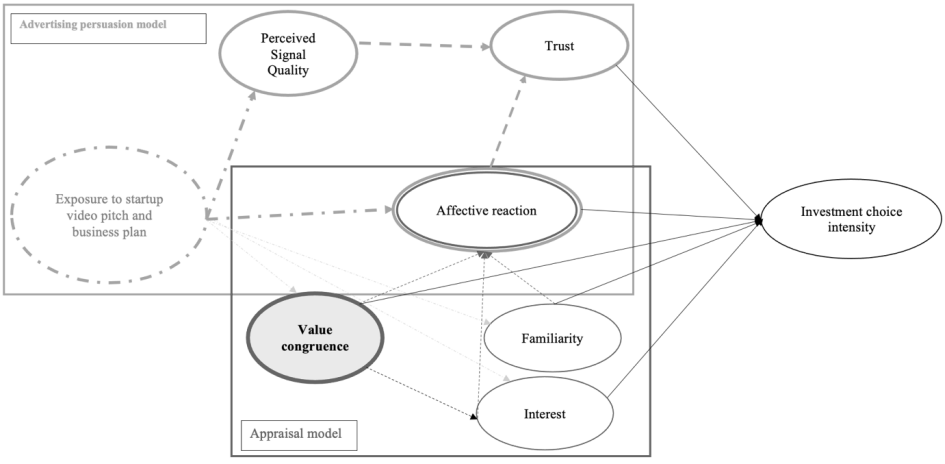


Figure 4. Equity Crowdfunding explanatory model and theoretical framework



4. Method and Data

To test our hypotheses, we conducted a decision-making experiment involving students from the University of Burgundy in France. A total of 100 students participated in the study. To detect inattentive participant responses, we implemented and controlled an automatic straightlining indicator, no students gave straightlining responses. Table 1 presents the statistics of our sample.

Table 1. Student sample statistics

Number of students	100
Average student age	20 years and 10 months
Student age variance	2 years and 11 months
Minimum / Maximum age	17 years / 39 years
Male / Female percentage	38% / 62%

We collected an empirical dataset by conducting a realistic, but controlled, experiment[4]. Controls allow us to specify the causal links tested in the experiment and to isolate the participants in order to avoid mimicry effects (not tested here). The empirical dataset utility was designed to estimate the structural equation model (SEM) coefficients corresponding to the explanatory model presented in Figure 3. The SEM estimated coefficients were then used to test the model hypotheses based on their significance. In line with Chin and Newsted (1999), we estimated the structural equation model using the Partial Least Squares (PLS) approach, providing a means of estimating models using structural equations, i.e. simultaneous linear dependency relationships that can be broken down into a measurement model and a structural model. The measurement model links indicators (observable or manifest variables) to latent variables. The structural model links the latent variables causally. This method enables several dependency relationships to be estimated simultaneously. Also, one important reason leads this choice: the covariation constraint on indicators of the same concept that prevails in the covariance-based SEM method is relaxed, allowing formative and reflective concepts, and not just reflective concepts, to be used in the model specification, which is our case.

4.1. Variables

Table 2 specifies the measure scales used for the constructs and Appendix 1 gives complete definitions. With the exception of the single-indicator variable, the other variables were designed by adapting measure scales from the literature by means of the analysis performed on the qualitative dataset presented above.

As explained in H6, the variable "value congruence" comes directly from the testimony dataset.

Below a sample of testimonies in which investors justify their choice in terms of their personal values:

> *"I invested in this project because their innovation matches my values!"*
> *"I invested in this project because this company seems aligned with my values and I think the bioprinting sector is very promising."*
> *"I invested in this project because it is in line with my values (social, ecological)."*
> *"I invested in this project because it corresponds to my environmental, economic, and social values."*

4. The questionnaire (in French) and data can be downloaded from the following website: https://drive.google.com/drive/folders/1qBzUcO4tHeelPgYhbWOIewU-ssCdzy43?usp=drive_link

Table 2. Variables

Variable name	Independent Dependant and Mediator	Variable nature: reflective/ formative/ computed	Scales used or adapted	Remarks
Investment choice intensity	Dependant	Computed	N/A	Single-indicator variable, computed as the ratio of the amount invested in the project compared with the initial endowment
Trust	Mediator	Reflective	Gurviez et Korchia (2002)	Adapted with a qualitative dataset
Perceived signal quality	Independent	Formative	Ahlers *et al.* (2015)*	Adapted with a qualitative dataset
Affective reaction	Mediator	Reflective	Mehrabian et Russel (1974)	Adapted with a qualitative dataset
Value congruence	Independent	Computed	Lindeman et Verkasalo (2005)	Single-indicator variable, see in the text for details
Familiarity	Independent	Formative	Korchia (2004)	Adapted with a qualitative dataset
Interest	Mediator	Reflective	Schiefele *et al.* (1993)	Adapted with a qualitative dataset

* Ahlers *et al.* (2015) present items acting as startup signals for ECF fundraising success rather than a scale.

In H6 we defined the "value congruence" variable as measuring the intensity of the correspondence between the company's values and those of the investor. The greater the correspondence between the values of the company and of the investor, the higher the value congruence will be. Since the concept of value congruence is defined as the intensity of the fit between the values of the individual and of the company, we have chosen to measure the distance between these values, rather than to ask the subject an abstract question requiring introspective ability, such as, "How highly does this project rank in your value hierarchy?" We therefore determined the subject's value hierarchy and then computed a measure based on the distance between the company's values and the subject's value hierarchy. This approach of measuring a latent variable by a similarity measure or a distance is used in the social sciences, for example to operationalize the concept of Individual-Organization Fit, used to measure a firm's attractiveness for a potential recruit. Kristof (1996) refers to the methods of measuring fit as follows, "*A second popular method to assess the fit between person and organization is to reduce this measure to a single index reflecting the degree of similarity between them. Researchers have generally used the bivariate congruence index of algebraic (X-Y), absolute (|X-Y|), or squared (X-Y)² difference*." To assess each subject's value hierarchy, we used the SSVS scale, a reliable and valid measure proposed by Lindeman et Verkasalo (2005) focusing on the 10 values from Schwartz (1992). We initially defined four values that characterized the four companies selected in our experiment according to a selection process detailed just below in Section 4.2 (Table 3 and Figure 5). We then computed

the Manhattan distance, applied to ranked vectors of different modalities. A computation example is presented in Appendix 2. In addition, since we expect "value congruence" to be high when similarity is strong—meaning that the distance is low—we built an indicator that reverses distance, and then standardized it[5]:

$$\textit{Value Congruence}\,(\textit{Value Company}, \textit{Subject Value Hierarchy}) = \textit{Value Congruence}\,(C, H) = \frac{10 - d(C, H)}{10}$$

4.2. Experimental materials

We followed recent scholarly recommendations for designing a realistic experiment with appropriate materials (Colquitt, 2008; Wood *et al.*, 2017). We therefore developed materials based on real-life campaigns (video pitches and business plans) available on the Wiseed.com platform. Our selection on the platform was based on one constraint: the ability to match each campaign with a value identified among the Schwartz (1992) values. Moreover, the values identified had to be sufficiently far apart (i.e., without overlapping content) to ensure sufficient variance for our value congruence analysis. A qualitative analysis of the discourse (pitch and business plan) conducted in the first phase of this study enabled us to highlight four values that meet our constraints: universalism, stimulation, tradition, and power. Table 3 below gives the conceptual definition of those values.

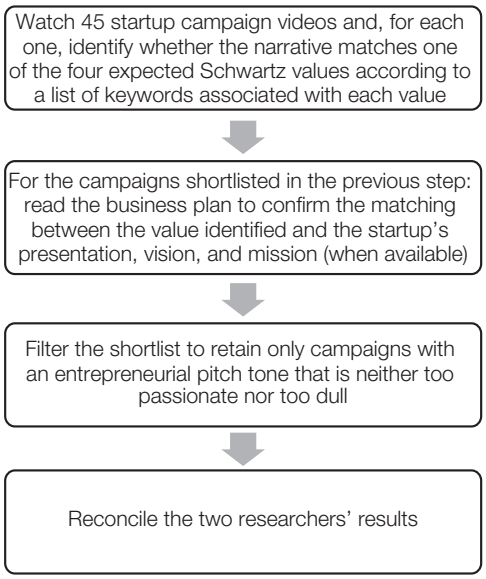
Table 3. Conceptual definition of values

Value	Conceptual definition	Illustrative testimonies from Wiseed Dataset (Sentence begins with 'I invested in this startup […]')
Universalism	Understanding, appreciation, tolerance, and protection of the welfare of all people and of nature	"because its approach is in line with the protection of nature" "because the project is strongly oriented towards sustainable development and preservation of natural resources"
Stimulation	Excitement, novelty, and challenge in life	"because I am interested in the novelty of the medical approach" "because I think it is an innovative and ambitious project"
Power	Social status and prestige, control or dominance over people and resources	"for the following reasons: A probable higher return in the long term by being a direct shareholder" "because it is a product of the future with a high return in 5 years"
Tradition	Respect, commitment, and acceptance of the customs and ideas that traditional culture or religion provide	"because I am convinced of the benefits of tips, tricks, and grandmotherly remedies" "because I like the concept [...]. Let's go back to the basics: simple, common sense and inexpensive"

5. By construction: $d(C,H) \in [0,9]$, we reversed: $10 - d(C,H) \in [1,10]$, then standardized: $[10 - d(C,H)]/10 \in [0.1,1]$.

The campaign screening was processed separately by two researchers on a set of 45 startups where data were public and collected at the time of this research. Figure 5 details the procedure.

Figure 5. Selection process for the four crowdfunding campaigns retained



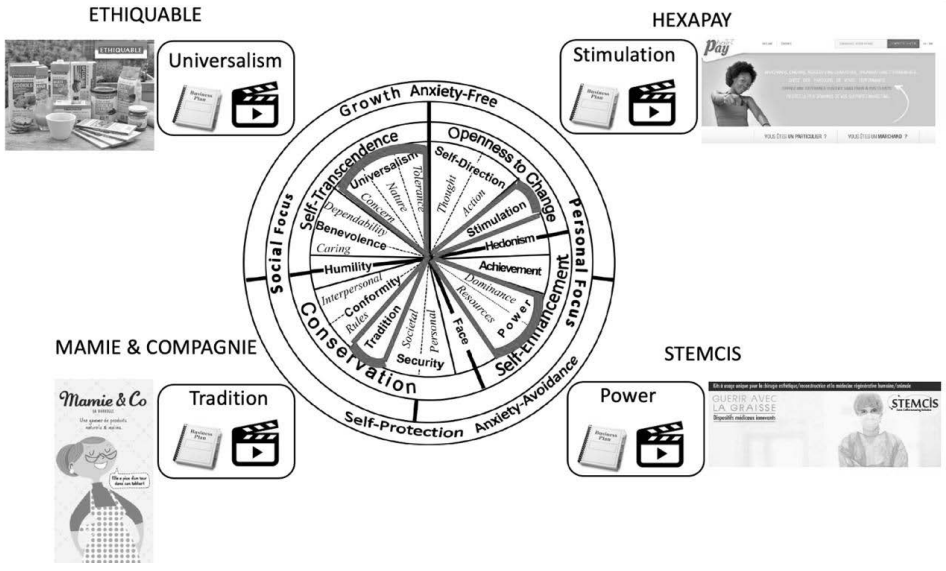
In this process, it was important to select video pitches where the entrepreneur's narrative was neither too passionate nor too dull in order to limit the contagion effect as much as possible. Effectively, in our explanatory model, the affective reaction is generated by the individual evaluation structure (defined by three variables in our context: value congruence, familiarity, and interest), in line with appraisal theory. At the end of this process, we retained four startup campaigns from the 45 startups analyzed: Ethiquable, Hexapay, Mamie & Companie, and Stemcis. Each campaign was associated with one entrepreneur's pitch (lasting 1 minute)[6] and one summary business plan of around three or four pages clearly indicating the value promoted by each startup. Appendix 3 gives a brief presentation of each company and Figure 6 shows their distribution around the Schwartz (1992) circumplex.

To improve the ecological validity of the experiment, we asked a small group of management science experts to assess the experimental materials (Wood *et al.*, 2017), i.e. the video pitch and the summary business plan (see an example of a business plan in appendix 4). We also defined a random incentive (a 10 or 20 € gift voucher with a 50/50 chance), independent of the participants' choices, to simulate the uncertain consequences of a real investment in equity crowdfunding.[7]

6. The videos of the experiment (in French) can be viewed at the following Internet address: https://drive.google.com/drive/folders/15oTmwCGMcb2jP5rllwlO7A8C_mfPGqTz

7. Indeed, venture capital investment is seen by some academics as a lottery due to the high uncertainty of a start-up's success.

Figure 6. Project distribution around the Schwartz (1992) value circumplex



4.3. Experimental procedures

Once the participants had settled into the experiment room, general instructions concerning the anonymity of the questionnaire were given. To avoid any social interaction, participants were asked to turn off their mobile phones and were told that they were not allowed to talk during the session. A neutral definition of equity crowdfunding, extracted from Wikipedia, was read out so that participants had a minimal understanding of the purpose of the experiment.

After this preparatory phase, the experiment opened with the projection of the four pitch videos. Each video was immediately followed by a pause dedicated to answering questions linked to the affective reaction measure. Participants were then given 12 minutes to study the four business plans (3 to 4 pages per business plan). This was about one minute per page, which was sufficient according to our pre-tests and in line with the real world where the decision-making process of equity crowdfunding investors is rapid and not very thorough. As showed by Skoglund et Stiernblad (2013), 72% of 390 equity crowdfunding investors spent less than 10 minutes analyzing the project information available. This point is explained by Mollick et Nanda (2015) who justify the low motivation of investors to analyze information by the small amounts at stake, sometimes limited to a few euros Hornuf et Schwienbacher (2015).

At the end of this analysis time, each participant had to make an investment choice via an online questionnaire. Each participant had a virtual total of €200[8] to invest in totality

8. The sum of 200 EUR was set on the basis of reasoning based on the transposition of the average amounts invested by ECF investors to the savings capacity of students.

with the constraint that the allocation per project had to be a multiple of €50. This means the participant had to invest either €0, €50, €100, €150 or €200 in each project so that the sum was equal to €200. Appendix 5 shows the allocation question from the experimental material. Allow us to precise that the script for the experiment indicated at the outset that the subject had decided to invest the sum of EUR 200 for personal reasons, on an Equity CrowdFunding platform. Since our aim was to study the choice and preferences of investors who invested, we eliminated the case of an investor who finally chose to withdraw without investing because no project would interest him sufficiently. Moreover, the four projects presented in the experiment cover a broad spectrum of interests.

After an explanation on the meaning of the 5-point Likert scale, students completed the rest of the online questionnaire. At the end of the one-hour experiment, when each participant had completed the questionnaire, students were thanked and rewarded with a random financial incentive in the form of a €10 or €20 gift card.

To ensure the internal validity of the experiment, we took the following precautions:

(1) *Cooperative or contradictory behavioral biases*

We chose not to reveal the objective of this research, but without providing a deceptive objective as advocated by the principle of deception applied by experimental psychologists, to avoid two problematic behaviors described by Weber et Cook (1972)—cooperative "good subject" behavior or contradictory subject behavior.

(2) *Instrumentation bias*

We conducted a pre-test with four people, including two doctoral students, to ensure that they understood the questionnaire.

(3) *Bias of contamination between subjects*

This bias can occur when participants discuss the objective of the experiment among themselves. In our case, the two people running the experiment made sure that the instructions prohibited any exchange during the experiment.

(4) *Affective contamination bias*

The contamination of affective reactions is a phenomenon studied within the framework of advertising. It occurs when an advertisement arousing a low or medium intensity emotion is immediately preceded by an advertisement eliciting a strong affective reaction with negative valence (Poncin et Derbaix, 2009). In our experiment, none of the four pitch videos is likely to elicit a strong negative affective reaction. In addition, each video was separated from the following one by a pause during which participants evaluated their feelings via an online questionnaire to isolate each sequence.

5. Results

We first test the quality of the measurement variables and then present the results of our explanatory model.

5.1. Quality of measurement variables

Single-indicator (computed) variables

According to Hair *et al.* (2017), single-indicator variables are perfectly suited to measuring observable variables, which is the case for the variable "Investment choice intensity", directly given by each participant's investment choice. This variable is calculated as the ratio of the amount invested in the project to the initial endowment. "Value congruence" is also a single-indicator latent variable, computed as the relative importance of the project's value for the investor. For these two variables, the correlation between the single-indicator variable and its indicator is always 1, meaning that they have the same value. By definition, there is no measurement error between the true value and the measurement (the measurement is the true value). The psychometric evaluation criteria of validity and reliability are therefore not applicable (Hair *et al.*, 2017). Note that the nomological validity of the "Value congruence" variable is confirmed by links between measures consistent with the hypothetical links between constructs (cf., H6 and H11).

Reflective variables

Reliability is controlled with two indicators: the reliability indicator (equal to the square of loadings) and average variance extracted (AVE). Reliability indicators and AVE should be greater than 50%. We note that few construct indicators have reliability indicators below the required threshold of 50% and that three indicators (BIENV2, INTE3, and EMO2) were significantly lower. Nevertheless, in line with the procedure and recommendations of Hair *et al.* (2017), we did not remove them. Internal consistency reliability is controlled with Cronbach's Alpha and Jöreskog Rho indicators, where a value between 0.70 and 0.90 is satisfactory for confirmatory research. In our case, this condition is fulfilled. Discriminant validity ensures that the latent variables are sufficiently distinct from one another, each capturing a phenomenon not represented by the others. Correlations between latent variables should thus not be too high. The Heterotrait-Monotrait ratio (HTMT) approach, proposed by Henseler *et al.* (2015), allows us to control the discriminant validity. This indicator suggests a maximum threshold of 0.90 if the constructs are conceptually similar and 0.85 for conceptually distinct constructs. In this study, a statistical hypothesis test was realized by bootstrapping to ensure an HTMT ratio statistically significantly different from 1 with 95% confidence intervals. Appendix 6 summarizes the psychometric measures of our reflective constructs.

Formative variables

Formative constructs (or the index) are defined by the measurable indicators that constitute them. Because the index is a weighted linear function of its measures, there is no measurement error. The indicators of the formative constructs represent the independent causes of the index and are not necessarily correlated. Moreover, the indicators have, by hypothesis, no measurement error (Diamantopoulos, 2006). These two points imply that the study of reliability is not relevant. Also, the criteria of convergent and discriminant validity have no place in the context of formative constructs (Vinzi *et al.*, 2010). We therefore followed the recommendations of Hair, Jr. *et al.* (2017) who propose the analysis of three dimensions (table 4): convergent validity, control of collinearities, significance and relevance of indicators.

Table 4. Psychometric quality of the formative constructs

	Familiarity	Perceived signal quality
Convergent Validity	Correlation (Familiarity, mono item indicator) = 0.584 < 0.7	Correlation (Perceived signal quality, mono item indicator) = 0.489 < 0.7
Control of collinearities	Variance Inflation Factor (VIF) < 5 for each indicator	Variance Inflation Factor (VIF) < 5 for each indicator
Significance and relevance of indicators	Outer loadings (except one) are significative	Outer loadings are significative

The low correlation coefficients of the two constructs, regarding the convergent validity dimension, may be explained by the decision to use a mono-item construct rather than a reliable and valid reflective construct from the literature, so as not to increase the size of the questionnaire and generate more cognitive fatigue. This is not a showstopper since, as explained by Hair, Jr. *et al.* (2017), the criterion of content validity (the selected indicators build an index that correctly approximates the concept studied) is more important than that of convergent validity (convergence towards a reliable and valid equivalent reflective construct that cannot exist given the singularity of the formative construct proposed).

Finally, this set of results demonstrates the validity of the measurement variables used in the study, which allows us to consider an analysis of the structural model in the next section.

5.2. Explanatory model

First, below, in table 5, are the statistics for the allocation of the experiment by project:

Table 5. Descriptive statistics per project

Projet	Nb Investors	Sum	Mean	Median	Mode	Standard deviation
ETHIQUABLE	92	10000	100,0	100,0	100,0	51,7
HEXAPAY	20	1450	14,5	0,0	0,0	34,3
STEMCIS	54	4200	42,0	50,0	0,0	47,0
MAMIE & CO	58	4350	43,5	50,0	0,0	46,4

Tables 6 and 7 present the descriptive statistics and correlation coefficients of our variables (all statistically significant with p-values < 0.05). We calculated variance inflation factors (VIFs) for the full structural model, indicating no significant multicollinearity concerns since the higher VIF value was 2,5 with an average of 1,695, which is below the threshold of 5.

Table 6. Variables—descriptive statistics

	Trust	Value congruence	Familiarity	Interest	Perceived signal quality	Affective reaction	Investment choice intensity
Average	0.044	0.012	-0.06	0.01	0.065	0.001	0
Median	0.073	-0.045	-0.103	0.021	0.102	0.076	0
Standard deviation	0.991	1.006	0.999	1	0.962	1.027	0.978
Variance	0.982	1.012	0.997	1.001	0.926	1.054	0.956
Kurstosis	0.273	-1.328	-0.745	-1.012	0.173	-0.697	-0.322
Skewness	-0.509	0.122	0.556	0	-0.377	-0.203	0.825
Range	5.439	2.929	3.637	4.262	5.773	4.744	3.566
Minimum	-3.402	-1.347	-1.148	-2.113	-3.608	-2.883	-0.891
Maximum	2.038	1.582	2.489	2.149	2.165	1.861	2.674

Table 7. Variables—correlations

	Trust	Value congruence	Familiarity	Investment choice intenslty	Interest	Perceived signal quality	Affective reaction
Trust	1.000						
Value congruence	0.156	1.000					
Familiarity	0.366	0.264	1.000				
Investment choice intensity	0.497	0.289	0.416	1.000			
Interest	0.594	0.299	0.579	0.673	1.000		
Perceived signal quality	0.537	0.151	0.272	0.377	0.456	1.000	
Affective reaction	0.512	0.21	0.446	0.483	0.629	0.426	1.000

The relevance of the full model, showing its predictive quality, is summarized in Figure 7, which indicates the R^2 for each dependent variable of the PLS-SEM.

Figure 7. Equity Crowdfunding explanatory model with R^2

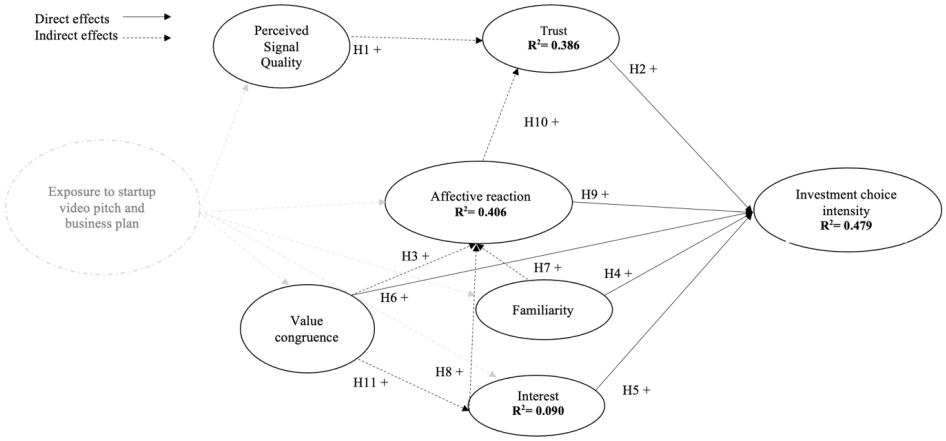


Table 8 shows the statistical test results for the model's hypotheses, with the rightmost column indicating accepted and rejected hypotheses at the 5% threshold. All hypotheses were verified at the 5% threshold except H3, H4, and H9. We have also introduced two control variables for the structural model: age and the fact of having already invested in equity crowdfunding, which are not significant at the 5% level.

Table 8. Model coefficients—significance / ***p < .01, **p < .05, *p < .1

Hypothesis	Coefficients	P Values	P Values < 0.05
H1	0.390	0.000***	true
H2	0.140	0.004***	true
H3	0.011	0.824	false
H4	0.015	0.793	false
H5	0.514	0.000***	true
H6	0.096	0.042**	true
H7	0.122	0.049**	true
H8	0.555	0.000***	true
H9	0.062	0.245	false
H10	0.346	0.000***	true
H11	0.299	0.000***	true

To capture the importance of each explanatory variable, we calculated its total effect, including both the direct effect and all indirect effects (via the mediating variables), in line with Hair *et al.* (2017). The results are reported in Table 9 and show that:

- The two main exogenous determinants of "Investment choice intensity" are "Interest" and "Value congruence", with "Trust" coming in third place. The impact of "Perceived signal quality" is clearly weaker.
- "Affective reaction" is largely determined by "Interest", followed to a lesser extent by "Value congruence".
- "Trust" is mainly determined by "Perceived signal quality" and "Affective reaction". The relative balance of weights associated with those antecedents makes "Trust" a mixed variable, both affective and cognitive.

Table 9. Total effect of explanatory variables (Total effect = direct effect + indirect effect; Total effect figures greater than 0.2 are in bold)

	Trust	Investment choice intensity	Interest	Affective reaction
Trust		0,140		
Value congruence	0.061	**0.269**	**0.299**	0.177
Familiarity	0.042	0.028		0.122
Interest	0.192	**0.575**		**0.555**
Perceived signal quality	**0.390**	0.055		
Affective reaction	**0.346**	0.11		

To analyze the "Value congruence" variable in more depth, we compared its direct effect on the "Investment choice intensity" for each subgroup, composed of all the backers that invested in one of the four projects. We therefore estimated the explanatory model four more times. Our results show that two projects, hence, two values, Universalism for Ethiquable and Power for Stemsis, have a stronger effect with higher coefficient values (0.166 and 0.183, respectively) compared with the two others (Tradition for Mamie & Co, Stimulation for Hexapay), which have small or negative coefficients (-0.023 and 0.022, respectively). An additional series of four linear regressions (one per start-up) with "Investment choice intensity", explained by "Value congruence", and including socio-demographic control variables[9], is in line with this result as indicated in Table 10.

Table 10. Regression of "Investment choice intensity" on "Value congruence"

Project	Coefficients (Value Congruence)	p-value	R^2
ETHIQUABLE	**0,340**	**5,049E-05*** **	**15,5%**
HEXAPAY	0,048	0,510	4,4%
STEMCIS	**0,271**	**0,00023*** **	**13%**
MAMIE & CO	0,091	0,366	8,33%

***p < .01, **p < .05, *p < .1

9. We included socio-demographic control variables (gender and age of participants) to check the extent to which they explained the dependent variable and could therefore modify the effect of the 'Value Congruence' variable. In fact, our results were similar, with a mean difference of 0.23% in the Standard Error, and with non-significant coefficients for the control variables (p-value > 0.05) for all projects.

5.3. Robustness

Robustness allows us to guarantee the possible generalization of a result beyond its original data, due to the representativeness and heterogeneity of the data.

Representativeness

First, the lack of representativeness of the sample, with mostly female participants (62%) is far from the gender distribution of ECF platforms. For example, for the Wiseed.com platform, 93% of investors are men. We conducted a multi-group analysis that did not reveal any significant difference (at the 5% threshold) between male and female students for the different hypotheses of the model.

Observed heterogeneity

Multi-group analyses reveal the dependent heterogeneity of observable variables. Analysis by categorical class involves comparing the coefficients of the structural model estimated for each sub-group. The significance of the difference of a given parameter is then studied. We studied heterogeneity for three binary variables: gender (female/male), MBTI personality (Feeling/Thinking and Intuition/Sensing), and the amount invested (Small = €200/ High = the subject's entire wealth).

To test the heterogeneity of gender and MBTI personality, we used a multi-group analysis, the PLS-MGA (Henseler, 2010), implemented in Smart-PLS, which compares all bootstrapping occurrences of the estimated parameter studied for both groups. Regarding gender and MBTI personality (Intuition/Sensing), our results show no significant difference between the two groups at the 5% level. Concerning MBTI personality (Feeling/Thinking), only one coefficient, affective reaction to trust, was scientifically different, logically higher (0.432) for the Feeling personality than for the Thinking personality (0.241).

To test the heterogeneity regarding the amount invested, we could not use the multi-group procedure since the sample was not divided in two parts. All the experiment's subjects, i.e., the whole sample, were therefore asked to choose their allocation amount twice. First with €200 and then with their entire wealth. According to Cohen *et al.*, 2008, individual investors who invest a large amount relative to their overall wealth should have a strong motivation to process information and will be less reliant on their emotions. We thus decided to focus on hypotheses H9 and H10, which respectively address the effect of the affective reaction on investment choice intensity and on the trust variables, to test the allocation amount effect as a moderator. A Student's t-test showed no significative difference at the 5% level.

Unobserved heterogeneity

Among the methods for identifying unobservable heterogeneity, Hair, Jr. *et al.* (2017) recommend combining the finite mixture PLS or FIMIX-PLS approaches and "prediction-oriented segmentation", or PLS-POS. The three-segment solution provided by the FIMIX-PLS method has an entropy at the threshold of 0.6, which indicates sufficiently distinct segments. In addition, the size of the three segments is reasonably "far" from the perfect equilibrium, i.e., 33%. The PLS-POS method confirms this segmentation, as it maximizes the weighted R^2 of the endogenous latent variables. We found heterogeneity between segments 1 and 3 with four significantly different parameters, revealed by a multi-group procedure. However,

this heterogeneity is not valid because the invariance condition is not satisfied for the familiarity variable, presenting a different score for these two groups. We hence conclude that there is no unobserved heterogeneity.

6. Conclusions

The objective of this research was to explore the role of personal values in ECF investment decisions. We developed an original theoretical framework, combining value theory, the psychology of emotions, and consumer marketing theory in accordance with McKenny *et al.* (2017)'s call to use multidisciplinary research to develop our understanding of the complex phenomenon of crowdfunding. We then identified several antecedents for investment choice, focusing on the concept of congruence between the investor's personal values and the values promoted by the startup. Our results show that "Value congruence" and "Interest" are the two main determinants of investment choice. These findings present several contributions as well as limitations that suggest avenues for further research.

Contributions

The first contribution of this study is to have explored the value congruence concept via investors' personal values, echoing the need to align backers' personal values with the campaign message, as highlighted by Nielsen and Binder (2021) in the case of reward-based crowdfunding. To our knowledge, our study is the first contribution on the role of personal values in ECF, probably because ECF is the most profit-oriented type of investment in the crowdfunding family. The value congruence concept we propose is integrative, since personal values can match the multiple investor motivations noted in the literature, such as altruistic motivation (Gerber and Hui, 2013) or, conversely, utilitarian motivation (Cholakova and Clarysse, 2015). Furthermore, the results of our experiment indicate that value congruence plays a more important role for some specific personal values: "Universalism" (generosity, a value turned towards others) and "Power" (greed, selfishness, a value turned towards oneself). Interestingly, these two personal values are diametrically opposed on the core value circle, highlighting a value bipolarity that plays a significant role in ECF investment decisions. This result may be related to the typology of SRI investors, with value-based investors and value-seeking investors (Kinder, 2005). Value-based investors are ethically motivated and seek to align their investment decisions with their own values. They prioritize the maximization of collective well-being over profit without being prepared to compromise their values in any way. At the other end of the spectrum, value-seeking investors (here meaning financial value) pursue the classic objective of maximizing their risk-adjusted return, where the non-financial information available is merely an additional indicator of the quality of the investment being evaluated. The role of ethics in investment decisions is therefore addressed via the "Universalism" value. According to Schwartz (1992), it is a prosocial value, whose motivational goal is to understand, appreciate, tolerate, and protect the welfare of all people and of nature. People consider Universalism as moral (Schwartz, 2007). Our study therefore shows that even for the most profit-oriented crowdfunding segment—namely, equity—investment choices may be driven by ethical values, which are thus not the exclusive domain of donation-based or reward-based crowdfunding. This is in line with the idea that the direct contact between investors and entrepreneurs enabled by crowdfunding could improve the ethical standards of entrepreneurial finance (Fassin and Drover, 2017).

Second, our study establishes a link between value congruence and affective reaction, the former explaining the latter via appraisal theory. We so propose an additional explanation to investors' affective reaction. To the best of our knowledge, this explanation based on value congruence is new in entrepreneurial finance literature, where investors' affective reactions are explained by focusing on the contagion effect triggered by entrepreneurial passion (Davis *et al.* 2017; Allison *et al.* 2017).

Finally, the results of our experiment demonstrate the importance of the affective dimension, as a complement to the cognitive dimension in investment choice. We show that, under the conditions of the controlled experiment, the effect of the "Perceived signal quality" (cognitive route) is marginal compared with "Value congruence" and "Interest" (affective route). This result is in line with the findings of Ren *et al.* (2021), who focus on emotional language in the project description and suggest that investors in crowdfunding campaigns do not always make rational decisions in their funding choices. This is at odds with the theoretical approach adopted by most researchers in the entrepreneurial finance literature, who consider that potential investors seek to interpret project quality signals, due to information asymmetry (Ahlers *et al.* (2015).

Limitations and further research

All studies are constrained by their sample, material, and procedures, which in turn give rise to opportunities for further research. Controlled experiments offer precision in variable measurement and control (i.e., high internal validity) but they can be far from "the real word", i.e., we need to address the issue of their external validity. Here, individuals made their decisions in a controlled, hypothetical reality. Although we tried to make this experiment as real as possible, notably by using material from real-life campaigns (business plan and video pitch) and by accumulating several effects via numerous variables and hypotheses, the decision-making environment was framed by our objectives rather than by a concern for realism. First, the controlled conditions of the experiment disregarded all social interactions, preventing the detection of quality signals conveyed by other investors and, consequently, any mimicry, despite mimicry playing a proven role in ECF (Hornuf and Schwienbacher, 2018). Social interactions can also concern values or other topics that can trigger emotional reactions. We do not know whether the suppression of social and digital interactions in our experiment leads to a relative over- or underestimation of cognitive versus value/emotional effects. It would therefore be interesting to repeat the experiment in conditions allowing social interactions in order to observe their effect on the balance between the value/affective and cognitive dimensions of the investment choice.

Second, affective reactions were measured using a self-reported questionnaire, immediately after exposure to the stimulus (entrepreneurs' pitch videos). This approach was easy to implement, but some subjects may have difficulty with introspective questions. It would be interesting to implement a different means of capturing these affective reactions, such as vocal and facial expressions and psychobiological measurements (electrical conductivity of the skin, pupillary dilation, heart rate, electrical activity of the muscles, measurement of alpha waves or blood flow in the brain, etc.). A multi-method approach would improve the reliability of the measurement and would provide more evidence regarding the importance of the affective dimension in decision-making.

Third, our experiment is not incentivized in the sense that the decision has no impact on the participant's gain. Incentives ensure that participants are rational, in other words have a pure financial motivation. However, this type of experimental protocol parameterization is not suited here because it would constrain the motivation of the subjects to be financial whereas the focus is broader including the study of non-financial drivers. We control the commitment of the participants (control questions scattered throughout the questionnaire and automatic verification of the absence of Straight Lining in the answers) but our protocol does not make it possible to accurately measure the trade-off between different motivations (financial, not financial, or mixed) for each participant. The introduction of incentive could be one way of answering this question in future research.

Four, our protocol requires participants to invest their entire financial endowment. The case of a participant who has no interest in any of the projects is therefore not taken into consideration. We have chosen this protocol because the four proposed projects cover a broad spectrum of personal values. An uninterested participant would have distributed the endowment uniformly. In fact, only one of the 100 participants chose to invest 1/4 of the endowment in each of the 4 projects. However, future research could incorporate this option (invest only part or all of the endowment) to gain a better understanding of participant interest.

Finally, our study was conducted at a university and students played the role of investors. Although crowdfunders are not sophisticated investors, it is possible that this sample is not representative of a population of crowdfunders (who are not totally novice investors). A possible consequence of the selection bias induced by our sample composition is, from our point of view, the weak effect of the "familiarity" variable, explained by the fact that the students were not familiar with the four startups in the experiment (Lambert *et al.*, 2012). We could repeat the experiment with real crowdfunders, enabling us to compare them with novice investors.

A further interesting extension of this research would be to perform the study with business angels in line with Drover *et al.* (2017)'s experiment. Research on the determinants of project selection by business angels (screening) emphasizes the cognitive dimension of choice by adopting the analytical frameworks of agency and information theories; however, the role of non-financial motivations is also established by the literature. The pleasure of accompanying a creator, interpersonal affinity (Mason and Stark, 2004), and the role of intuition seems to form a natural bridge with our research.

APPENDIX

Appendix 1: Construct indicators

Construct	Dimension	Code	Signification
Affective reaction	Pleasure	PLAI1	Happy / Unhappy
		PLAI2	Upset / Happy
		PLAI3	Dissatisfied / Satisfied
		PLAI4	Sad/ Happy
		PLAI5	Hopeless / Optimistic
	Activation	ACTI1	Without energy / Full of energy
		ACTI2	Sleepy / Awake
		ACTI3	Not simulated / Stimulated
Perceived signal quality	Management team	EQUI1	The size of the management team is appropriate for this project
		EQUI2	The leaders have complementary profiles
		EQUI3	The qualifications of the leaders are appropriate for this project
		EQUI4	The experience of the managers is appropriate for this project
	Business plan	PLAN1	I find this product/service innovative
		PLAN2	I think this market is growing
		PLAN3	I think that the competition does not prevent a newcomer from entering the market
		PLAN4	The financial outlook seems good
Trust	Benevolence	BIENV1	I think this management team is committed to continuous improvement in the development of its business
		BIENV2	I believe that the management team is continually seeking to improve the information given to its investors
	Credibility	CREDI1	The management team's involvement gives me security
		CREDI2	I have confidence in the commitment of the management team
		CREDI3	Being associated with this management team is a guarantee
	Integrity	INTE1	The management team is honest with investors
		INTE2	The management team is honest with investors
		INTE3	The management team shows interest in its investors

Interest	Situational interest	Emotional involvement	AFFE1	I like this project very much
			AFFE2	I found this project stimulating
		Attention	ATTE1	This project caught my attention
			ATTE2	This project captivated me
		Curiosity	CURI1	This project aroused my curiosity
	Individual interest	Emotional valency	EMO1	After a long period without contact with this field, I am eager to get information about it again
			EMO2	I prefer to talk about my hobbies rather than this field
			EMO3	When I am in a bookshop, I like to browse through the magazines related to this field
		Intrinsic orientation	INTR1	With (COMPANY NAME), I am convinced that I have chosen an investment that corresponds to my personal preferences
			INTR2	I have chosen this investment primarily because of this interesting field
		Valence of value	VALE1	This field is of real personal value to me
			VALE2	Compared to other subjects that are important to me (in connection with my hobbies), this area is of much less importance tome
			VALE3	Acquiring new knowledge about this field is more important than acquiring new knowledge about my hobbies
			VALE4	Before I decided to invest, this area was important to me
Familiarity		Familiarity with company characteristics	ATTR1	My hobbies or passions are related to the field of activity of the company
			ATTR2	I live in the city or region of this company
			ATTR3	I have already been confronted with the problem solved by this company's offer
		Familiarity with company	ENTR1	I have already invested in the company
			ENTR2	I know the products or services of this company
			ENTR3	I know directly or indirectly one or more of the founders of this company
Value congruence			CONGRAXIO	Measure of the intensity of the correspondence between the values of the company and those of the investor, here operationnalized using a (Manhattan) distance between the participant's prioritised values and the unique representative value of the project under consideration (NB: the distance measure in reversed and standardized)
Investment choice intensity			INVESTRATIO	Amount (in EUR) invested in the project / 200

Appendix 2: Computation example for the 'Value Congruence' variable

In the following example, we compute the 'value congruence' variable for the subject number 1 of the experiment, focusing on the company Ethiquable.

Hypothesis:

C = Value Company, for Ethiquable = [Universalism]

H = Subject Value Hierarchy as determined by SSVS scale

H = Value Hierarchy for subject number 1 = [Self-Direction, Stimulation, Universalism, Security, Benevolence, Achievement, Power, Tradition, Hedonism, Conformity]

H is an ordered vector, since by design, we have:

rank (Self-Direction) = 1

rank (Stimulation) = 2

rank (Universalism) = 3

…

By replacing values modalities by their rank in H, we get:

H' = [1,2,3,4,5,6,7,8,9,10] (H' is the rank vector from H)

H' is defined as the reference vector, meaning rank of components from other vectors derive from H'.

Rank of the unique component of C is the rank of the identical value in H', we have rank (Universalism) in H' = 3 ⇒ C' = [3] (C' is the rank vector from C)

The Manhattan distance is computed on one dimension (the common information), let's call H" the truncate of H' on its first component and let's consider the Manhattan Distance:

$$\text{Manhattan Distance } (X, Y) = \sum_{i=1}^{n} |x_i - y_i| \ \forall\, X, Y \in \mathbb{R}^n$$

We have $d(C', H") = |3 - 1| = 2 \Rightarrow$ *Value Congruence* $(C, H) = \dfrac{10 - |2|}{10} = 0{,}8$

Another way to interpret the Manhattan distance value is as fallow: $|3 - 1| = |$*Rank* (*Universalism*) in *C'* – *Rank* (*Universalism*) in *H'*$|$

The result 0,8 means a strong congruence which is the result of a weak distance.

We chose the Manhattan Distance because its interpretation fit exactly what we wanted to measure, the difference in the rank of the components of two ordered vectors (here singleton vectors).

Appendix 3: Company presentation and values as mentioned in the summary business plans

ETHIQUABLE	**Description** Ethiquable is a cooperative company, in other words a SCOP (*société coopérative et participative*): our company's capital is held by its employees. For the past 13 years, we have been working to ensure fair trade and to support peasant agriculture with 49 small producer cooperatives. Each of our fair trade and organic products comes from a single area and from a single organization with which we have identified a development and empowerment project. We accompany the producers on the ground to implement these fair-trade projects.
HEXAPAY	**Description** HexaPay is the first solution to meet the challenges of mobile shopping. On the merchant side, it can be used to very simply create new express purchase paths, from all marketing supports. On the consumer side, HexaPay allows them to buy the product they want from an ad, without any hindrance and with all their favorite payment methods.
STEMCIS	**Description** Since 2011, Stemcis has sold innovative medical devices in the form of single-use kits. In cosmetic surgery, our products use the patient's own fat to rejuvenate their face and to perform reconstructions or breast augmentation. In veterinary medicine, our kits purify the stem cells contained in fat to treat tendonitis and arthritis in dogs and horses. The next step will be the treatment of osteoarthritis in humans...
MAMIE & CO	**Description** Mamie & Co is the first brand in France to revisit the tips, tricks, remedies, and recipes passed down by our grandmas. Our role is to design, create, and market an exclusive range of traditional products by providing both advice and recipes. We want to be the leading advisors in this field. We initially chose direct sales so that the brand would become known through positive word of mouth.

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Appendix 4: STEMCIS business plan (translated)

STEMCIS
Business Plan

Presentation*

Since 2011, STEMCIS has been marketing innovative medical devices in the form of single-use kits.
In cosmetic surgery, our products use the patient's own fat to rejuvenate the face and perform breast reconstruction or augmentation.
In veterinary medicine, our kits purify the stem cells contained in fat to treat tendonitis and osteoarthritis in dogs and horses.
The next step will be to treat osteoarthritis in humans...

Our values

Developing a profitable company is important to us.

Our vision

"To become the world leader in single-use devices for the preparation of fat or its cells, in the fields of cosmetic and reconstructive surgery, and veterinary and human regenerative medicine."

Identity

STEMCIS (SAS) / Company created in 2008 in SAINT DENIS (97490)
Registration number: 504 934 050 RCS St-Denis de la Réunion
Business: Developing, manufacturing, and marketing innovative medical devices that enable fat to be used either as a filler in cosmetic surgery or as a source of stem cells in regenerative medicine.

STEMCIS wins numerous awards

- Winner of the 2006 national competition for the creation of innovative technology companies (Adipsculpt)
- Winner of the Agence Nationale pour la Recherche 2011: TRAVESTI project (Ischaemia)
- European Funds, TACS project 2013 (Osteoarthritis/Stem Cell)

* NB: Some of the information contained in this business plan is fictitious and has been created for the purposes of the experiment

1

STEMCIS
Business Plan

Numerous partnerships

- Indian Ocean Cyclotron (CYROI)
- Osteo-Articular and Dental Engineering Laboratory (LIOAD), INSERM Nantes
- Micro and Nano Biomimetic Medicine Unit, INSERM, Angers
- Claude Bourgelat Institute (ICB)/Vetagrosup Lyon

How will the funds raised be used?

→ COMMERCIAL DEVELOPMENT

- Strengthening and developing sales teams
- Export development through the search for new distributors
- Upgrading to export standards
- Increasing production capacity with more appropriate industrial processes to achieve economies of scale

→ NEW PRODUCT DEVELOPMENT

- Cosmetic kit for micro-injection
- Veterinary medicine: treatment of osteoarthritis in dogs and horses

Development stage

- Improvement of industrial processes: 2014
- Marketing of veterinary osteoarthritis kit: 2015
- International cosmetic surgery products: USA 2015, Asia 2016
- International veterinary products: Europe 2015/2016, USA 2016/2017

Our exit strategy: Industrial

Competition: VetStem (USA)

Differentiating factors

- Complete, top-of-the-range products with efficacy scientifically proven by clinical studies in humans and animals, unlike competing products
- The team's unique product development expertise
- Perfect knowledge of the market and already on the market

2

STEMCIS
Business Plan

Financial forecasts

Prévisionnel du compte de résultat :

Compte de résultat (€)	From 01/01/17 to 31/12/17	From 01/01/18 to 31/12/18	From 01/01/19 to 31/12/19	From 01/01/20 to 31/12/20	From 01/01/21 to 31/12/21	From 01/01/22 to 31/12/22
Chiffre d'affaires	**928 754**	**1 826 380**	**3 684 400**	**6 679 490**	**14 493 936**	**26 724 500**
Biens						
Services						
Production stockée						
Production Immobilisée	175 703	153 972	198 647	287 648	347 890	350 990
Production	**1 104 457**	**1 980 352**	**3 883 047**	**6 967 138**	**14 841 826**	**27 075 490**
Coûts de production	**553 631**	**1 088 380**	**2 338 400**	**4 246 990**	**9 211 436**	**18 272 000**
Marge brute	**550 826**	**891 972**	**1 544 647**	**2 720 148**	**5 630 390**	**8 803 490**
%	49,9%	45,0%	39,8%	39,0%	37,9%	32,5%
Coûts de structure	249 161	203 639	330 258	498 345	826 613	1 333 077
%	22,6%	10,3%	8,5%	7,2%	5,6%	4,9%
Loyer	67 280	67 200	67 200	67 200	70 560	70 560
VA	**234 385**	**621 133**	**1 147 188**	**2 154 603**	**4 733 216**	**7 399 853**
Frais de personnel	291 797	326 088	442 465	895 835	1 581 198	2 046 435
Taxes	18 575	35 614	70 004	120 231	246 397	427 592
Subvention d'exploitation	68 000	141 000	150 000	-	-	-
EBE	**- 9 987**	**400 430**	**784 719**	**1 138 537**	**2 905 622**	**4 925 826**
%	-0,9%	20,2%	20,2%	16,3%	19,6%	18,2%
Autres Produits et charges						
DA	-18 173	-61 719	-152 275	-301 421	-382 064	-426 571
DAP Production Immobilisée	-77 819	-108 424	-105 066	-127 396	-166 023	-196 181
REX	**- 105 978**	**230 287**	**527 349**	**709 719**	**2 357 535**	**4 303 074**
%	9,6%	11,6%	13,6%	10,2%	15,9%	15,9%
Résultat financier	-	- 4 250	- 4 250	- 4 250	- 4 250	- 4 250
Résultat courant avant impôt	**- 105 978**	**226 037**	**523 099**	**705 469**	**2 353 285**	**4 298 824**
Résultat exceptionnel	-	-	-	-	-	-
Résultat avant impôts	**- 105 978**	**226 037**	**523 099**	**705 469**	**2 353 285**	**4 298 824**
IS	-	-	-	194 078	776 584	1 418 612
Résultat net	**- 105 978**	**226 037**	**523 099**	**511 392**	**1 576 701**	**2 880 212**

Tableau de financement :

Flux de trésorerie (€)	From 01/01/17 to 31/12/17	From 01/01/18 to 31/12/18	From 01/01/19 to 31/12/19	From 01/01/20 to 31/12/20	From 01/01/21 to 31/12/21	From 01/01/22 to 31/12/22
CAF	-185 690	242 208	581 823	652 561	1 776 898	3 151 974
Variation du BFR	192 749	63 362	1 502	-26 184	1 819 056	2 059 017
Flux de trésorerie opérationnel	**-378 439**	**178 846**	**580 321**	**678 745**	**-42 158**	**1 092 957**
Investissements	77 183	284 500	450 000	760 000	408 000	310 000
Cessions						
=Flux de trésorerie sur investissement	**-77 183**	**-284 500**	**-450 000**	**-760 000**	**-408 000**	**-310 000**
Augmentation de capital	400 000			2 000 000		
Variation des autres capitaux propres (Subvention d'invest)						
CC d'associés						
AR	-23 692	-23 692	-23 692	-23 692	-23 692	
Dividendes						
Nelle dette/Rbst dette	129 645	355 000	-95 000	-95 000	-145 000	-90 000
= Flux de trésorerie de financement	**505 953**	**331 308**	**-118 692**	**1 881 308**	**-168 692**	**-90 000**
Flux de trésorerie total	**50 331**	**225 654**	**11 629**	**1 800 053**	**-618 850**	**692 957**
Trésorerie	**50 374**	**276 028**	**287 657**	**2 087 709**	**1 468 859**	**2 161 816**

3

STEMCIS
Business Plan

The STEMCIS team

STEMCIS was founded by 2 researchers, cell biologists, Régis, Director and Franck, Chairman. They are supported by 3 researchers, a management assistant, a regulatory engineer, and a strategic committee. A large part of the manufacturing is subcontracted to a partner company, ALCIS, which has been manufacturing medical devices since 1999. Part of the research work is also carried out with several public partners/subcontractors.

- Franck (Chairman and founder)

Doctorate in Biochemistry from Denis Diderot University (Paris VII)
Certificate in live animal experimentation from the Lyon Veterinary School
D.I.U. Cellular Therapy, Mulhouse Hospitals, University of Haute Alsace
D.U. in quality and risk management for healthcare establishments, Université Louis Pasteur, Strasbourg

- Régis (Managing Director and founder)

Habilitation to direct research in Cellular and Molecular Biology, University of La Réunion
Doctorate in Cellular and Molecular Biology from the Marseille Faculty of Medicine
DIU 'Adult and Paediatric Cell Therapy' from the University of Haute-Alsace Mulhouse-Colmar

- Gérard (Strategic Committee)

Doctor of Pharmacy, from January 2007 to September 2008, he was Chief Executive Officer of Sanofi Aventis, where he spent his entire career.
Member of the Académie des Sciences since 2003, Prix Galien (1983, 2000), Prix de l'Ordre des pharmaciens (2004).

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Appendix 5: Allocation question from the experimental material (translated)

Question 5: The amount you wish to invest in Equity Crowdfunding is 200 EUR, please indicate how you would like this amount to be divided between the various projects:

Please note: All 200 EUR must be invested, and the amounts allocated to each project must be multiples of EUR 50: either EUR 0, or EUR 50, or EUR 100, or EUR 150 or EUR 200.

1. How much are you investing in project No. 1 (ETHIQUABLE)? ____
2. How much are you investing in project No. 2 (HEXAPAY)? ____
3. How much are you investing in project N°3 (STEMCIS)? ____
4. How much are you investing in project N°4 (MAMIE & COMPAGNIE)? ____

Appendix 6: Psychometric measures of our reflective constructs

	Indicators	Reliability		Internal consistency reliability		Convergent validity
		Reliability indicator	AVE	Jöreskog' Rho	Cronbach's Alpha	
Reflective variable		**>0.50**	**>0.50**	**0.70-0.95**	**0.70-0.95**	**HTMT confidence interval doesn't include 1**
Trust	BIENV1	0.459	0.539	0.902	0.876	YES
	BIENV2	0.298				
	CREDI1	0.623				
	CREDI2	0.706				
	CREDI3	0.631				
	INTE1	0.639				
	INTE2	0.621				
	INTE3	0.336				
Interest	EMO1	0.540	0.558	0.946	0.938	YES
	EMO2	0.323				
	EMO3	0.435				
	INTR1	0.536				
	INTR2	0.531				
	VALE1	0.701				
	VALE2	0.447				
	VALE3	0.482				
	VALE4	0.652				
	CURI1	0.487				
	AFFE1	0.751				
	AFFE2	0.650				
	ATTE1	0.614				
	ATTE2	0.668				
Affective reaction	ACTI1	0.548	0.638	0.933	0.918	YES
	ACTI2	0.426				
	ACTI3	0.554				
	PLAI1	0.727				
	PLAI2	0.748				
	PLAI3	0.738				
	PLAI4	0.652				
	PLAI5	0.714				

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