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How to Change Entrepreneurs' Attitudes toward a Circular Economy: An Exploratory Framework to Reduce the Gap between Circular Intentions and Circular Actions

Cecile Fonrouge 

Institut de Recherche sur les PME, Université du Québec à Trois-Rivières (UQTR),
Trois-Rivières, QC G8Z 4M3, Canada; cecile.fonrouge@uqtr.ca

Abstract: Entrepreneurs are aware of the importance of having practices for circularizing their resources. However, the rare previous research specifically in entrepreneurship shows a gap between intentions and implementation with numerous barriers (structural, contextual, and cultural). This article proposes a first framework to reduce this gap between intentions and circular actions. These solutions are based on the theory of attitude changes, which states that changes in individuals' attitudes are more significant if they are preceded by an inexpensive act (Binding Communication Approach). As this is a still little-explored subject that mixes circular entrepreneurship and environmental psychology, the research method is exploratory, based on an analysis of previous writings in these two distinct fields, with the proposal of a first formalization starting from the example of solutions based on inexpensive acts (communities of practices, prizes, and tools). Conclusions are proposed regarding the characteristics of this type of preparatory act necessary to change entrepreneur attitude toward circular economy practices.

Keywords: circular economy; entrepreneur; attitude-behavior gap; commitment; binding communication



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1. Introduction

This article analyzes the motivation behind pro-circular behavior being a major concern due to climate change—this concern is shared by many Western countries. Note that countries with consistently sustained growth face these problems more acutely (China, India, and certain African countries). Circular innovations could come from these countries. With climate sceptics and the eco-anxiety that paralyzes behavior, entrepreneurs are key players for change, yet entrepreneurs are a heterogeneous reality, ranging from self-employed workers and eco-industry start-ups to more traditional manufacturers and retailers. Given this heterogeneity, this type of economic player is not always represented by associations or pressure groups, and therefore cannot always be reached by homogeneous public policies and communication campaigns.

Circular economy is a term that first appeared in the last decade of the twentieth century as an alternative to the traditional linear economic model. However, the term remained in obscurity until it was first implemented by the Chinese government in the wake of the twenty-first century, through an initiative called the “Circular Economy Promotion Law of the People’s Republic of China” [1]. There is also a lack of universally accepted framework models that encapsulate all aspects of the circular economy and there is no hard proof of the financial efficiency behind the adoption of such approach. There have been a few attempts by researchers such as the Ellen MacArthur Foundation [2] and Lieder and Rashid (2016) [3], who proposed various models for the circular economy. However, the literature lacks the empirical validation of the existing circular economy models proposed by various researchers.

Two main approaches coexist: first, that relating to product management with the three Rs (and also five Rs) and second, that relating to the impact of these strategies on

business models. The classic three Rs start by reducing the least used raw resources, but also minimizing resources useful to the production cycle. “Reusing” involves taking advantage of waste and by-products from the production cycle by considering them as new resources until they are exhausted. Finally, “Recycling”: here, entrepreneurs will seek to find a new use for the resources. Two new Rs are added: Refusing and Rot. Indeed, entrepreneurs may wonder if the material resources they use are necessary and if they cannot give back to the earth in the form of, for example, composting certain elements of the production cycle. Secondly, Bocken et al. (2016) [4] proposed another model for the circular economy. According to their study, there are “three different strategic approaches when attempting to transition from a linear economy to a circular economy model: slowing resource loop, closing resource loop and narrowing resource flow” (p. 309).

Entrepreneurs’ awareness of the circular economy must be understood as a first step to understanding possible changes in attitude. Previous research that has focused specifically on entrepreneurs notes a gap between the pro-circular attitude and actual behavior. In other words, in the rare research that focuses on entrepreneurs and their circular practices, the authors note that entrepreneurs are very aware of the importance of better controlling their flow of resources but seem powerless to implement overall practices to circularize their materials.

The objective here is to describe the psychological mechanisms which make it possible to understand this gap. The interest of this question lies in the fact that to allow a change in the attitude of entrepreneurs, the obstacles to the transition from a linear economy to a circular economy must be understood. The ideas developed in this article have a concrete impact on business life. Indeed, it is a question of showing that training or communication which is not preceded by a behavioral commitment via a non-costly preparatory act will have relatively little effect on changing an entrepreneur’s attitude. On the contrary, an awareness campaign which is preceded by an activity involving entrepreneurs will be more likely to change the entrepreneur’s attitude. This approach, known by the term Binding Communication, is illustrated by examples of practices carried out in the French-speaking Canadian province of Quebec.

The contributions of this article are numerous. First, this is one of the first times that the literature on circular entrepreneurship has been compared to the previous research in environmental psychology. By mixing these two literatures, solutions are found to reduce the gap between actions and intentions. The entrepreneurship literature describes all the barriers (structural, contextual, cultural) which explain this gap, while psychology literature teaches that attitude changes are more effective if they are preceded by inexpensive acts. The type of inexpensive actions is given by the example of a regional experience: community of practice, price, and tools. This article lists in one region the type of inexpensive preparatory acts that entrepreneurs can carry out easily. These inexpensive preparatory acts constitute a framework for filling the gap between good circular intentions and implementations. This therefore allows us to consider future experimental research on the impact of participation in communities of practice, in prizes and rewards, and in the use of specific tools in the circular economy.

Secondly, considering that changes in attitude toward the circular are more effective if they lead entrepreneurs to carry out inexpensive actions as described in the regional experience, this article proposes a first framework for choosing the type of circular acts. Thus, the inexpensive acts explored (community of practice, price, and tools) must present a certain number of criteria: Free Will Compliance, Consistency, must be Public, Responsibility, and Irrevocability. Here, a methodological research framework is provided for future articles on attitude change in the circular economy. A practical implication concerns ways of communicating to entrepreneurs to convince them to adopt virtuous practices in terms of optimizing their resources. Communications with entrepreneurs are doomed to a form of failure that leads to eco-anxiety or skepticism if practitioners do not involve entrepreneurs by making them participate in activities that are inexpensive for them (what is called preparatory acts). In other words, our major contribution is to admit that pro-

circular communication campaigns addressed to entrepreneurs are more effective if they are combined with the implementation of inexpensive preparatory acts.

2. Circular Economy Awareness

Awareness of the benefits of circular economy practices has mostly been studied for consumers [5,6] or “officials” in local developmental agencies [7] and less for entrepreneurs. Circular economy awareness is based on three criteria: (1) recognition of the circular economy, (2) circular economy-related behavior including present circular economy practices, and (3) future development of the circular economy in the region (p. 1037, [8]). Previous literature teaches us about a certain number of elements in the determinants, types of motivations, and cultural differences concerning possible awareness in the circular economy.

This entrepreneurial awareness depends on the willingness of individuals to engage in pro-circular actions. Pro-environmental willingness would be the result of the activation of personal moral standards, with openness to change and altruistic values as major antecedents. These moral standards would depend on the information possessed by entrepreneurs and on social interactions [9]. The less information entrepreneurs are exposed to about resource management issues, the less circular awareness they will have. Unfortunately, the opposite is not true [10]. Similarly, the less entrepreneurs interact within their network and with their business partners on issues related to resource reduction and optimization, the less sensitive they will be to circular issues. A first consequence of the possible awareness of entrepreneurs consists of saying that information campaigns are necessary but not sufficient to act. A traditional communication campaign will not necessarily lead to a change in the attitude of entrepreneurs because entrepreneurs’ actions may be unrelated to the concern they express about the environment. The second consequence of the low awareness of entrepreneurs when they do not discuss environmental issues with each other is the assertion that entrepreneurial networks must be infiltrated by questions relating to the circularization of resources. To summarize, the determinants of circular awareness are based on the values of entrepreneurs and their openness to change and are moderated by their exposure to information on the circular economy and by belonging to business networks that address this subject.

Motivations related to the possible outcomes also play a key role in the adoption of pro-circular behaviors. Three types of motivations are analyzed in the literature: (1) those linked to obtaining tangible rewards—for example, economic benefits and resource scarcity linked to the adoption of circular practices; (2) those that make it possible to meet socially acceptable expectations with, for example, prizes and distinctions aimed at rewarding firms that have adopted environmental practices; and (3) finally, those that make it possible to feel that one is acting in accordance with one’s convictions—here it is about appealing to the intrinsic motivation of entrepreneurs with regard to their deep-seated beliefs.

These are lessons mainly coming from the field of environmental psychology. They give us general analytical frameworks for the motivations and possible changes in attitude of entrepreneurs. This specific point is not studied in environmental psychology, hence the interest of our research. Indeed, in the entrepreneurship literature, researchers adopt a point of view that starts from practices. Instead of asking what the psychological mechanisms are that enable entrepreneurs to become more aware of the circularization of resources, entrepreneurial researchers focus on the practices adopted.

Studies that focus specifically on the entrepreneur are quite rare (see Table 1).

These studies operationalize differently the forms of awareness and the types of practices in the circular economy. For the first one, the researchers ask fairly general questions about their knowledge of circular economy concepts and, more specifically, “Your firm has the willingness to: (a) regenerate wastes; (b) recycle wastes; (c) minimize resource consumption and waste production”. The behavior is evaluated through the purchase, resource, wastes, collaboration strategies, and if a special management department of circular economy is established (p. 147, [10]). The second one presents six practices: resource and energy utilisation, investment recovery, eco-design, green purchasing, customer cooperation,

and internal environmental management (p. 544, [11]). The third one defines awareness with 11 questions. This is the research that provides the most detail for circular economy awareness. They classify practices into five main areas: economic benefits, resource scarcity, environmental impact, relationships, and implementation strategy (p. 570, [1]). They agree on one point: the existence of an important gap between awareness and the implementation of practices.

Table 1. Survey studies published in peer-reviewed scientific journals on entrepreneurial awareness of the circular economy.

Reference	Methodologies and Context	Results
Liu and Bai (2014) [10]	157 firms in a manufacturing cluster in China—questionnaire and in-depth interviews	Good understanding about the circular economy (CE) but important gap between firm awareness and behavior
Masi et al. (2018) [11]	77 questionnaires—snowball technique across the world, LinkedIn	The level of implementation of CE practices is mainly within the firm rather than across the supply chain, and firms preferred practices related to resource and energy utilisation
Liakos et al. (2019) [1]	103 questionnaires—UK manufacturing firms	Three pillars for implementing CE practices: economic benefits, environmental impact, and resource scarcity. The environmental impact pillar of CE is at a more developed stage than the other two pillars

Two out of three studies present the Chinese context. In fact, there is a lot of circular economy research in the literature that focuses on China. This can be explained by the importance given to these subjects due to strong economic development and the rather interventionist relays offered by Chinese development agencies. There are cultural differences between China and Europe in the types of circular reference practices. “For China, the focus is on general environmental problems and pollution, while for Europe the focus is on materials, resource efficiency, waste, new business models, new jobs, eco-innovations, social innovations, as well as wider implementation” (p. 1036, [8]). On the contrary, community pressure is less important in China [10]. For us, other differences should be considered and not only cultural differences—for example, the pro-environmental activist cultures which are very present in northern Europe and Germany. The interventionist culture of local development agencies and the activist traditions of certain entrepreneurs must be considered in future research on the circular entrepreneur.

Awareness applies to a wide variety of practices without them being homogeneous. One way to reconcile these different approaches in the circular economy would be to focus on the type of impacts that the adoption of circular practices has on business models. These impacts could be classified into three categories: slowing, closing, and narrowing.

In summary, entrepreneurial practices in reference to circular awareness are not homogeneous in previous research. However, these three studies agree on one point: a striking “gap” exists between a circular firm’s awareness and its actual behavior in developing a circular economy from the entrepreneurial point of view.

3. The Value–Action Gap

A striking gap exists between awareness and actual behavior. Knowing is not enough. In fact, it is not because entrepreneurs are aware of environmental issues that they will implement circular practices, as shown by the research carried out by Liu and Bai [10] on 157 firms in an industrial cluster in China. This discrepancy between value and practice can

be observed among many individuals as well as among entrepreneurs. “The environmental actions that people take may be unrelated to the particular concern that they express about environment” (p. 263, [12]). To be able to reduce this gap, it is necessary to understand the psycho-sociological mechanisms that lead an entrepreneur not to take and implement circular practices. This understanding is based on an analytical framework describing changes in people’s attitudes toward pro-circular behavior.

First, the occurrence of unexpected events can also modify the values of entrepreneurs. Behavior is a function of attitudes, norms, habits, and reinforcement, with unexpected events acting as triggers. For example, an entrepreneurial networking activity enables a contractor who wishes to pack his products in cardboard boxes to reuse another contractor’s boxes. The objective here is to determine the social process which crystallizes the pro-circular attitudes of entrepreneurs [9]. Applied to ecological causes, this analytical framework has three dimensions: (1) the cognitive dimension evaluates the knowledge related to particular circular situations; (2) the affective dimension measures the emotions felt by the subject regarding the participation of his company in environmental degradation; (3) finally, the behavioral dimension or predisposition to act measures what the respondent is prepared to do when faced with various situations involving ecological commitment.

A first body of research builds on Fishbein and Ajzen’s 1980 [13,14] theory of planned behavior. Intention is a predictor of pro-circular behavior. In this stream of research, the link is made between the impression of perceived control (locus of control) and behaviors such as recycling. “Locus of control represents an individual’s perception of whether he or she has the ability to bring about change through his or her own behavior. People with a strong internal locus of control believe that their actions can bring about change. Such people are much less likely to act ecologically, since they feel that ‘it does not make a difference anyway . . .’ People with an external locus of control, on the other hand, feel that their actions are insignificant, and feel that change can only be brought about by powerful others” (pp. 255–256 and 243, [15]). In this approach, attitudes and intentions are deemed stable, and the way unexpected events can make the entrepreneur change his attitudes is not considered.

A second body of research is attempting to sophisticate the search for predictors of environmental behavior by considering that attitudes are not stable over time (dynamic dimension) and must integrate positions of power to act and to have an impact (sociological dimension). “Power to make a significant difference, one way or the other, to global or even local environmental change is immensely unevenly distributed” (p. 265, [12]). These perspectives are based on ethnographic methodologies and are not always frequent and relayed in the field of circular economy research.

So, in the first current, the gap between values and practices would be visible in the intentions to have circular behavior and in a strong belief in the internal control that entrepreneurs have over their environment. The second current integrates the power positions of each entrepreneur by estimating that entrepreneurs are not equal in terms of their room for maneuvering to adopt circular practices. In other words, the analysis of the gap between values and actions depends on the power that the entrepreneur has to change things and the two approaches agree on that point. Sceptical entrepreneurs and those with high eco-anxiety that paralyzes behavior do not perceive their strong position of power and feel a low level of external locus of control.

There are various reasons for this discrepancy between entrepreneurs’ pro-circular values and their actual behavior, which allows us to describe in detail the enablers and barriers of circular entrepreneurship.

4. Pro-Circular Implementation Barriers

There are many barriers to the implementation of circular practices among entrepreneurs. Liu and Bai [10] derived their own classification from their questionnaires and interviews with 157 companies. From their analysis, they extracted three types of barriers: structural, contextual, and cultural factors.

4.1. Structural Barriers

The interview results of Liu and Bai's [10] research showed that some firms' organizational structures are hampered by inefficient bureaucracy. Rules, routines, and procedures are known to hinder circular innovation, and even for innovations, those responsible for implementing them must first explain and legitimize these new practices. He or they often forget the environmental purpose, too busy justifying the links between old and new methods, hence the dependence of organizations on initial conditions and original technological paths. In entrepreneurship, the original impulse gives shape to subsequent innovations including circular innovations. Thus, if the original conditions are not based on a circular philosophy and values, the implementation of circular innovations is slowed down. Another barrier is linked to the agendas of entrepreneurs, which are generally short-term. Those who integrate resource management objectives into their long-term vision can more easily implement circular practices. This last point is supported by researchers interested in the value–action gap. So, for Kollmuss and Agyman, "temporal discrepancy refers to the fact that people's attitudes change over time" (p. 242, [15]). This gap between actions and practices can be reduced over time, especially if entrepreneurs take part in activities that can convince them of the usefulness of circular practices with incentives. Interestingly, 50% of the identified barriers have a close relationship with organizational structure.

4.2. Contextual Barriers

The pro-circular behavior of a new firm is influenced not only by internal factors but also by its environment. From the most global to the most local, it is about the regulations and obligations in terms of waste management, the behavior of other actors in the sector who become examples and models to follow, but also the pressure from citizens and certain activists who want to change locally because they suffer the impacts of lax management of materials sent to landfill. A significant contextual barrier put forward by the interviewees made by Liu and Bai was "uncertainty about the marketplace". Consumer pressures are interpreted by entrepreneurs as also going against pro-circular behavior. Indeed, entrepreneurs, reflecting their efforts for cleaner products and services in their selling price, are afraid that consumers will not be ready to pay more. If the costs of creating eco-industrial chains and processing waste exceed the profits, then entrepreneurs are not encouraged to behave in a sustainable way in terms of resource management. And observing what the competition is doing is a significant obstacle. When the entrepreneur feels he is the only one to adopt pro-circular behavior which will have an impact on his margins, he will not engage in this type of practice. Mimetic behavior between firms is a lever that could be used to implement management dedicated to the circular economy but at the level of a sector or market. Entrepreneurs inspire each other. One way to put pressure on them may come from pressures exerted locally by environmentalist groups. These community pressures are weak in China. This explains the little attention that previous researchers have paid to environmental activists. This is not the case in certain countries in Europe and North America, where pressure groups seek to influence the behavior of firms in terms of environmental degradation.

4.3. Cultural Barriers

"Cultural barriers refer to a firm's ethos, habits and manager's personalities, as well as to values, all of which have deeply influenced the behavior of developing the circular economy" (p. 150, [10]). A first and important barrier is the risk-taking of entrepreneurs. While they can take risks concerning their core business, they are sometimes more reluctant to take risks on collateral aspects that may have an impact on their core business. If the entrepreneur does not see short-term profitability which represents the absence of values present in the very mission of his company, then he will be reluctant to make a pro-circular decision. Value chain analyses must therefore show forms of savings to convince entrepreneurs (see the illustration section, which shows the importance of value chain management tools to overcome this type of barrier). This risk aversion can be explained

again by the mimetic behavior of groups of entrepreneurs, who observe the behavior of other firms and act by imitation.

A major cultural obstacle is the difference between systems of thought according to professions, hierarchical levels, and different professional experiences. Thus, pro-environmental awareness is not homogeneous within the entrepreneurial team. It depends on the background and the position you occupy. In the absence of a strong strategic discourse, this variability harms the implementation of pro-circular practices. Even in small organizations, cultural differences can be observed between strategic and operational activities. Organizational silos reflect silos of thinking. “Silos exist between the planning and operating of a circular economy that sustain cultural difference and often generate animosity. An administrator from a state-owned corporation indicated that operational employees are skeptical of new circular economy initiatives from the administration sector because there is the fear that these will only consist of onerous tasks” (p. 150, [10]).

Some of these barriers are common to the formalizations that lead organizations to change. One way to respond to resistance to change is to offer persuasive communication that involves entrepreneurs.

5. Binding Communication to Change Attitude and Behavior toward the Circular Economy

To reduce the gap, researchers need to determine how to induce an entrepreneur to adopt more circular behaviors. Several theories have defined the ways in which individuals change their attitudes and behavior. These theories come from social psychology and are based on a variety of factors.

Firstly, in the “self-perceptions” theory, individuals do not necessarily have direct access to their internal states or attitudes. It is through the observation of others and circumstances that attitudes are revealed. Let us try to apply this theory to our entrepreneurs: except for entrepreneurs whose business model is circular, they have no clear-cut opinion on the circular economy [5]. Observing competitors in waste management or being questioned on the subject leads entrepreneurs to position themselves in relation to resource circularization practices.

The second theory, known as commitment theory, admits that economic actors—through their choices and actions—create a bond between attitudes and future behavior. In a desire to be consistent, individuals will always seek to balance their actions and their behavior. In our case, an entrepreneur who has made a declaration in favor of recycling resources will be more easily aware of the importance of recycling in the future. These postulations have an impact on the ways in which the benefits of circular practices could be communicated to entrepreneurs and convince them to replace a linear model of resource use with a circular one.

Some researchers, following in the footsteps of the work of Joule et al. [13], synthesize and push the previous conceptual approach within the framework of communication on aspects linked to possible environmental degradation. This approach is called Binding Communication. It involves combining an inexpensive preparatory act with communication about the benefits of the circular economy for the entrepreneur. The idea is to combine an inexpensive act with a persuasive communication message. This would be more effective than simply proposing communication or training: “To explain the results, the first experimental validation of the impact of a low-cost preparatory act was made by Freedman and Fraser concerning the foot-in-the-door technique. [...] They found that 53% of a group of housewives agreed that a team of five to six investigators could visit their homes for 2 h to make an inventory of all the products they used for cleaning. Three days before this visit, the women were asked to fill out a brief questionnaire containing eight questions concerning their product consumption (preparatory act). Without this initial request, only 22% of the women agreed to the visit by the investigators” [14]. In another piece of research [16] on environmental subjects, they compare the effectiveness of several communication strategies to encourage young athletes to recycle. They show that young

people placed in the following engaging situation—spending 15 min of their break time advising spectators on waste sorting—were more likely to change their attitudes toward recycling than those who did not. Both groups had received recycling training beforehand. Attitude change, therefore, depends first and foremost on obtaining prior actions that make individuals commit. This part presents the conditions for effective communication for changing attitudes toward the benefits of the circular economy.

The preparatory action required to bring about a change in entrepreneurs' attitudes to resource circularization practices must meet at least five requirements. (1) The entrepreneur must feel free to accept or refuse. Indeed, according to the theory of cognitive consistency, if a change in behavior is obtained under constraint, the impact on attitudes will be almost non-existent. In this context, coercive measures aimed at obliging entrepreneurs (through taxes, norms, or standards, for example) are unlikely to have an immediate effect (Free Will Compliance). (2) The act must be consistent with the message that follows. For example, a questionnaire on the cost of residual materials sent to landfill must present a price scale that is consistent with the cost of disposal at recycling centers (Consistency). (3) The preparatory act, even if it is not very binding, must nevertheless be carried out in front of people. Here let us see the role of prizes, distinctions, and awards won by entrepreneurs in front of the public, which lead these same entrepreneurs to become highly effective ambassadors (Public). (4) The idea is also for entrepreneurs to feel responsible for the impact of their actions because if an entrepreneur does not feel responsible, then he or she will see the emergence of defeatist and fatalistic discourse that leaves the answers to climate problems to future generations. One way of empowering entrepreneurs is to propose solutions to resource management issues (Responsibility). (5) The preparatory act must not be perceived as cancellable. Indeed, if the entrepreneur has the option of not doing so, then the impact on changes in attitude will be lesser because he or she will be able to blame external circumstances. This point can be verified by asking the degree of internality of the act: in the locus of control approach, establishing whether the actor feels responsible or attributes the fact of having performed this act to external circumstances (Irrevocability). "Therefore, after a preparatory act, when faced with a new situation, participants recall the action and behave consistently with it because they fail to provide explanations for this previous behavior other than themselves. It is then that attitudinal and/or behavioral consequences occur" [16].

Therefore, the change in attitude of entrepreneurs toward the circular economy could occur if entrepreneurs are placed in situations which lead them to carry out inexpensive preparatory acts, which—due to the cognitive coherence of individuals—brings them into a second phase to express pro-circular values that did not exist before.

The psychological mechanisms that allow individuals to change their attitude has been seen. Now the idea is to apply this to the context of the circular economy. How else, in a given territory, is the attitude of entrepreneurs changed toward the importance of circularizing resources and is this transformed into action? Let us list the inexpensive actions put in place for entrepreneurs to make them change their attitude. Obviously, it is a question a posteriori of qualifying these acts as inexpensive and drivers of change. The links are explored between cognitive psychology and entrepreneurial literature and practices aimed at entrepreneurs.

Illustration of various preparatory acts will be taken from the case of the Québec province in Canada. The main limitation is that it is difficult to compare the attitude changes of entrepreneurs with and without the preparatory act. This involves exploring the possible situations in which entrepreneurs are involved so that they change their attitude to a pro-circular attitude.

6. An Illustration of Solutions to Reduce the Gap between Intentions and Actions through Preparatory Acts

Quebec's circular economy research network includes more than 200 researchers studying these issues. "The transition to a circular economic model calls for an interdisci-

plinary and systemic scientific approach. The Québec Circular Economy Research Network (RRECQ) aims to combine research and training in circular economy with the needs of society. The RRECQ stands at the interface between research and society to bring concerted, concrete, and sustainable solutions to organizations, communities and individuals through its research, training, and transfer activities" (<https://rrecq.ca/en/home/> accessed on 2 February 2024). Observation of the initiatives taken by players in the circular economy in Quebec makes it possible to describe several examples of activities for entrepreneurs that are like preparatory acts, as defined earlier with the five criteria (Free Will Compliance, Consistency, Public, Responsibility, and Irrevocability). The multitude of initiatives in Quebec aimed at promoting the circular economy can be categorized as follows: participation in communities of practice, involvement through competitions and awards, distinction, and prizes, and the use of facilitating methods and tools. The distinction is made based on the operative nature of the preparatory act: less for communities of practice and more for the use of facilitating methods and tools.

6.1. Communities of Practice

Communities of practice bring together people who share common knowledge. In this sense, they contribute to changing entrepreneurs' attitudes and enable them to adopt behaviors that circularize resources. "The concept was originally adopted to explain learning, and more recently innovation across work, organizational and spatial settings. Communities of practice (CoPs) are defined as groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis" (Liu et al., 2023) [17]. Two dimensions of communities of practice interest us here: their self-organized nature and the fact that they bring together individuals who are similar to each other. The fact that these are self-organized structures means that the four Rs principles can be adapted flexibly enough for each entrepreneur to draw lessons for his or her own situation. The similarity of people in communities of practice hinders the diversity of circular solutions. But in exchange, the group finds it easier to agree on acceptable circular practices.

In Quebec, for over 10 years, the TIESS (territoire innovant en économie sociale et solidaire—innovative territory for the social and solidarity economy) brings together social economy players on themes such as the circular economy and the social economy (www.tiess.ca accessed on 2 February 2024). Since 2019, this group has been documenting the links between the circular economy and the social economy. One example is the *Ressourceries* or recycling centers. *Ressourceries* are local small businesses which salvage and give value to and reuse all types of unprocessed residual materials. It has been made possible to bring together all of Quebec's *Ressourceries* in an association that is responsible for collectively defending the interests of this type of organization by, for example, ensuring common political representation and pooling knowledge so that each *Ressourcerie* benefits from the contributions of the others. <https://www.ressourceriesquebec.ca/> accessed on 2 February 2024. In this example, belonging to a community of practice aligns members' discourse with recycling practices. However, the actors are all convinced by nature since their very activity is to resell second-hand goods. Awareness therefore remains within a circle of people who are already convinced. For example, let us think of some possible discrepancies. Indeed, TIESS promotes a hierarchy in the three Rs, putting the R for reduce first, but is this always in the interest of *Ressourceries*, whose economic model is based on reusing goods rather than reducing consumption? Nevertheless, joining an association that brings together other companies doing the same business is a public, inexpensive, and freely obtained act. The coherence between reducing consumption and recycling waste is relative, since more consumption leads to more waste and therefore more activity. Moreover, the irrevocable nature of the act is also relative, since the entrepreneur can leave the community of practice at any time. The City of Montreal—Quebec's largest city, home to nearly 50% of the province's population—has launched two communities of practice: one for the textile and clothing sector (13 to 15 active members) and one for businesses for improving

waste management (14 restaurants and businesses are members). There is an important limitation here: entrepreneurs belonging to these communities of practice are often already convinced of the benefits of the circular economy. To change attitudes and behavior, it would be wiser to look for communities of practice not dedicated to the circular economy, but offering activities to raise awareness of waste reduction, for example. An illustration of this type of transversal community of practice is the establishment over three years of an acceleration laboratory, which brought together all the key players in construction. The idea is to offer reuse after demolition. In the Gaspésie region, deconstruction rather than simple demolition made it possible to save nearly 5% of the cost of the project but above all only a fifth of the materials from a former restaurant ended their life in a landfill site. Many of them were used by citizens (<https://www.quebeccirculaire.org> accessed on 2 February 2024). In conclusion, the fact of belonging—even temporarily—to a community of practice constitutes an inexpensive preparatory act which commits the entrepreneur to future pro-circular practices.

6.2. Awards, Distinction, and Prizes

In Quebec, prizes, distinctions, and awards are not directly linked to the themes of resource circularization. It is generally chambers of commerce, local development organizations, and certain cooperative banks that award prizes to entrepreneurs who stand out for their pro-environmental values. In 2020, for example, the Desjardins cooperative bank offered a “coup de coeur” prize for projects that promoted the environment through responsible agriculture, the circular economy, and innovation. The public had 15 days to vote in each category (youth, sustainable development, and employment and innovation) by text message. The initiatives with the most votes won a prize in each category of 100,000 Canadian dollars. For sustainable development, the first winning entrepreneur was the pink fly project. Their object was to reduce the use of highly toxic insecticides with a sterile, pink-tinted fly. This insect would combat the onion maggot, the most important pest in dry and green onion production. It offered green solution for the environment, farmers’ health, people, and communities. The second, Merinov, is a major industrial research center in the field of fisheries, aquaculture, and the processing and valorization of aquatic products in Canada. Its goal was to reduce impacts on marine ecosystems through sustainable approaches. The third was Synergie Montréal: nothing is lost, everything is transformed. Synergie Montréal is Greater Montreal’s first industrial symbiosis. It is a group of companies working together on a circular economy model. One company’s residual material becomes another’s raw materials. It is worth noting that two of the three winners were not strictly entrepreneurs, but rather facilitators. This cooperative aspect is one of the distinctive features of sustainable development and circular economy initiatives. The most specific circular economy initiative in Quebec is the Circular Initiatives Award from the Circular Quebec platform. *Québec Circulaire* is one of the flagship initiatives of the *Pôle québécois de concertation sur l’économie circulaire*, a voluntary grouping of leaders from a variety of backgrounds, aiming to accelerate the transition to a circular economy in Quebec. The platform’s mission is to federate the variety of initiatives, tools, and expertise that are currently dispersed, and that will multiply over the next few years (www.quebeccirculaire.org accessed on 2 February 2024). The platform has over 3000 members. The prize is open to students, researchers, and members of civil society. What is interesting is that this initiative is mapped across Quebec, among 300 other concrete actions aiming to make Quebec more circular. Joining a group highlights actions in the field of the circular economy and makes it possible to situate what is being done, both geographically and thematically. To qualify for this competition, the initiative must (1) reduce the number of virgin resources consumed; (2) intensify the use of products and their components and/or extend their lifespan; (3) give new life to resources. In 2022, a hundred initiatives were presented to a panel of experts. The criteria used to determine the winners: the initiatives’ potential leveraging effect on optimizing resources in circulation in Quebec, their relevance to accelerating the transition, their positive environmental, social, and economic impact, and their innovative nature.

The six winners focused on the following themes: reclaiming rainwater, reclaiming surplus grain and cereals, reclaiming fine construction and demolition grain, reusing information technology equipment, a place to network with agricultural players, and the city of Chapais in the Northern Territories due to its leadership on CE. But it was not just the winners who could change their attitude. In fact, it was only a matter of registering for the competition to get a foothold in the form of a change toward circular economy practices.

6.3. Methods and Tools

The tools and methods offered in the circular economy will help entrepreneurs calculate their environmental impact and reduce their consumption of resources. A center for valorization and connection between researchers and practitioners is ahead of the curve in proposing calculation and waste reduction methodologies. The mission of the Center for Technology Transfer in Industrial Ecology (CTTÉI) is to increase the performance of businesses and communities through research and development of innovative approaches and technologies in industrial ecology (www.cttei.com accessed on 2 February 2024). It depends on an academic institution located in Sorel Tracy. These methodologies only become preparatory acts for changes in attitude if they are used collectively (Public criterion) during training or networking activities. They propose a guide, *Performing a Cost Analysis of Material Flows (MCFA)*, to profiting from waste analysis. The MCFA takes into consideration the obvious costs related to waste management (e.g., rental of waste containers, disposal fees, gasoline surcharges, etc.) as well as hidden costs (e.g., purchase material, energy costs, labor costs, immobilization, depreciation of certain equipment, etc.). Once this analysis is completed, entrepreneurs can better assess the economic impacts associated with waste and consider improvement measures such as replacing inputs, modifying processes, internal recycling, or the sale of by-products. Concretely, the MCFA is a tool for identifying opportunities to increase profits while reducing the environmental footprint of organizations. It aims more specifically to: (1) know the real cost of waste during the production of a good; (2) identify materials that would save money; (3) improve productivity and profitability.

Another initiative to offer analysis tools in the circular economy comes from the social economy players already mentioned above, the TIESS (*territoire innovant en économie sociale et solidaire*). Forty companies brought together to highlight business models typical of the circular economy. The benefit for entrepreneurs who use this tool is to identify the challenges and particularities for each business model. The entrepreneur can position himself in relation to these standard models and improve his business model in this sense.

Lastly, RECYC-QUÉBEC, the Quebec Recovery and Recycling Society, also offers 12 strategies for circularizing resources, organized into four main approaches: (1) rethink to reduce resource consumption and preserve ecosystems; (2) use products more frequently; (3) extend the life of products and components; (4) give new life to resources. Apart from specific tools, entrepreneurs are made aware of the circular economy by participating in change management workshops or through networking activities serving to create industrial symbioses, with the waste of some becoming the input of others.

The idea is that there is a link between an act carried out in public and future behaviors of circularizing resources. In other words, it is because the entrepreneur has already participated in a community of practice, in an award competition, or in networking activities around applied tools and methodologies that he or she will change his or her attitude. The preparatory act commits the individual to an attitudinal modification. It is seen as a way to initiate and promote pro-environmental behavior. Five conditions or criteria are necessary but note that they are not all represented in the three above types of preparatory acts. Table 2 illustrates the greater or lesser importance of the criteria according to the types of acts.

Table 2. illustration of preparatory acts in Québec province to change entrepreneurs' attitudes toward the circular economy.

Criteria	Communities of Practice	Awards, Distinction, and Prizes	Methods and Tools
Free Will Compliance	Usually	Always	Usually
Consistency	Sometimes	Depending	Always
Made in Public	Always	Always	Necessary
Responsibility	Often	Sometimes	Often
Irrevocability	Lower	Rarely	Possible

The five criteria for implementing engaging communication during preparatory acts in the circular economy do not all apply in the same way depending on the type of act. In the case of the Canadian province of Quebec, there is an abundance of preparatory practices for entrepreneurs.

7. Conclusions

This article focuses on possible changes in the attitude of entrepreneurs regarding circular practices. For one of the first times, it compares the literature on entrepreneurship, which is very focused on practices, with that on environmental psychology, which is interested in psychological mechanisms. The very fact of connecting these two areas is original. This confrontation between two types of research shows that entrepreneurs are aware of the issues with the circularization of resources. However, a gap exists between circular practices and implementations. This gap would vary depending on the individual and be particularly marked if entrepreneurs have a weak belief in their internal control and if they believe that their position of power in the markets does not allow them to influence these same markets. This gap can be explained by the existence of contextual, structural, and cultural barriers specific to circular innovations—barriers which are described in this article. To provide circular empowerment and reduce these barriers, a perspective from the research on attitude change suggests engaging the entrepreneur through inexpensive preparatory acts. For an entrepreneur, carrying out these inexpensive actions would be a solution to reducing the gap between intention and circular action. Then, this article proposes to give examples of solutions of this type of inexpensive act which change the attitudes of entrepreneurs toward the circular. These solutions are taken in the case of a Canadian province: Quebec. These examples of solutions are chosen because they have been implemented. It must be understood that in entrepreneurship, where we study real entrepreneurs, unlike research in psychology for which students are often the subjects of the experiments, it is more difficult to implement experimental methodologies. Participation in communities of practice, competing for prizes and other rewards, and the use of methods and tools for promoting better circularization of resources constitute acts that are uncostly for entrepreneurs and encourage them to adopt more circular practices. In response to previous research, which notes a gap between the intentions and circular practices of entrepreneurs, this article proposes to implement inexpensive acts which raise awareness among entrepreneurs more than all communication practices. Acts that enable changes in the attitude of entrepreneurs must present a certain number of criteria: Free Will Compliance, Consistency, Public, Responsibility and Irrevocability. This type of exploratory research must be followed by other experiments that compare groups which have carried out a costly act and others which have not been subjected to this type of preparatory act. However, it is easier to carry out these experimental tests in two groups on consumers or students than on entrepreneurs. One way of doing this would be to administer a questionnaire to raise awareness of the importance of circular practices before and after participation in an inexpensive act.

The interest of this type of research is to confront the entrepreneur with these practices by starting to raise awareness of some of the forms of circularization of resources. Since the entrepreneur has decided to participate freely in these preparatory activities, this entry

point appeals to him or her and therefore echoes his or her own concerns. Thus, instead of considering the entire life cycle of the product or service or carrying out a complete analysis of the value chain, the entrepreneur starts from a starting point—admittedly more modest, but more involving for him or for her.

The contributions of this article are numerous. First, this is one of the first times that the literature on circular entrepreneurship is compared to the previous research in environmental psychology. By mixing these two literatures, solutions are found to reduce the gap between actions and intentions. The entrepreneurship literature describes all the barriers (structural, contextual, cultural) which explain this gap, while psychology literature teaches that attitude changes are more effective if they are preceded by inexpensive acts. The type of inexpensive actions is given by the example of a regional experience: community of practice, price, and tools. This article lists in one region the type of inexpensive preparatory acts that entrepreneurs can carry out easily. These inexpensive preparatory acts constitute solutions to the gap between good circular intentions and implementations. This therefore allows us to consider future experimental research on the impact of participation in communities of practice, in prizes and rewards, and in the use of specific tools in the circular economy.

Secondly, considering that changes in attitude toward the circular are more effective if they lead entrepreneurs to carry out inexpensive actions as described in the regional experience, this article proposes a first framework for choosing the type of circular acts. Thus, the inexpensive acts explored (community of practice, price, and tools) must present a certain number of criteria: Free Will Compliance, Consistency, must be Public, Responsibility, and Irrevocability. Here, a methodological research framework is provided for future articles on attitude change in the circular economy. A practical implication concerns ways of communicating to entrepreneurs to convince them to adopt virtuous practices in terms of optimizing their resources. Communications with entrepreneurs are doomed to a form of failure that leads to eco-anxiety or skepticism if practitioners do not involve entrepreneurs by making them participate in activities that are inexpensive for them (what is called preparatory acts). So many inexpensive acts can be put in place to reduce the gap between intention and circular actions among entrepreneurs.

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