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The RCoins model

Access to finance is the most imperative growth constraint for young and innovative ventures (De Prijcker et al., 2019; Manigart & Sapienza, 2017). As a recent phenomenon, crowdfunding has been positively influencing entrepreneurial financing and has thus been leading the way to a democratization of financial opportunities for entrepreneurs as well backers (Ackermann et al. 2020, p. 277). The growth of equity crowdfunding calls for particular attention, as it has potential benefits that can be attractive to high-quality entrepreneurs. Prospective advantages include a fast and relatively standardized way to reach a large number of investors, establishing market presence and “traction” (evidencing interest in a venture’s product), and gaining feedback from the market (Blaseg, Cumming & Koetter, 2020).

With the ambition to positively impact the entrepreneurial processes in crowdfunding markets, the RCoins project was initiated by three University of Applied Sciences and Arts Western Switzerland (HES-SO) schools in Fribourg, Switzerland, in 2019. The School of Management, the School of Engineering and Architecture, and the School of Social Work joined forces to prove with a demonstrator pilot for collecting and handling PET drink bottles that recycling rates can be significantly improved from a stagnant 80-83% to 95% and ultimately 100%.

Citizens become entrepreneurs: The initial RCoins concept evolved around the idea of all citizens becoming sustainable investors. The project would have helped transition from a linear to a circular economy by encouraging citizens to be more motivated toward plastic bottle recycling, incentivizing them via an innovative crowd-investment reward platform (Feld & Hathaway, 2020, Bocken et al., 2014). By leveraging blockchain technology, citizens would have been able to collect tokens because of their recycling actions. Tokens could have been invested via the RCoins crowd-investment platform in selected companies with a clear social or environmental impact mission. Each token invested would have represented an equity part

in the selected companies – the equity-crowdfunding model – meaning citizens would have been entitled to a financial return in case of a liquidity event or exit. Crowdfunding and ICOs have some aspects in common, and the combination could increase entrepreneurial behavior in an ecosystem (Ackermann et al. 2020, p. 282). RCoins aimed not only to motivate citizens to recycle more and be rewarded financially for their actions but also to engage them collectively and progressively with impact investment as an alternative asset allocation class of the future (Krueger 2021). Hence, the project stimulates impact-driven entrepreneurship. Markman et al. (2019, p. 373) define impact entrepreneurship (environmental, social, and sustainable entrepreneurship) as “the development of sustained applications and solutions that collectively address grand challenges to make the world better. Impact entrepreneurs apply economics logic, but they prioritize solving formidable challenges ahead of wealth creation per se”.

While other initiatives exist today, most blockchain and cryptocurrency schemes are limited to the logistics of tracking waste streams, and their business model is fundamentally based on donations. At the same time, similar projects do not involve the consumer in the steps after consumption, usage, and recycling, but they should. Consumers are becoming more responsible and aware of the problem of single-use plastics and are seeking sustainable alternatives (Pastran, Colli, & Poclaba, 2021, p. 149). This shift in consumer behavior has been evolving hand in hand with sustainable entrepreneurship. Sustainable entrepreneurs and enterprises play an essential role in the struggle with the overwhelming amounts of plastic waste generated yearly by providing innovative solutions (Vig, 2021, p. 110).

In 2020, an application for financial support was submitted to Innosuisse – the Swiss Innovation Agency – and their feedback was that a prototype was needed. However, as establishing the RCoins Limited Partner Investment Platform was evidenced to be a very costly and complex

process, it was decided to first implement a more simplified version of the project without using blockchain technology.

RCoins today

Anyone willing to recycle a PET plastic bottle can create an account on the RCoins web application www.rcoin.ch. After connecting to one of the ten RCoins smart recycling bins by scanning a QR code, they can insert the bottle in the bin and instantly receive 1 RCoin per bottle.

Collected RCoins can either be:

1. Exchanged for offers and discounts with the 13 project partners - shops, restaurants, etc., or
2. They were used to contribute to the improvement of social welfare by making donations to the 8 charitable organizations participating in the project.

These two options are offered to help answer the research question studied by the School of Social Work: do people prefer to use the reward for themselves or for helping others in their society? A questionnaire is accessible on the web application or by scanning a QR code on the bin.

Main target population

The demonstrator pilot started in October 2021 with a selected student and academic staff user group at the HES-SO school premises on the Plateau Péroilles campuses. However, many classes were still being held online because of the pandemic. For the in-person classes, not all students were present either, as only those who were vaccinated were allowed to attend. This led to the decision to expand access to the RCoins platform to the general public.

Objectives

The project objectives covered three main activities:

- to develop smart PET bottle collection bins,
- to develop a web application to manage the virtual currency RCoins, and
- to set up a novel business model that rewards recycling actions instead of taxing.

Successful completion of all objectives provides a validated concept for engaging consumers in actively participating and being able to drive a circular economy. The achievement of these multiple objectives can be seen as an opportunity to develop new and innovative business models (Casadesus-Masanell & Zhu, 2013; Lindgardt et al., 2015).

Main challenges

- **Finding partners.** For implementing the initial concept, it was necessary to have a partner that would have either helped screen for sustainable projects – a sustainable investment advisor – or that would have served as an intermediary. This task turned out to be a lot more difficult than expected, as most of the potential partners were reluctant to participate.

Eventually, the novelty of the business model stemmed from the partnership with Impact Hub Bern, a catalyst for innovation and entrepreneurship. They would have been responsible for analyzing and evaluating start-ups or companies, and the first investment options would have included 27 start-ups that were part of the Circular Economy Incubator.

- **Technical issues.** As the creation of the RCoins smart recycling bins started, many unexpected challenges were encountered: ordered pieces arrived with delay; the connection between the server and the bins was sometimes lost; the fact that batteries were used was not only unsustainable but also inconvenient as someone had to

recharge and replace them weekly, making sure the connection was re-established every time. Subsequently, cables with connection to electrical plugs were incorporated.

- **Lack of participants.** Because of the pandemic, there were a lot fewer students and staff members present on the campus than usual.
- **Deciding on a model.** A very tough decision had to be made between directly implementing the first concept or separating the process into two phases, starting with a less risky, less complex test phase.
- Besides finding the proper personnel for executing the physical workstream, **maintaining the interest and motivation** of the already involved staff members and partners required efforts as well.

Major results obtained

- **Increased the visibility** of Swiss MSMEs and charity organizations in the city of Fribourg.
- **Awoke the citizens' interest** in sustainable entrepreneurship and impact investment (these were mentioned as part of the project's second phase in the press release, the social media content, and during interviews).
- **Increased the citizens' awareness** about the need to recycle more.

Key learnings

- It is important to be agile and pivot in order to adapt to changing circumstances or unexpected challenges. Having to simplify your concept, your model might seem like a step back, but it can help gather useful insights for the next steps.
- While it was considered that the project's most challenging part was creating the Limited Partner Investment Platform, a longer-than-expected delay came from a very

simple technical detail – the batteries. This taught us that all elements of a project are equally important and cannot be underestimated.

Next steps

- Create an iOS and Android **mobile application**, as digital technologies have consolidated in today's business scenarios, and consequently, digital platforms are among the most successful organizations on the global scale (Lafuente, Ács, & Szerb, 2022).
- **Use our international network** to replicate the model in education institutions and companies around the globe
- Submit a **second application for financial support** to Innosuisse.¹
- Find **partners and investors**.
- **Implement the second phase** of the project, based on the initial model but with a focus on social entrepreneurship. For this aim, a partnership with Swiss foundations is envisioned. Citizens could still invest their RCoins in sustainable projects and companies, but this time it would be the foundations selecting and managing projects with a social purpose.

Expected outcomes

- The equity crowdfunding context will allow entrepreneurs that have trouble obtaining capital to access new funding opportunities. Moreover, having Swiss foundations as intermediaries will help dissipate the risk of getting no funding at all, which is usually associated with crowdfunding campaigns (Cumming & Reardon, 2022). It is therefore

¹ <https://www.innosuisse.ch/inno/en/home.html>

Innosuisse promotes SMEs, start-ups and other swiss organizations in their R&D activities

expected that RCoins will have a positive impact on entrepreneurial processes in crowdfunding markets.

- As part of an entrepreneurship and innovation ecosystem, RCoins will help increase the adoption of innovation in sustainable entrepreneurship. Moreover, sustainability entrepreneurship will play a substantial role in resolving social and environmental issues by identifying and creating entrepreneurial opportunities (Bakry, Daim, Dabic, & Yesilada, 2022).

Conclusion

RCoins addresses the growing societal demand and legislative obligation in Switzerland and Europe for recycling more plastics to reduce and ultimately avoid environmental waste pollution and significantly abate greenhouse gas emissions. Furthermore, the project creates sustainability awareness and fosters social entrepreneurial behavior. The systemic approach is unique, and innovative with a high level of complexity. The combination of smart collection bins with digital blockchain ledgers for tracking and rewarding the proper return of plastic packaging will provide consumers with a crowd-investment platform dedicated to sustainable entrepreneurial activities. A successful demonstrator pilot in the city of Fribourg will present leadership in tackling the complex challenge of plastics recycling authentically and effectively and will set an example for the Swiss confederation. Furthermore, the project is in line with data provided by the Global Entrepreneurship Monitor (GEM), that in the last years, despite the impact of Covid 19, starting a business to make a difference in the world remains a strong motivator and has increased impressively (Baldegger, 2022 et al., p. 34).

Figure 1. RCoins platform. Source: Own.

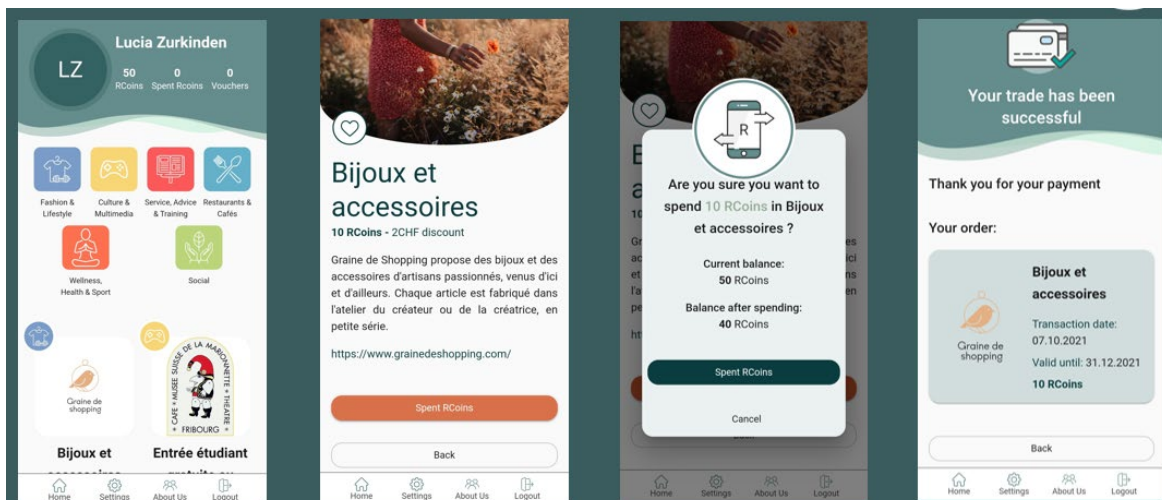
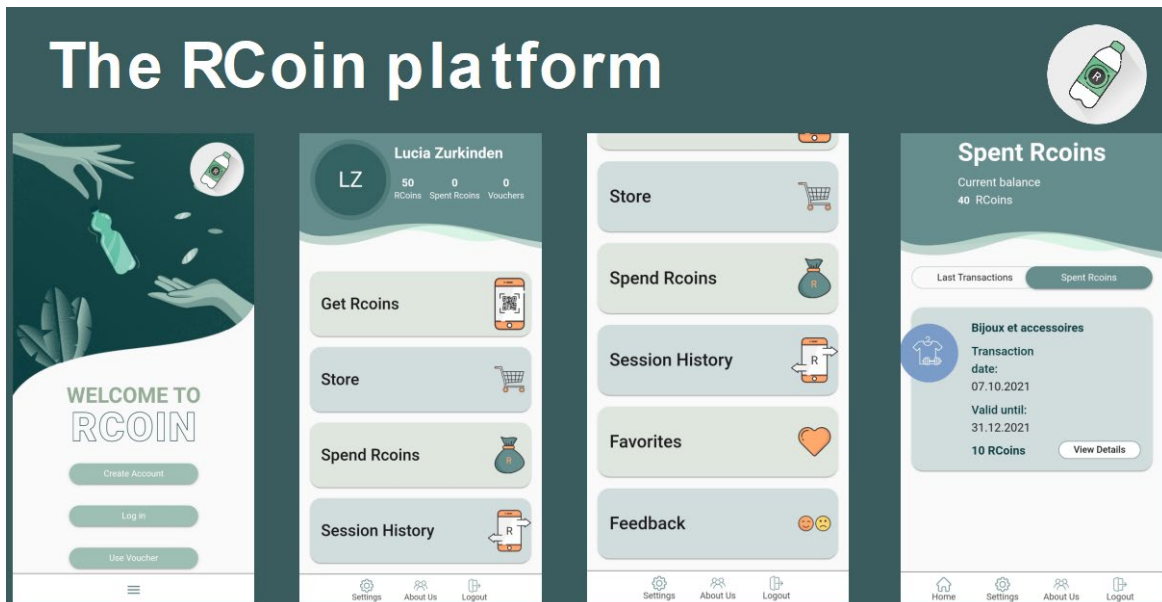
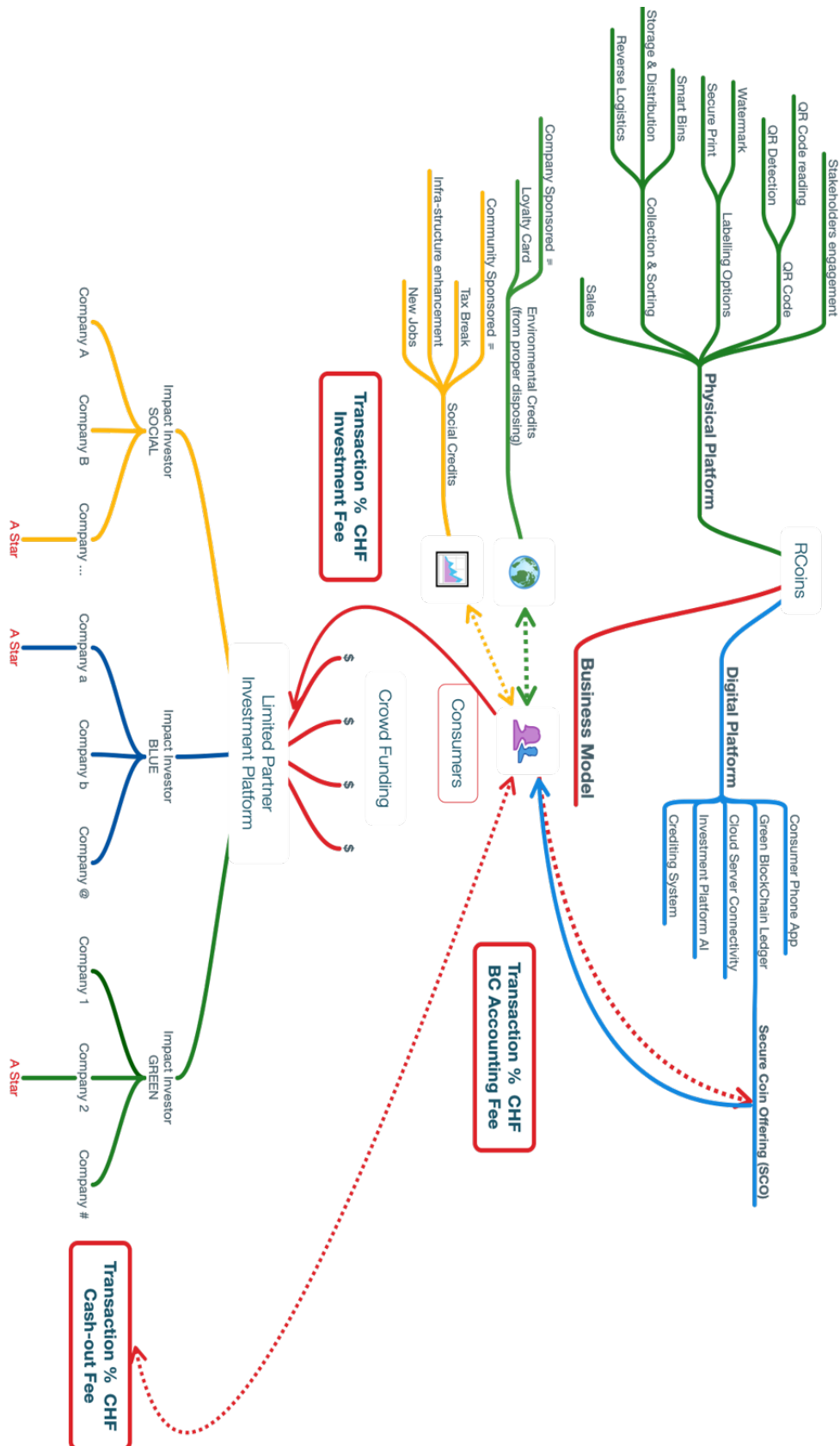


Figure 2. RCoins initial concept. Source: Own.



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