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Inno-Quarter

Business test programs for sustainability-minded, innovative start-ups at festivals and events

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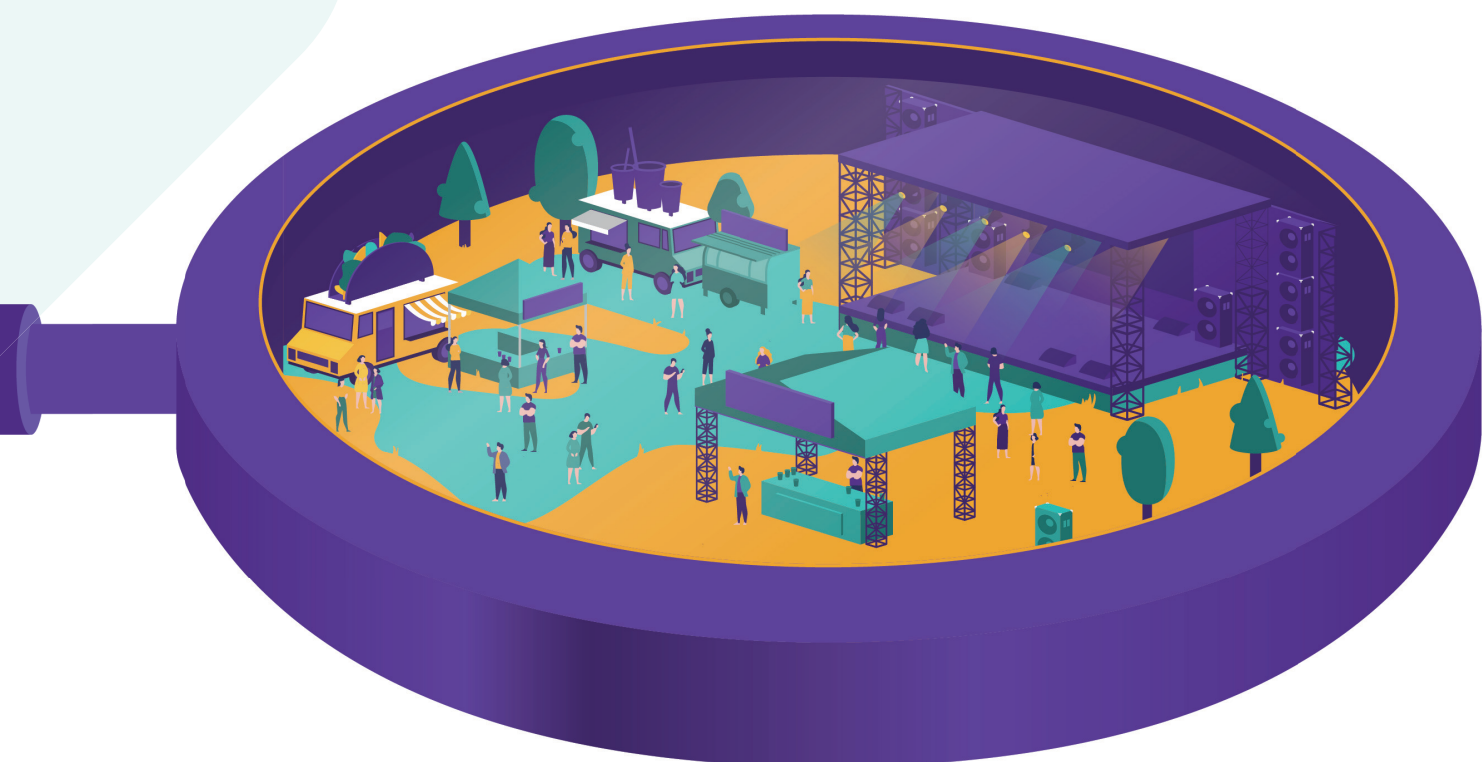
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Inno-Quarter

**Business test programs for
sustainability-minded, innovative
start-ups at festivals and events**

Project report



Interreg
North Sea Region
Inno-Quarter

European Regional Development Fund



EUROPEAN UNION

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About this report

Inno-Quarter (**IQ**) is an international Interreg North Sea project that developed business test programs for start-ups on existing festivals and events. The project ran from 2018 until 2022. The program was organized in five European North Sea regions: the Central Denmark Region (Denmark); Halland (Sweden); Bremen (Germany); Province of Fryslân (the Netherlands); and Western Flanders (Belgium).

This report evaluates the method of business testing at festivals/events. This evaluation was conducted as part of work package 3 (activity 1) of the IQ project. The evaluation is based on the project's two predetermined project results. Namely, 1] business model learning in start-ups and 2] increased market uptake of the start-up's innovations.

The method of business testing at festivals/events as applied by IQ, can be seen as a support measure where the target groups are start-ups in the process of developing a new product or service. IQ specifically set out to support sustainability minded start-ups. Via the business test programs start-ups were offered the opportunity to conduct one test at a festival or an event.

It should be noted that IQ was impacted by the Covid19 pandemic and the resulting restrictions, which changed the scope from festivals to events (online and offline) during the pandemic. This means that the IQ programs in 2018 and 2019 took place in a very different context than the programs during the Covid-19 pandemic. This had repercussions for the programs as well as the research as will be discussed in the report.

In this report the following main research question (**MQ**) is answered:

To what extent does business testing at festivals and events support innovative, sustainable start-ups in their business development process?

The main research question is answered via three sub questions, namely:

SQ 1: How does business testing at festivals and events support innovative, sustainable start-ups?

SQ 2: How does business testing at festivals and events facilitate business model learnings in innovative, sustainable start-ups?

SQ 3: How does business testing at festivals and events support increased market uptake of innovative, sustainable start-ups?

In the first two chapters of this report the research questions, key concepts and the project are described. Chapter 3 details the research methods. In chapter 4, 5 and 6, the research questions are addressed. In chapter 7 the findings are summarized and discussed. Chapter 8 consists of a conclusion and recommendations for further development of business test programs at festivals and events.

Chapter 1: Introduction

The IQ project set out to support early-stage start-ups with an innovative, sustainable business idea. This support entailed the facilitation of business tests at existing festivals and events¹. The idea that business testing in the development stages of a business can improve the odds of success is based on business development strategies such as Lean Start-up [1] and the Strategyzer's Business Model Canvas series [2]–[4]). By offering this service, IQ aims to address the issue of start-up failure due to lack of testing in the development stage [5].

The IQ project expects that festivals and events as a context for business testing can perform two functions for start-ups. One is 'feedback collection' by being able to interact with a large amount of people in a short amount of time. The other is 'performance testing' via the implementation of a solution in the festival its infrastructure (social, financial, energy, water, food, waste, transport, etc.).

This report evaluates the IQ method. For the evaluation, the pre-determined project results defined in the IQ project plan [5] of 'business model learning' and 'market uptake' are used. The main research question that follows is:

MQ: To what extent does business testing at festivals and events support innovative, sustainable start-ups in their business development process?

This question is answered via three sub questions, namely:

SQ 1: How does business testing at festivals and events support innovative, sustainable start-ups?

SQ 2: How does business testing at festivals and events facilitate business model learnings in innovative, sustainable start-ups?

SQ 3: How does business testing at festivals and events support increased market uptake of innovative, sustainable start-ups?

The following sections define key concepts for the evaluation of the method of business testing at festivals and events based on existing literature. At the end of the chapter, it is summarized why this method may be expected to support start-ups in their business development. It is also visualized how the research questions relate to each other.

¹ From 2020 on the concept of the business test programs came to include a broader range of events so that testing could continue during the Covid-19 pandemic. See Chapter 3.

1.1 Innovative, sustainable start-ups

In this report start-ups are defined as micro-enterprises:

- enterprises that are developing a novel product, service, or business model with the aim of upscaling the business (based on [6]).
- having less than €2 million income and less than 10 full time staff units [7], [8].

A sustainable start-up is also understood as a young micro-enterprise, but specifically with the aim of making sustainable impact through their business activities [9]. Sustainable business development is found to typically require extensive stakeholder management [10]. This is related to the systemic nature of sustainability challenges; a solution requires changes throughout the chain of consumption and production [11].

Start-ups are engaged in an entrepreneurial business development process. This process may be understood as discovering, developing, and exploiting entrepreneurial opportunities for profit [12], [13]. When speaking of sustainable entrepreneurship, this profit extends to social and environmental benefits [9]. Entrepreneurial opportunities are typically of an uncertain and high-risk character because at first neither the market nor the product/service exists yet [14], [15]. This initial state is one of extreme uncertainty, which may be managed through the collection of evidence via business (model) testing [3], [4].

Business models are conceptual models of how a business will create and deliver value to customers, and how the business will generate profit from delivering that value [16]. Typically, in the development stage of business, the business model consists of a set of assumptions that are to be validated and refined [3], [16]. Sustainable business models may be understood as: “business models that incorporate pro-active multi-stakeholder management, the creation of monetary and non-monetary value for a broad range of stakeholders, and hold a long-term perspective” [17, pp. 403–404]. It has been identified that balancing the creation of economic, societal, and environmental value as well as the effort required to engage with external stakeholders are some of the main challenges in the development of sustainable business models [10].

It may be understood that important typical challenges of innovative, sustainable start-ups in the development stage are reducing uncertainties about the business, balancing economic and sustainable value creation, and engaging external stakeholders.

1.2 Business testing and business model learning

Business testing is understood as a method for optimizing a business through strategic data collection and understanding customer needs [1], [3] as well as reducing uncertainty through the collection of information [18]. In the context of sustainable business development, business testing has been argued to be a relatively easy way to interact with users as well as other stakeholders around a business idea [19]. This suggests that business testing could be of help in addressing two of the three challenges mentioned above: reducing uncertainty and engaging stakeholders.

Business testing ultimately revolves around the collection of evidence to proof or disproof assumptions, to help a business determine next steps [1]. Testing, and specifically interaction with end-users and other stakeholders, is expected to help start-ups develop an optimal solution in the form of a product or service that responds to actual market needs. This is important because lack of market need is one of the most reported reasons of start-up failure [20], [21].

The concept of business testing [3] as it is understood here, is closely related to the business model canvas [22]. It builds on the idea of designing a business via nine building blocks that relate to three pivotal questions: is the offering desirable, feasible and viable [3], [22]. The building blocks are divided as follows [22]:

- *Desirability*: Value proposition, customer relationships, customer segments, and channels
- *Feasibility*: Key activities, key resources, and key partners
- *Viability*: Costs and revenue structure

Sustainable business models expand on the initial business model blocks. Variations on the business model for sustainable business development typically include a dimension for social and environmental value creation (see e.g., [23]–[25]). Business model learnings are understood here as insights pertaining to the business model blocks.

The applicability of business testing is expected to be mostly after the ideation stage. Business testing as method does not address the level of sustainability or innovativeness of the basic business idea itself, which is typically established prior to testing [19]. Essentially, a sustainability element in business model testing, as it is understood here, would relate to the translation of the sustainability purpose of the start-up into the business model elements. Assumptions relating to the business model elements could then be tested.

A business testing method can be used to gain feedback from users, customers, partners, or other external parties after an initial business idea has taken shape [19], [26]. As such, business model testing can help start-ups explore directions for more sustainable solutions by providing a tool for internal and external interaction around new possible innovation directions [27].

1.3 Business testing and market uptake

Market uptake is about bringing innovative products and/or services to the market. The market uptake of products/services may be increased through business testing in two ways. One, because it should enable the improvement of products/services' fit with a market need (see 1.2). Secondly, business testing in a public space such as the festival may support the social process of uptake of innovations.

According to Rogers [28], adoption is a process within a social system. The adoption rate is related to the positive perception of five variables by member of the system [28, pp. 15–16]:

- Perceived advantage of the innovation in relation to other solutions?
- Fit of the innovation with values, experiences, and needs of the community?
- Is the innovation and its impact easy to understand?
- Can the innovation be tried out before purchase?
- Are the innovation and its results visible to members in the community?

Festivals and events typically bring together a community of people with similar interests and values [29]. Theoretically, testing in such a space could benefit the adoption process. The opportunity for potential customers to try out and see the innovation in the festival space is expected to positively impact the uptake of an innovation.

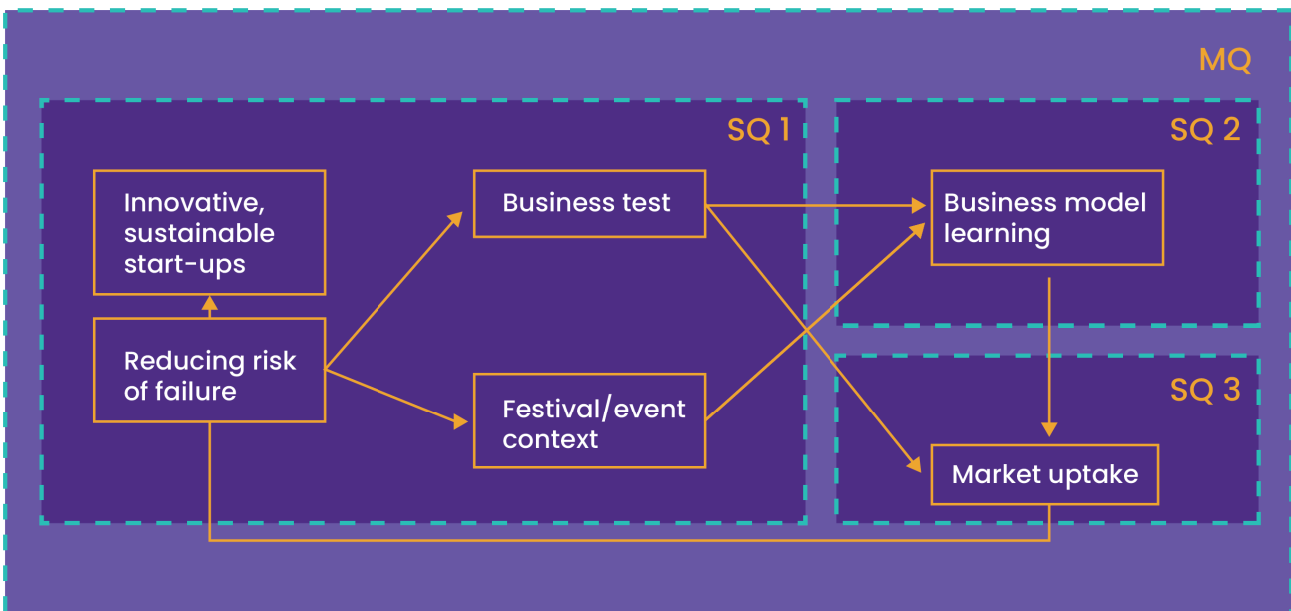
1.4 Summary of key concepts and research questions

The main research question of this report is whether the method of business testing at festivals and events supports innovative, sustainable start-ups in their business development process. The IQ project applies this method to address the risk of business failure due to lack of testing in the development stage. Entrepreneurial sustainable innovation may be understood as a highly uncertain process. Business testing as an evidence-driven strategy [18], is expected to help entrepreneurs gain a deeper understanding of what customers want and expect via the collection of insights. Key assumptions of the project are that business testing at a festival or event leads to business model learnings and increased market uptake.

Based on the discussion of key concepts in this chapter, figure 1 shows how business testing in a festival/event context supports business development. It is expected that the IQ method as it was developed via the project (SQ 1) supports business model learning (SQ 2) and market uptake (SQ 3). As described above, business testing at festivals may be expected to lead to business model insights, which in turn may be expected to lead to improved market fit.

It is also assumed that testing at a festival may support market uptake through the visibility of that innovation within the festival space. Altogether, business model learning and market uptake is expected to reduce risk of business failure for innovative, sustainable start-ups.

In the next chapter, the basic design of the business testing programs as organized by the IQ project is described. After that, the research methods used to answer each of the three research sub-questions are described. To answer the main research question, it is important to understand how business testing at festivals and events works. This question will be addressed in Chapter 4. The core assumptions of this approach that 1] testing at a festival or event can provide insights about business models and that 2] testing at a festival or events supports the adoption of innovations are discussed in Chapter 5 and Chapter 6 respectively. The main research question is addressed in Chapter 7.



MQ: To what extent does business testing at festivals and events support innovative, sustainable start-ups in their business development process?

SQ 1: How does business testing at festivals and events support innovative, sustainable start-ups?

SQ 2: How does business testing at festivals and events facilitate business model learnings in innovative, sustainable start-ups?

SQ 3: How does business testing at festivals and events support increased market uptake of innovative, sustainable start-ups?

Figure 1: Overview of research questions and key assumptions about business testing at festivals and events.

Chapter 2: **Description of the IQ project**

The partnership within the IQ project has implemented the IQ-method of business testing at festivals and events as a business development instrument within its respective regions: Halland (Sweden), Central Denmark Region (Denmark), Bremen (Germany), Province of Fryslân (the Netherlands), and West Flanders (Belgium). This chapter describes the business testing method as applied by IQ, the initial design of the business test programs, the organization, and the regional configurations.

2.1 Description of project aim

IQ has set out to develop a 'quick end-user feedback' approach [5], by using festivals and events as interactive spaces for business development. The aim of IQ is to provide platforms that help innovative, sustainable start-ups to test their business ideas and to support market uptake of their products and services. The key outcomes of the project are as follows [5]:

- 70 percent of participating (aspirant) start-ups derive specified business model learnings
- Improved market uptake of 30 products/services

IQ facilitates tests for innovative start-ups in all phases of development, from idea to the commercialization stage. IQ intends to support start-ups that aim to contribute to the UN Sustainable Development Goals (SDGs).

The IQ method was born out of the perceived need for innovative start-ups to be able to test their business ideas in real-life contexts. It was expected that testing in a realistic context would minimize the risk of start-up failure (based on popular business development strategies such as Lean Start-up, Customer Development and Business Model development [1], [3], [4], [30]). IQ offers a business testing service for start-ups, so that they can gather information for quicker and evidence-based decision-making about their business. The expectation is that this gathering of information via business tests in the development stage of a new business, should help start-ups refine their business idea. This should give them better odds of succeeding on the market. Besides information gathering, business testing with IQ was also expected to help start-ups to find (future) customers and partners.

In summary, IQ offers start-ups access to festivals and events to test their products/services, so that they may generate insights about their business plans.

2.2 IQ programs

IQ facilitates a relatively quick iteration cycle: the preparation, design, and the evaluation of a business test. The IQ programs do not offer support for a complete business development process, rather, it is an instrument that start-ups can make use of to support their business development process. The general steps of organizing a business test program at a festival/event were designed through a joint effort during the first two partner meetings in Leeuwarden (the Netherlands) (October 2017) and Varberg (Sweden) (February 2018) respectively. The design can be seen in figure 2. The general process steps are meant to ensure international compatibility of the regional programs to support the trans-regional development of the IQ programs through comparable activities.

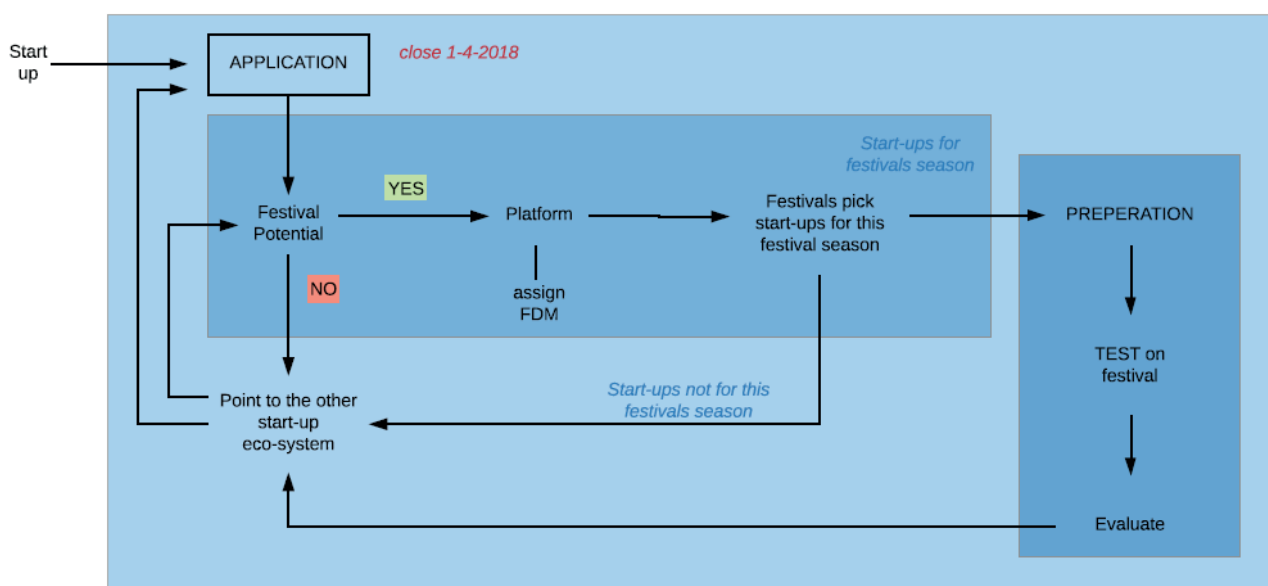


Figure 2: The start-up selection model of IQ (figure by Brezet, H. presented at IQ partner meeting, February 2018).

As figure 2 shows, organizing an IQ program entails four main activities:

- Application and selection of start-ups
- Preparation of the tests Testing at the festival
- Evaluation of the outcome

It is detailed on the next page how the activities were conducted within the project.

Application and selection. Recruitment of start-ups was organized via an open, online, international call for applications. The call was promoted via regional entrepreneurship and innovation networks. Selection of participants was done by the coordinators of the regional programs (referred to as the innovation brokers). The innovation brokers met multiple times a year (online) to discuss their selections and opportunities for international exchange of start-ups. The selection of start-ups was done by the innovation brokers via jointly agreed upon guidelines:

- Is the business idea innovative?
- Does the innovation have business potential?
- Does the intended test fit with the scope of the festival/event?
- What is the contribution to the Sustainable Development Goals?

However, the guidelines were not absolute; start-ups that scored high in one dimension but low in another, could still be selected to participate. There was no jointly agreed upon protocol in place on how to evaluate the applications based on these guidelines.

Preparation of the tests. After being selected and appointed to a program at a festival/event, start-ups were offered a preparation track in the form of workshops or individual coaching. This was meant to help them to identify key assumptions about their business and to design a business test that would fit into the event. The innovation broker or invited experts provided this support.

Testing at the festival. The tests at the festivals were executed by the start-ups themselves. During the tests the innovation broker was present to support and coordinate the overall test program. Several start-ups tested at the same time at the festivals. Depending on their test questions, start-ups sometimes conducted tests at different areas of the festival/event but there was typically a central location dedicated to the business test program. This could be in the form of a physical location such as a market fair concept or specific events on the festival program, such as a presentation or a guided tour along the tests.

Evaluation of the outcome. The innovation brokers evaluated the results of the tests and the potential implementation with the start-ups. The innovation brokers helped to interpret the results and to define potential next steps. The innovation broker would also offer network contacts in case relevant.

The business tests programs of IQ in essence entail the definition of a business model-related test question, the design of a business test at festival and the interpretation of the results. In the next section it is described how the test programs are organized.

2.3 IQ organization

As mentioned in the previous section, several start-ups test during the same festival. All tests at a festival together constitute the business test program. The organization of an IQ program performs three general organizational activities: 1] festival test coordination, 2] stakeholder engagement and, 3] communication.

Festival test coordination. The design of the festival test on the single business level is done by the start-ups themselves with help from an innovation broker. The innovation brokers coordinate how the tests may fit together in a program. For example, the tests may be presented via a 'market fair' model, where each start-up demonstrates or showcases his/her idea. Backstage integration, another model to organize the business tests, is about start-ups testing a potential solution for a festival problem in action. E.g. the collection of festival waste as a resource for a new product to achieve circularity. The overall test program and collaborations between participating start-ups and the festival organization are designed by the innovation broker.

Stakeholder engagement. IQ programs aim to connect to the local business support infrastructure so that start-ups smoothly can move on to other support programs if they want. For example, in the region of Halland, the coordination of the regional IQ program is done by business incubator HighFive. Stakeholder engagement is also aimed at regional commitment so that the approach developed by IQ may be adopted by the regional infrastructure partners after the project.

Communication. The communication of IQ programs is usually aimed at three target groups. Firstly, it is aimed at recruiting start-ups by campaigning for the regional festival/event programs. Secondly, during the festival/event the tests are promoted on site so that visitors are able to engage with the start-ups. Finally, IQ showcases the tests on the project website to inform interested stakeholders.

Framing the business tests by an encompassing festival innovation program, engaging regional business support organisations, and advertising the project to start-ups, the public and stakeholders is all done to enable interaction. The IQ program essentially revolves around facilitating interactions between start-ups and potential customers or other relevant stakeholders. For example, the programs organized innovation tours, pitches by the start-ups on a stage, or a game that motivates visitors to give feedback.

2.4 Regional configuration of IQ programs

The partnership of IQ consists of operational and non-operational projectpartners. Here, only the operational partners are covered. Below a description is provided on each regional program organization.

IQ Halland, Sweden. Business incubator HighFive (Halmstad) is contracted by regional authority Region Halland to coordinate and develop the Swedish IQ program. HighFive, in turn, collaborates with the Halland division of a national social business incubator Coompanion Halland (SE) and a local incubator Potential. VBG (Varberg, SE). The program is developed in collaboration with Hallifornia (Varberg) under the name Silicon Halli. Hallifornia is an annual city festival that celebrates coastal culture and programs sport events, music, food and more. The festival hosts and co-develops the IQ program. Later, other events were included, such as a second festival Into the Woods, a Tech Week and golf tournament Scandinavian Mixed.

IQ Aarhus, Denmark. Worldperfect (Aarhus) is a sustainability consultancy firm. Worldperfect has expertise in making festivals more sustainable as well as in business and product development at festivals and events. Worldperfect works with multiple events in Aarhus. The organisation shaped the IQ program at Northside based on the sustainability challenges of the festival to ensure a close connection between the scope of the event and the innovation.

IQ Bremen, Germany. Bremen University takes on the double role of both research and regional program coordination in the IQ-project. The activities are based at the Chair in Small Business and Entrepreneurship (LEMEX). LEMEX initially collaborated with M01N Start-up Camp (Bremen), an event that brings together the Bremen start-up community through a fair and pitch event. In 2019, M01N hosted the program developed with LEMEX at their own event and at a satellite event at the arts and culture festival: Breminale (Bremen). Later, LEMEX organized the program at other events such as the Bremen University Campus Festival, Sustainability Day (Bremen), and Prototypen Party (Oldenburg).

IQ Fryslân, Netherlands. The Province of Fryslân (Leeuwarden) is the lead partner in the IQ project and coordinates the international exchange, the international call, and internal and external communication efforts of the project. Initially, the music and arts festival Welcome to the Village (Leeuwarden) organized the IQ program under the header of their innovation program DORP, in collaboration with the Leiden, Delft, Erasmus (universities) joint sustainability program, coordinated by TU Delft. Since 2019, the organizational partner of DORP is innovation platform organization Innovatie Pact Fryslân (Leeuwarden, NL). As such, DORP became part of their start-up program which includes various other events and support measures for start-ups. In 2021, the Province of Fryslân also collaborated with Innofest, a regional business testing program that operates at festivals and events.

IQ Kortrijk, Belgium. The IQ program in Kortrijk is organized by HOWEST, a University of Applied Sciences. IQ is based at the Howest Business department, which focuses on student entrepreneurship. HOWEST primarily send their student entrepreneurs abroad to DORP to validate their business ideas. In 2021, HOWEST organized an IQ program at their Student Welcome event.

Other partners. NHL Stenden Hogeschool (Leeuwarden, the Netherlands) is a University for Applied Sciences. NHL Stenden developed a handbook for supporting and managing sustainable innovation through festival experiments based on the IQ approach; the Festival Experimentation Guide [31]. Aalborg University (AAU, Denmark), Department of Planning, monitored the project through research. AAU provided recommendations for IQ program development based on project results.

2.5 Summary: IQ business test programs at festivals/events

IQ aims to support business model learning and market uptake through business tests at festival and events. The target group of this support measure is early stage innovative, sustainable start-ups. The basic design of the method and the necessary activities were agreed upon at the beginning of the project. IQ was organized in five regions, in different configurations. The approach was further developed through knowledge exchange between the partner regions at partner meetings.

To evaluate whether business testing at festivals/events is useful, there are three points to consider. As it is assumed that this method supports business model learning (SQ 2) and market uptake (SQ 3), these two expected outcomes are important success indicators for the IQ method. These are evaluated in Chapter 5 and Chapter 6, respectively. A third important point relates to how the business test method supports innovative, sustainable start-ups through testing at festivals/events (SQ 1). Specifically, the distinctive feature of festivals/events as context for business testing is important.

Chapter 3: Research methods

To answer the main research question: To what extent does business testing at festivals and events support innovative, sustainable start-ups in their business development process, three sub-questions are formulated. To answer these sub-questions different methods have been used, see table 1. The methods used are described in sections 3.1, 3.2 and 3.3. Relevant literature has been consulted to define the key concepts in Chapter 1 and to interpret the results of this study.

Table 1: Research methods used per research question.

Sub Research Questions	Chapter	Methods
SQ 1: How does business testing at festivals and events support innovative, sustainable start-ups?	Chapter 4	Observation, questionnaire
SQ 2: How does business testing at festivals and events facilitate business model learnings in innovative, sustainable start-ups?	Chapter 5	Questionnaire
SQ 3: How does business testing at festivals and events support increased market uptake of innovative, sustainable start-ups?	Chapter 6	Questionnaire, desk research

To evaluate the method of business testing at festival and events as applied by the IQ project, data was collected in three ways: via observation, a questionnaire, and desk research. Observation was aimed at understanding how the business testing method at festivals/events was applied. Questionnaire and desk research data was used to evaluate the method in general and to evaluate the assumed functions of the method (based on IQs main project result indicators [5]):

- Business testing at festivals/events supports business model learning for 70% of the start-ups
- Business testing at festivals/events increases market uptake of 30 products/services

Table 2 shows when and where the data were collected and in which sections these data were used. With regards to the questionnaire data, due to Covid-19 related restrictions, festivals and events in 2021 could not take place as planned. It is important to note that 1] this led to a lower number of participating start-ups in IQ in 2021 and thus in a smaller sample size than expected, and 2] that the contexts wherein the data were collected differed considerably between 2018-2019 and 2021.

Table 2: Overview of data collection.

Data collection method	Time of data collection	Used for:	Used in:	Data collected on:
Observation	2018 2019	Description of the business testing at festivals/events method	Chapter 4.1 Chapter 4.2	Start-ups in the test programs of 2018-2019. See table 3.
Questionnaire	2021	Evaluation of the method Business model learning Market uptake (self-assessment)	Chapter 4.3 Chapter 5.2 Chapter 6.2	Start-ups in the test programs of 2021. See table 4.
Desk research	2021 2022	Market uptake (count of launches and 3 year survival rate)	Chapter 6.2	Start-ups in the test programs of 2018-2019. See table 3 and Appendix II.

The questionnaire data do not exactly relate to the initial concept of testing at festivals, as the business tests in 2021 had to be organized in alternative ways or contexts. Unfortunately, this variety of contexts means that no conclusion can be drawn on testing in a festival context based on the questionnaire data. The alternatives ways of testing and contexts were:

- Online tests at digital events
- Tests at alternative physical events or context
- Tests at a physical festival but in an adapted form to comply with Covid-19 restrictions

A list of the events included in the study can be found in table 3. The events in the Netherlands were included via a collaboration in 2021 with Innofest, a business testing at festivals/events program in Fryslân. This program was not included in the observations of 2018 and 2019 and was not considered in the initial description of the method.

Finally, it should be noted that the sample of start-ups is the result of the selection of the innovation brokers of the business test programs, based on the project's agreed upon guidelines. No further assessment of their innovativeness or sustainability was done before including them in this study.

3.1 Observation

At the start of the IQ project, a basic design of the business test programs was created. Programs in 2018 and 2019 were observed to understand how the programs were implemented in practice. An overview of the observed programs can be seen in table 3. Observation was done during the festivals when the start-ups were testing. Versions of the resulting model describing the general method of the business test programs was presented to the IQ partnership during project partner meetings.

Table 3: Overview of observed IQ programs in 2018-2019.

Observed festivals	Region	2018	2019
DORP/WTTV <i>*Overlapped in time with Silicon Halli</i>	Fryslân (the Netherlands)	Observed in part*	observed
Silicon Halli	Halland (Sweden)	Observed in part*	observed
Worldperfect x Northside Festival	Central Denmark Region (Denmark)	not observed	observed
M01N Camp	Bremen (Germany)	no program	observed
Bremiale	Bremen (Germany)	no program	observed

3.2 Questionnaire

A questionnaire was distributed among the start-ups that participated in a business test program at festivals and events in 2021. The questionnaire included questions on business characteristics, test design, business model learnings and increased market uptake. Input was provided per start-up via a digital survey-tool. Start-ups filled the questionnaire in after their test. The survey was open from July 2021 to March 2022. All start-ups that participated in IQ were approached to participate in the research. The questionnaire was sent to 56 participating start-ups, of which 32 start-ups have completed the questionnaire. The resulting response rate is: 57%. Figure 3 shows how many start-ups responded, at which events they tested, and whether they conducted a physical test or an online test. Events and tests that were cancelled were not included in this study.

The questionnaire evaluated business model learnings and market uptake via multiple choice questions and a 7-point Likert scale. The business model learnings are based on the developed 'mission-business model canvas' and derived specified business model learnings in Chapter 5. The questionnaire was tested by the innovation brokers before distribution. The questionnaire can be found in Appendix I.

Due to Covid-19 related travel restrictions it was not possible to travel abroad. When physical presence was not possible, the test programs were photographed by the innovation broker for contextual reference.

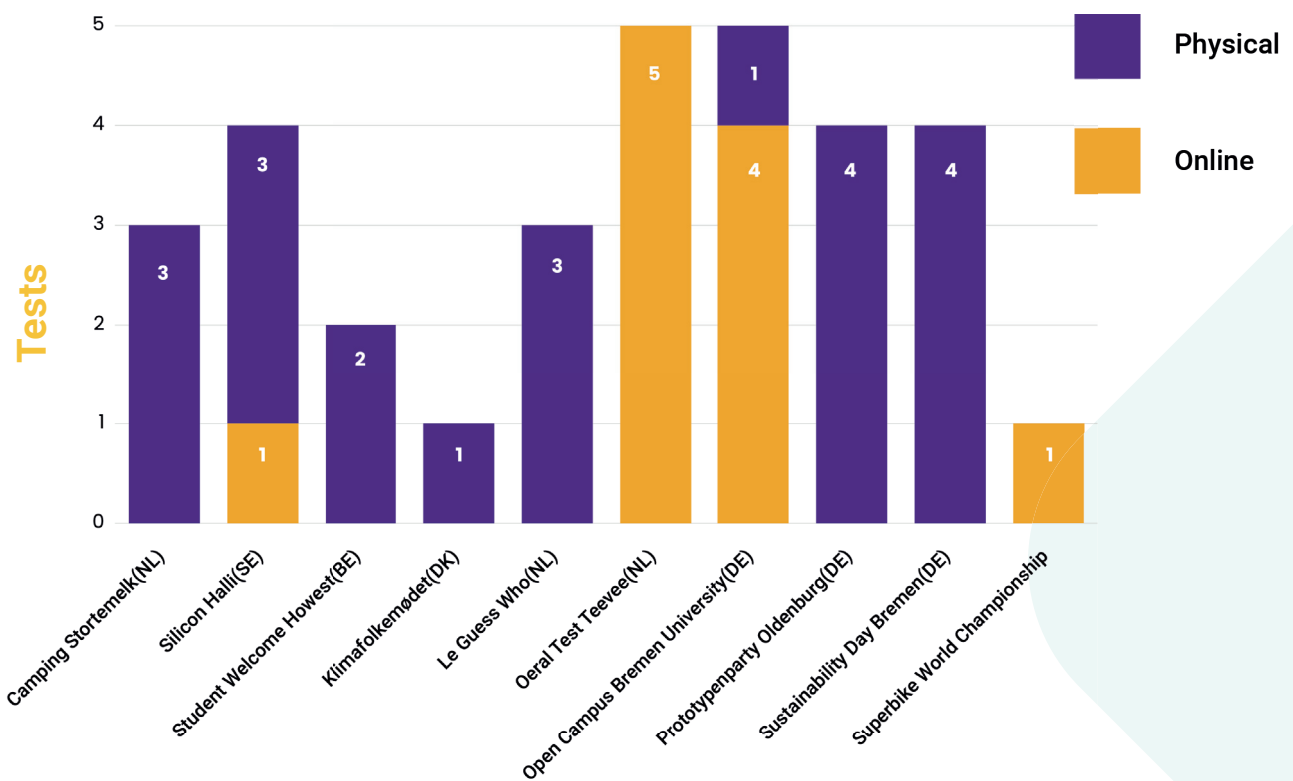


Figure 3: Number of online/physical tests per event (2021).

Table 4: Overview of business test programs included in the questionnaire.

Event	Description event	Online
Open Campus Festival (Bremen, Germany) 07 June 2021	Online celebration of the 50 th year anniversary of Bremen University.	Online
Oerol Test Teevee (the Netherlands) 11/12/18/19 June 2021	Online event with Oerol festival visitors specifically organized for the start-ups.	Online
Silicon Halli at Hallifornia (Varberg, Sweden) 22-24 July 2021	A covid-proof version of Silicon Halli during the Hallifornia festival.	Physical
Sustainability Day (Bremen, Germany) 24 July 2021	Sustainability fair in the city.	Physical
FIM Superbike World Championship (Assen, the Netherlands) 24-25 July 2021	Motor sports event at TT race circuit.	Physical
Klimafolkemødet (Middelfart, Denmark) 2-4 September	Event with debates, presentations, cultural events, speeches, workshops around social challenges.	Physical
Camping Stortemelk (Vlieland, the Netherlands) 3-5 September 2021	Tests at the Stortemelk Camping during the cancelled festival weekend.	Physical
Impactfest* (The Hague, the Netherlands) 4 November 2021	Event about transitioning to a sustainable economy for start-ups, scale-ups, investors, policy makers and other impact makers.	Physical
Waddenfestival Test Teevee (Leeuwarden, the Netherlands) 04 November 2021	Event about the Dutch Wadden islands with presentations and workshops, on topics such as food and nature.	Physical
Student Welcome festival (Kortrijk, Belgium) 7 October 2021	Campus event to welcome HOWEST students.	Physical
Le Guess Who Festival (Utrecht, the Netherlands) 12/13 November 2021	Music and culture festival in the city.	Physical
Prototypenparty (Oldenburg, Germany) 25 November 2021	Event where start-ups present prototypes to get feedback and to find collaborators.	Physical

* Start-ups participating in the Impactfest program were approached. None completed the questionnaire.

3.3 Desk research

Desk research was done to derive the survival rate and rate of market uptake. It was investigated whether start-ups from the 2018 and 2019 editions of the business test programs were still active three years after testing. Active is defined as having an active online presence via social media, a website or webshop in the form of posts, news items or for sale items. For app-producing start-ups, it was also checked if the app was still available. The results were checked by the regional innovation brokers. This was done to increase the reliability of the result. The innovation brokers also checked and completed the list of start-ups that participated in their programs and provided information on which start-ups launched and which did not. The resulting overview of start-ups, start-up survival and market uptake can be found in Appendix II.

When the innovation broker returned a different assessment of start-up survival than the result of the desk research, the innovation broker's answer was used. When start-up survival could not be determined this particular start-up was taken out of the analysis. Some start-ups that participated in the business test programs did not fit the definition of start-up (e.g., NGOs, established SME, public authority), data from these start-ups are not included in the survival rate either. These cases were excluded because the aim was to draw a conclusion on whether the business test method as applied by IQ could support market uptake of products/services by start-ups.

Alternative indicators of survival that could be considered are having employees or having turnover, alike the Eurostat [32] sample used for comparison (see Chapter 6). However, as the start-ups in this study were in a much earlier stage of development, it is likely that they do not yet have turnover or employees still. Therefore, survival is understood for the purpose of this study as: evidently working on the start-up.

Chapter 4: Supporting innovative, sustainable start-ups

In this chapter, SQ1 is addressed: *How does business testing at festivals and events support innovative, sustainable start-ups?* Based on observations at business test programs in 2018-2019, four aspects of business testing at festivals/events are discussed. These aspects are: test aim, test design, interaction, and business support. In the second section of this chapter a model is presented that describes the IQ-method of business testing at festivals and events. The third section describes characteristics of participating start-ups, the tests they conducted and their evaluation of the test method. In the final section, the research question (SQ 1) is answered.

The business test programs, as organized by IQ, are expected to fulfil a set of functions, as shown in table 5. To give an impression of how the test programs performed these functions, table 6 shows in what form these functions were observed in the test programs of 2018-2019. IQs approach to business testing at festivals/events was developed by the IQ partnership through the implementation of their own regional programs and knowledge exchange at partner meetings (two times a year). Versions of the IQ model (4.2) and recommendations were presented at the partner meetings as well.

Table 5: Overview and organization of the functions of a business test program at festivals/events formulated by IQ [5].

IQ aspects	Business model learning	Market
<u>Business test</u>	<ul style="list-style-type: none"> • Enabling product/service development • Demonstration of products/services to potential customers/businesses 	<ul style="list-style-type: none"> • Exhibiting products/services ready for market uptake
<u>Festival/event context</u>	Meeting ground for innovators with potential customers	
<u>Facilitation</u>	Business support platform	

Table 6: IQ functions per festival program.

IQ functions / observed at:	Enabler for product/service development	Demonstrate product/ services to potential customers or businesses	Exhibit products/ services ready for market uptake	Meeting ground for innovators and potential customers	Business support Platform (Based on observation or input from innovation brokers when not present)
M01N Camp + Breminale (Bremen)	Collecting feedback from festival visitors through prototype showcasing	Prototype showcasing to other founders and experts + showcasing to Breminale audience	Sales tests of mature products/ services	Lounge area and feedback-reward system for event visitors	Individual coaching, external expert workshop, connections to Bremen's start-up community
Worldperfect @ Northside Festival (Denmark)	Prototype or process testing backstage with festival volunteers, vendors, or festival organization	Opportunity to present product/service during festival for interested festival visitors			Individual coaching and joint inspiration session for sustainable product/ service development in relation to test
DORP @ Welcome to the Village (The Netherlands) <i>*DORP changed scope in 2019 and was not observed to include market ready products/services since.</i>	Pre-festival hackathon (DORP) aimed at concept and prototype development	Prototype testing during the festival with visitors	Pilots with mature products/ services in festival context*	DORP tour for regional network, DORP festival area is the core for innovation activities at the festival	A weeklong coaching program, including a kick-off event: daily workshops and coaching sessions during the DORP hackathon.
Silicon Halli (Sweden)	Collecting feedback from festival visitors through prototype showcasing.	Prototype showcasing and testing with festival visitors	Sales tests of mature products/ services	Pitches on stage for visitors, Silicon Halli tent at the festival with lounge area, feedback reward scheme.	Individual coaching for participants, a program of four workshops, and support from incubators and business developers.
HOWEST (Belgium) <i>*Due to HOWEST only sending start-ups abroad until 2021.</i>	<i>*Not observed</i>	<i>*Not observed</i>	<i>*Not observed</i>	<i>*Not observed</i>	Program is part of the HOWEST business development platform for student entrepreneurs.

4.1 Four aspects of business testing at festivals/events

Next, the following aspects of business testing at festivals/events are described: test aim, test type, interaction, business support.

1. Test aim

As discussed in chapter 1, business testing is expected to be most useful after the initial business idea has been conceived. Initially, the IQ test programs intended to support sustainable start-ups with an innovative product/service specifically at Technology Readiness Level (TRL) 5-8. Meaning that start-ups would range from testing a refined prototype in a real-life environment to testing the business model pre-launch. In practice, the programs of IQ supported start-ups at all TRLs. For example, DORP (from 2019 on, after DORP changed its scope) specifically services SMEs by having students and young professionals solve their innovation challenges by developing new ideas. This fits an entry level of TRL 0 (no idea for a solution yet).

It was also found that some programs included start-ups that already had launched a version of the product, while still developing the business. This does not fit the TRL scale, because the TRL scale presumes a strategy of testing to perfection before launching. For a better fit with the iterative process of business development through business testing the TRLs are translated into three test aims. Start-ups are likely to move back and forth between different test aims in their business development process as they generate new insights. These aims should therefore not be seen as a scale but rather as a point of departure for designing a business test.

The test aims are based on 'three kinds of fit' [4, p. 49] from the Value Proposition Design approach. The three kinds of fit are: 1] problem-solution fit: understanding user needs, 2] product-market fit: finding out if customers are interested in the intended product, and, 3] business model fit: designing a feasible business model. Following the descriptions of the three 'fits' in the Value Proposition Development book [4, p. 49], three test aims are derived and listed below. The TRL levels were defined in the IQ project application as can be found in table 7, where they are related to the corresponding test aims.

1. Concept development aims at gathering insight into the problems that customers have and exploring ideas for solutions. Start-ups come in with an idea or concept. Specific needs related to this test aim would be to derive criteria for the success of the intended business idea or to prove that the solution works to solve an identified problem that users have (a proof of concept).

2. Prototype development is aimed at investigating whether the prototype is built in such a way that it works and that it is attractive to users. These tests may concern a rough prototype or a refined one. The difference with concept development tests is that the aim is to confirm or disprove assumptions about a concrete solution. Basically, start-ups test whether their idea translated into a prototype meets its expectations in a real-life context with customers or users.

3. Business development is a pilot of the pre-commercial product/service. Start-ups in this stage have a refined product/service. The tests in this category must ensure the business model is sound. For example, the production and sales of a first batch of products, a pricing experiment, or the marketing approach.

Table 7: Test aims versus the TRL scale (TRL scale taken from Inno-Quarter project application [5], original source for this TRL scale unknown).

TRL LEVEL		TEST AIMS
0	Idea. Unproven concept, no testing has been performed.	[out of scope of business testing]
1	Basic research. Principle postulated and observed but no experimental proof available.	Concept development
2	Technology formulation. Concept and application have been formulated.	
3	Applied research. First laboratory test completed; proof of concept.	
4	Small scale prototype built in a laboratory environment (“ugly prototype”).	Prototype development
5	Large scale prototype tested in intended environment.	
6	Prototype system tested in intended environment close to expected performance.	
7	Demonstrating system operating in operational environment at pre-commercial scale.	Business development
8	First of a kind of commercial system. Manufacturing issues solved.	
9	Full commercial application, technology available for consumers.	Growth

2. Test Types

Besides test aims, there are different types of tests possible. At the programs of 2018-2019 two types of tests were discerned: 1] 'plug and play' and 2] 'integrated'. Plug and play tests did not require interventions in the festival infrastructure. A typical set-up of these tests was a sort of 'business test fair'. This entailed market booths wherein start-ups presented their innovation, grouped in an area dedicated to the business test program at the festival/event. The start-ups would pitch their product or service (idea) to visitors to get feedback. These tests were mainly demonstrations and sales tests. Plug and play tests are relatively easy to realize. The IQ programs as observed in 2018 and 2019 mostly consisted of plug and play tests and the collection of feedback from festival/event visitors.

Integrated tests are tests that do require a specific intervention in the festival infrastructure. An example of an integrated test is the composting of a part of the event's waste stream. Integrated tests are likely to be aimed at testing the performance or usability of a product, a technology, or a process. Such tests can utilize the festival context to generate specific insights; however, this kind of test is more time and resource intensive to conduct than a plug and play test. It also requires cooperation of the festival and its partners that make the event happen (public authority, volunteers, vendors, suppliers, etc.). Few participants conducted an integrated test in the festival, but there were some: e.g., the collection of waste as a resource, ridesharing, or disposables used by a food vendor.

It was observed that most business tests involved a prototype, that was demonstrated to festival visitors. In some cases, the test included a try-out of the prototype or a sales test. There were some tests that focused on trying out an element of the business, for example the way the product is served, how to collaborate with partners or how to organize a service. Other tests included early sales of a product or were aimed at finding a launching customer. At DORP, exclusively, prototypes were developed on site.

Based on the tests conducted by the start-ups observed in 2018-2019, there are four general types of tests. Namely: to develop, to demonstrate, to try-out and to sell. A matrix is provided (table 8) that shows the test types in relation to the test aims presented in the previous section. The matrix represents the resulting business test-designs expected at festivals/events. The underlined test designs are expected to be most prominent based on the observed business tests.

Table 8: Theoretical scope of a business testing program at festivals/events.

		Test type			
		Design	Demonstrate	Use	Sell
Test aim	Concept development	Designing a concept on site	Demonstrating a concept	Tryout of a concept	Sales test of a concept
	Prototype development	<u>Designing a prototype on site</u>	<u>Demonstrating a prototype</u>	<u>Try-out of a prototype (to get feedback/ technical performance)</u>	<u>Sales test of a prototype</u>
	Business development	Designing a business model on site	Demonstrating a business concept	<u>Try-out of (an aspect of the) business (pilot)</u>	<u>Sales test of the business (early launch)</u>

3. Interaction

A third aspect of a business test is the interaction. The interactions can be divided into two categories: 1] with people, and 2] with the festival infrastructure. Because the first is the dominant feature observed in the 2018-2019 test programs, the focus here is on interaction with people. Festivals engage audiences but also other people and organizations, such as food vendors, building crew, volunteers, local businesses such as hotels, municipalities, waste companies, rental companies, and artists [33]. Often the tests require interaction with users or potential customers, but it may also occur that the start-up seeks to engage with potential partners that may be present within the festival space.

With interaction is meant the way that the start-ups collect feedback. Often used methods were surveys and short interviews. Other examples of methods used by start-ups were sales tests of the product to determine pricing, ranking, or voting for design options, and observation. Some start-ups did not use a structured method to collect insights.

The design of the interaction at the festival determines what feedback is collected, the quality of the feedback and how the feedback can be used after the festival. Thinking about the method of feedback collection (e.g., open questions, closed questions, votes, price point, etc.), the target group and how the festival/event space may or may not represent the context the business aims to operate are all expected to impact the usefulness of test.

4. Business support program

The final aspect is that of the support program. The first editions of the business testing program at festivals within IQ (2018) were Silicon Halli and DORP. The pictures below (figure 4) give an impression of how the test programs looked.

The basic design of both test programs was similar. After being selected, start-ups were offered one or more meetings to prepare their test. Based on these meetings, the start-ups conducted a test during the festival. Even though the major steps were the same, the implementation of the business program was different, as can be seen in table 9.

Both business test programs offered support in the design and execution of the test. The support activities of DORP and Silicon Halli were mostly seen to be focused on preparation of the test. DORP offered a hackathon style program with workshops etc. at the festival site right before the festival. The Silicon Halli program offered workshops to support the design of the test in the weeks running up to the festival. The aftercare step to support the evaluation of the test was less defined.



Figure 4:[1] DORP 2018, [2] Silicon Halli 2018, [3] DORP in action (2018), [4] Silicon Halli in action (2018). All own pictures.

Table 9: Comparing regional IQ methods DORP and Silicon Halli (as organized in 2018).

Program	DORP 2018	SILICON HALLI 2018
Length of festival test	10 days (7 days prototyping hackathon + 3 days festival testing)	3 days festival testing
Preparation of the test	1 kick-off meeting	Multiple preparation meetings with
On site program	Workshops during the hackathon part of the program	-
Coordination of the program	Coordination in-house by the festival	Coordination by incubator
Participants	Start-ups/SME coupled with teams of students, and young professionals.	Start-ups.
Test format	Presentations to festival audience (booths and demonstrations) / use tests integrated in the festival	Presentations to festival audience (booths and demonstrations / use tests integrated in the festival
Focus of the test	Prototyping from scratch. Focus on product or service development and development of innovation and entrepreneurship skills.	Existing product/service concept. Focus on business model development.
Support types	Coaching, lectures, practical support, network.	Coaching, practical support, network.
Stakeholder engagement	Range of partners from innovation ecosystem invited for an 'innovation tour' at the festival.	Specific business support partners are one site during the tests.
Aftercare	-	-

Facilitating business model learning is one of the business test programs assumed main jobs. To achieve this, participating start-ups should not only test, but also derive useful learnings from the gathered insights. The function of the business support included in the test programs of IQ is to help prepare, conduct, and evaluate the test. To ensure that business model learning takes place, more focus on the evaluation sessions with the start-ups was recommended after the first IQ program editions of DORP and Silicon Halli.

In 2018, Silicon Halli was coordinated by a local incubator, while DORP was organized in-house by the festival. Observing these two programs it was derived that it could be beneficial to have a business support organization such as an incubator involved. Such an organization has knowledge in-house on business testing and can provide support when designing and evaluating a test. Furthermore, business support organizations can direct start-ups towards the business testing program at suitable points in the start-ups' development processes. After the business test program, the business support organization can direct start-ups to other suitable programs.

Within the IQ project it has been found that it works well to collaborate with business support organizations on the preparation and evaluation workshops. In Halland, the business test program is taken up by the incubator HighFive. In Bremen as well as in the Province of Fryslân, experts from the field were invited to give workshops. Finetuning this relationship of the business test programs with the regional business support systems is expected to benefit both the quality and the durability of the program. This way the business test program can function as an add-on for other business development program. Different implementations of the business test program may be expected if the programs are made to fit well within in their regions.

4.2 Business testing at festivals/events to support innovative, sustainable start-ups

Based on the previous sections, a basic model is proposed that shows how the business testing programs at festivals supports innovative, sustainable start-ups. The model shows how the described aspects of the business testing method relate to each-other. In this chapter, first a model is offered that shows the format of the programs organized within IQ. After this, a general version is offered that can support the design of festival tests² in the future by the partnership or other interested parties. Note, for innovators, business support organizations, festivals and other interested parties, an extensive handbook has been published by the project on how to test at festivals: the Festival Experimentation Guide by Dijkstra & Boonstra [31]. The guide is available via <https://innoquarter.eu/feg/>.

Given that most tests observed in 2018 and 2019 revolved around a prototype, the model builds on Lean Start-up's iterative build-measure-learn loop [1] for prototype testing, expanded with a research & design step, as this was observed in the DORP program. The four general steps of a business development cycle that are derived are described in table 10.

² The Festival Experimentation Guide was developed before this model was presented and does not relate to it. The guide is an extensive resource of tools and methods that could be of use when filling in this model for a specific festival test.

Table 10: General steps of a business development cycle.





General steps business development cycle				
Description	Developing the initial business idea	Prototype that embodies (an element) of the business	Data collection on performance of the prototype	Evaluation of collected data to inform next steps

Figure 5 shows the typical model observed at the business test programs of IQ, except for DORP. Different than the other programs, DORP offers a model where the initial solution idea and prototype are both developed within the program. The typical IQ model, consist of a support program, that covers the process of preparing, conducting, and evaluating a business test performed at a festival or event.

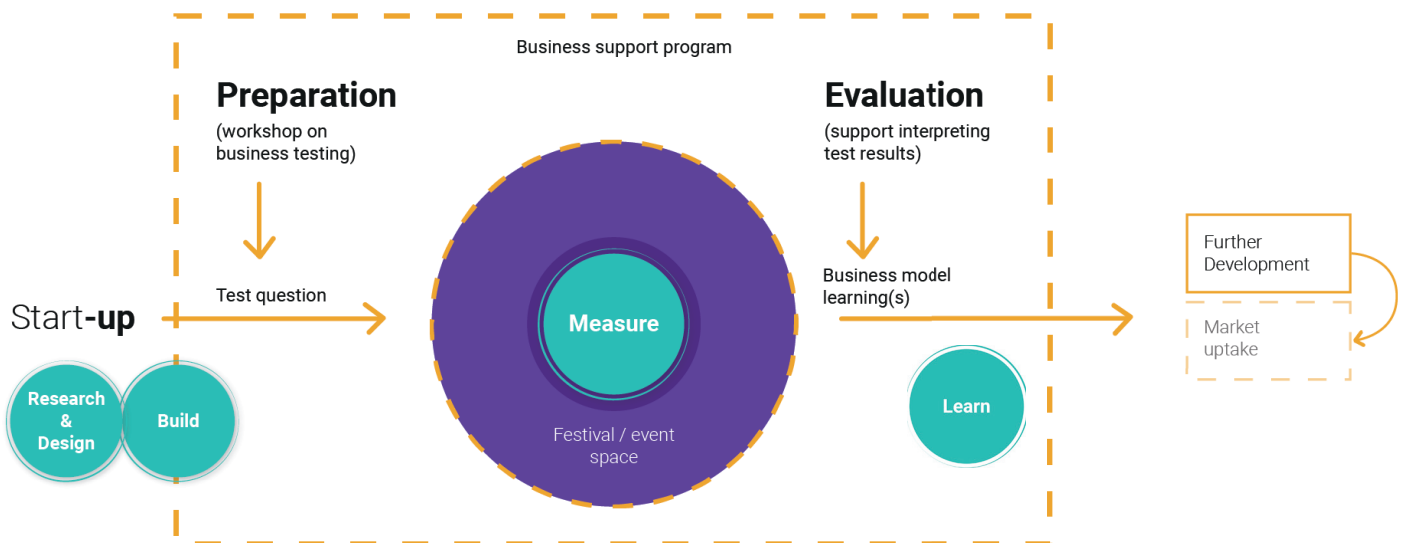


Figure 5: Model of the method of business testing at festivals/events as organized by IQ.

Participating start-ups enter the program, with a business idea and a prototype developed outside of the program. Some additions, a new version of the prototype or presentation materials were observed to be made in the preparation stage as part of the test design, therefore the build step is located partly inside the IQ support program. The festival/event context is utilized to measure; to collect insights to answer the test question.

The support program's main function is to support start-ups in defining their test aim, and specific test question, to select the appropriate test type and data collection method, and lastly to support the evaluation of the data. Ultimately, this should inform business model learnings after the festival test. Altogether, the program should provide insights on next steps (further development) and improved market uptake (either directly or due to the improved business model).

To ensure that a business test at a festival/event can yield useful and representative outcomes, a set of key questions is proposed to guide the development of a test design. The set of questions follows the steps and activities of business testing at a festival/event identified in figure 5. The IQ test model (figure 6) illustrates how the questions relate to an overall test design. The questions are:

- 1. Research and design:** What test aim informs the test? Is there a need for exploration or testing an assumption? And what does the start-up thus need from potential customers? (e.g., information, inspiration, commitment, purchases, co-creation?)
- 2. Preparation and evaluation:** What expertise is needed from the program managers? (From basic business model knowledge to information on what test data investors might like to see to how to build a prototype?)
- 3. Build:** What is the goal of the test and what is the function of the prototype? (This determines what the prototype should be able to perform and how refined it should be.)
- 4. Festival/event space:** Who/what is present within the festival space? How can they/it best be interacted/engaged with?
- 5. Measure:** What data should be collected and what can be measured within the specific festival space?
- 6. Learn:** What happens to what has been learned when it used outside the festival context? How is everything learned used after the festival? And who learns? (Only the start-up or also potential users, or others?)
- 7. Outcome:** What is a successful experiment? What outcomes are key for the start-up?

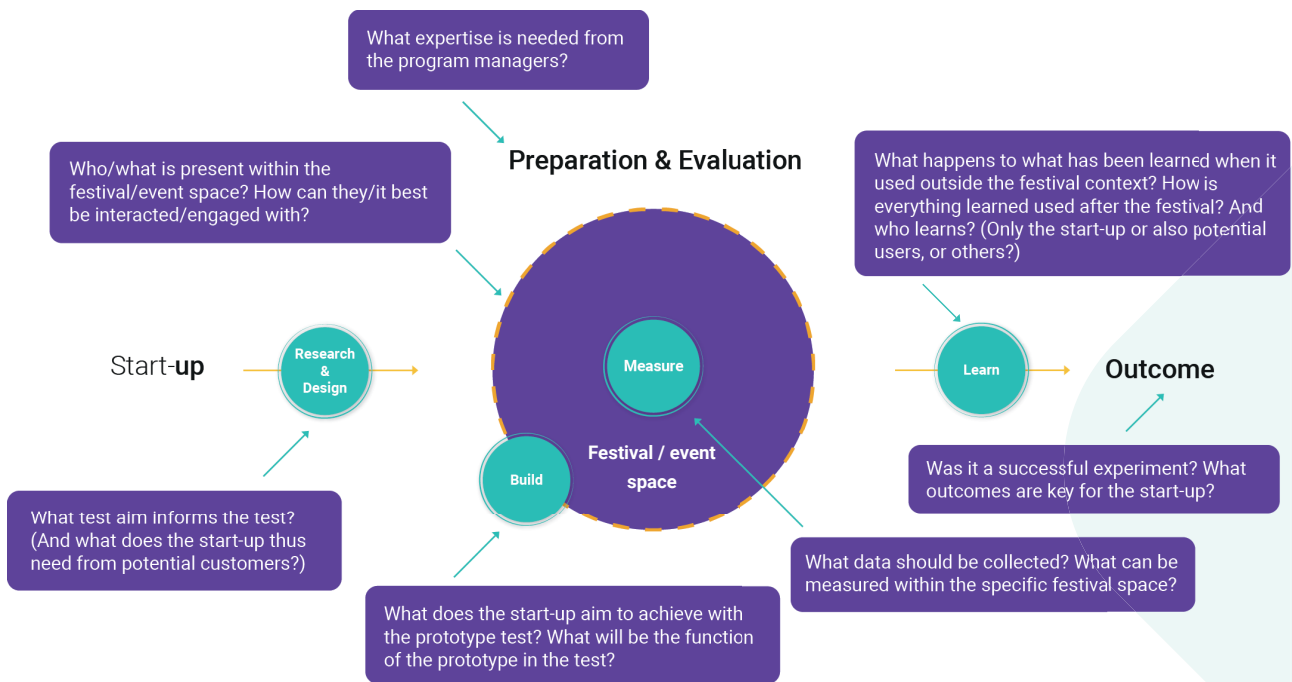


Figure 6: IQ test model: Questions to support the design of business tests at festivals/events (first version presented at IQ partner meeting, September 2020).

4.3 Start-ups' evaluation of testing at festivals/events

In this section, based on questionnaire data, the method of testing at festivals and events is evaluated. First, the characteristics of the participating start-ups and the conducted tests are presented. After this, it is discussed how participating start-ups evaluate the method of testing at a festival/event. It should be noted that the questionnaire data were collected in 2021 during the Covid-19 pandemic. This means that the context wherein these data were collected was different than the context wherein the observations (2018-2019) were made that informed the first part of this chapter (see also Chapter 3).

Characteristics of participating start-ups

The questionnaire results showed that most respondents – 19 out of 32 – tested a product or service innovation at the festival. From the 32 questionnaire participants, 23 were registered as a business for less than 3 years. 7 out of 32 were not yet registered as a business at the time of filling the questionnaire. The majority was thus either a nascent business or under three years old. In terms of size, all participants fit the definition of micro business [8]; all have under 2 million sales income annually. More than half (19 out of 32) have not had income from sales at all yet. Of the participating businesses 24 out of 32 intended to deliver (also) to customers directly, 8 out of 32 was only intending to deliver to other businesses.

31 out of 32 participants³ inputted how they prioritized each profit, social impact, and environmental impact, awarding 0 to 100 points. Figure 7 shows how these inputs looked translated to a percentage of the total amount of points awarded by each participant. All participants prioritized social or environmental impact to an extent, 30 out of the 31 prioritized all three impacts. Notably, the mean of the percentual values awarded to social and environmental impact prioritization – respectively 33,43% and 35,11% - were around the same level of the mean value given to profit prioritization (31,46%).

Indicate below, how much prioritization you give to profit, social impact and environmental impact within your business or organization:



Figure 7: Visualization of reported prioritization of social and environmental impact as well as profit. Calculated as percentages of the total amount of awarded points per participant.

Based on these data it may be understood that the participants of business testing programs at festival/events are young or nascent businesses that are sustainability-minded and developing a novel product or service. Most participants intend to sell directly to customers.

³ For one participant the value of 0 was recorded for all three options profit, social and environmental impact, indicating that the question was not filled in.

Characteristics of tests

At the time of testing, the largest group of start-ups was focused on the development of the product or service (13 out of 32). 16 of 32 start-ups were spread evenly between idea development (5 out of 32), business model development (5 out of 32), and business growth (6 out of 32). The remaining 3 start-ups reported that their focus was on something other. Table 11 shows how this relates to the previously defined test aims. This data suggests that while all test aims were present, the aim of prototype development is the most prominent one.

Table 11: Reported test focus related to test aims and Technological Readiness Levels (TRL) as specified in chapter 4.

Times reported*	x	5			13			5		6
Questionnaire phrasing	[not included]	Developing an idea			Developing a (part of) the product/ service			Developing the business model		Growing the business
Test aims	First idea	Concept development			Prototype development			Business development		Growth
TRL	0	1	2	3	4	5	6	7	8	9

* 3 participants opted for 'other'.

Figure 8 shows the distribution of selected test elements across the events in 2021. Start-ups could select multiple answers. Note that from some events only one start-up responded, so there is not enough data to conclude anything about the typical test design of the single events.

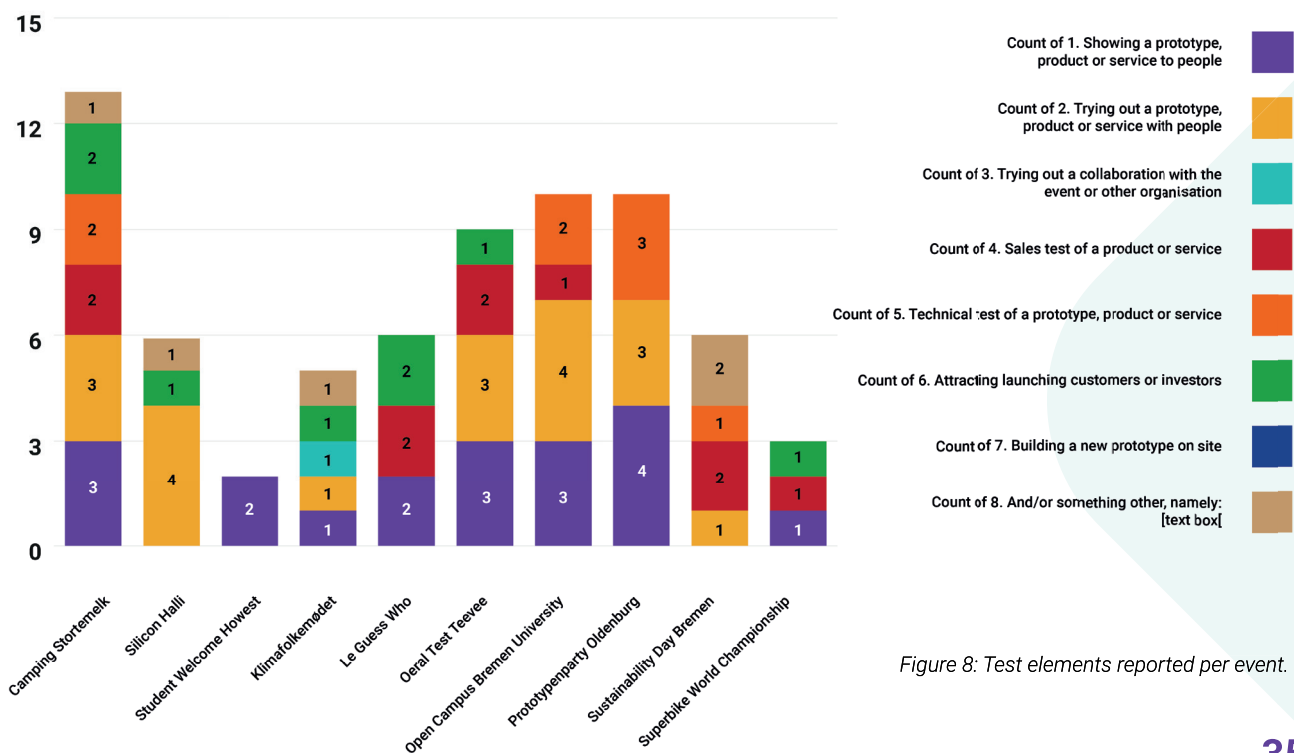


Figure 8: Test elements reported per event.

Start-ups' tests often included multiple elements, as can be seen in figure 9. Most included the elements of showing or the trying out a prototype with people. Only 5 tests did not include this.

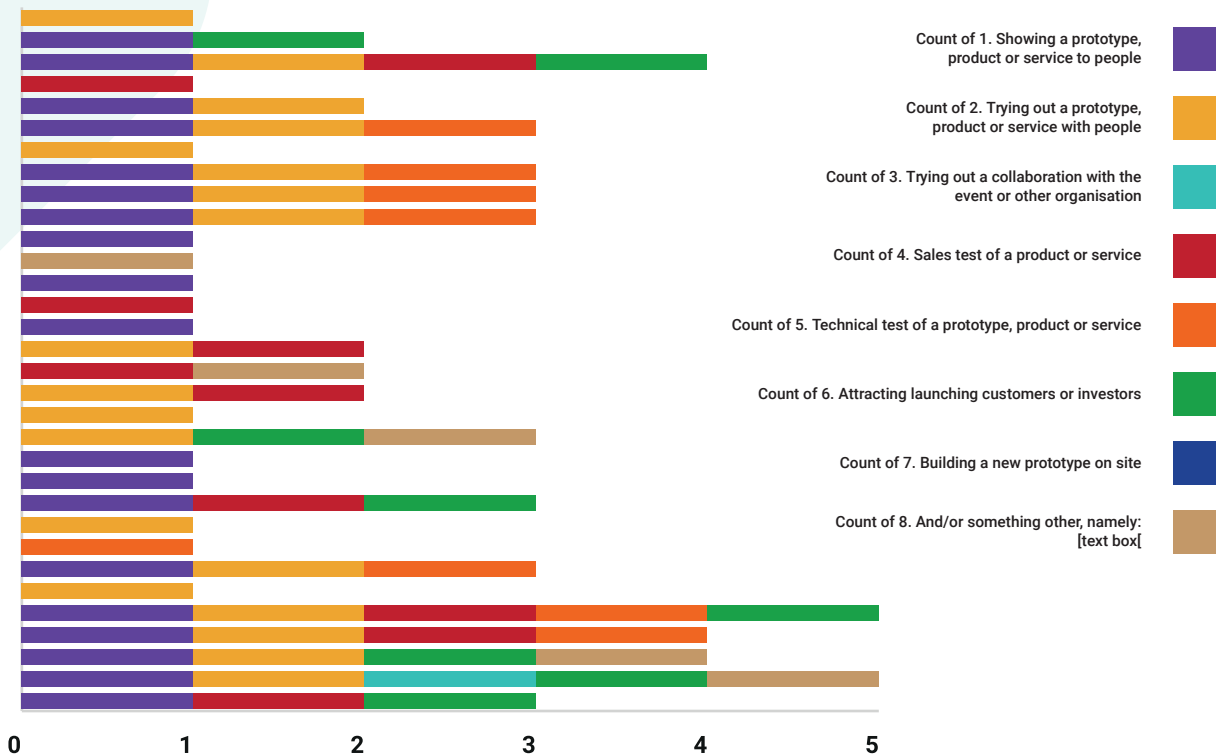


Figure 9: Reported test elements per participant.

Figure 10 shows how prominent each test element was across test programs. Showing a prototype to people and trying out a prototype with people were most often reported, each 19 times. After that, the sales test was most often reported (10 times). Notably, the building of a prototype element was reported 0 times, this is typically a prominent element of the DORP program, but this event was cancelled in 2021 (due to Covid-19). In total there were 5 start-ups that selected 'other' to describe an element that was not pre-specified. One start-up only selected the 'other'-option. The input under 'and/or something other' entailed giving out samples, launching a product, a brainstorm session, and user research.

The questionnaire data show that the development focus of participating start-ups at the time of testing ranged from the development of an idea to business growth, with the largest group focusing on product/service development. This suggests that the method of business testing at festivals/events might be particularly used for product/service development. This supports the expectation (see 4.1) that the test aim of prototype development is the most common. The results also show that of the expected test types, the most prominent ones were the showing and trying-out a prototype.

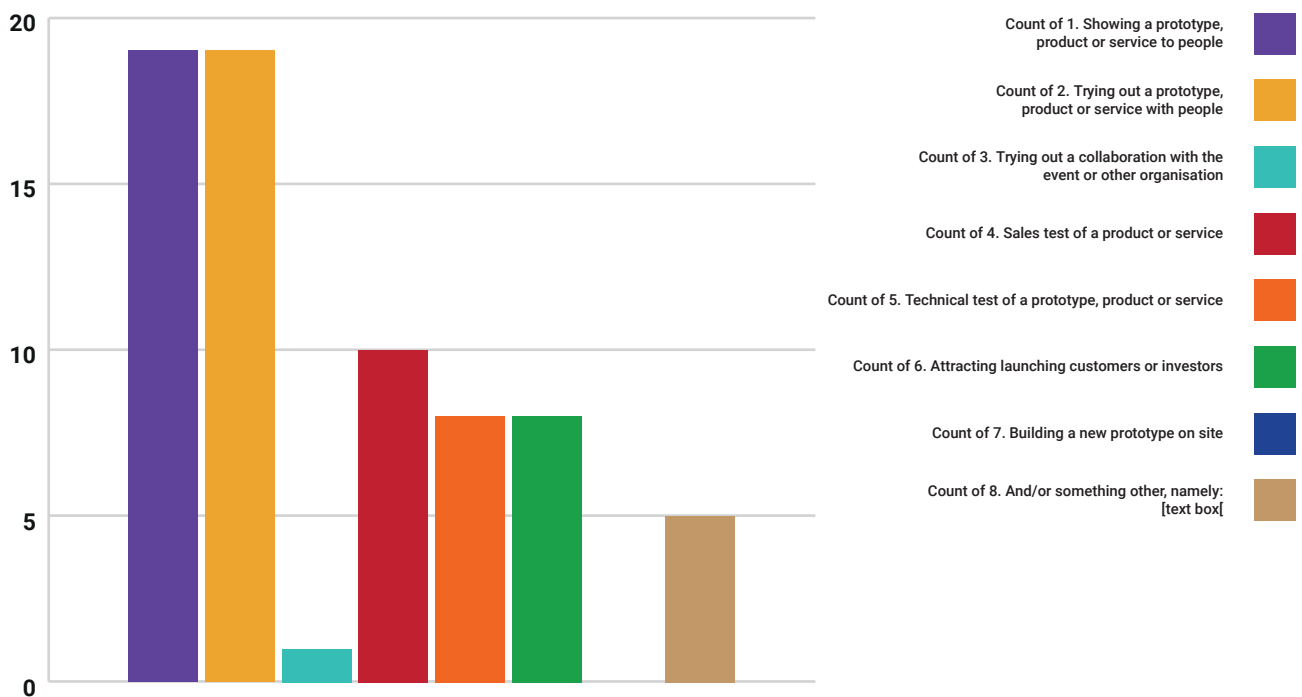


Figure 10: Count of times a test element was reported in total.

Evaluation of the test method

Via the questionnaire, participating start-ups were asked via a 7-point Likert scale how they evaluated the quality of the information that was collected via the test. Initially, this question was meant to say something about the festival as a context for testing. Covid-19 restrictions led to a mix of different events and gatherings; therefore, it says something about business testing at various types of events.

Most responded positively when asked about the quality of information as can be seen in figure 11. Overall, it may be concluded that participants find that testing at a festival/event generates useful information. Notably, when asked about the quality of the information, a large portion (41%) responded 'somewhat agree'. Being able to gather a good quality of information via a business test at a festival/event is important if business model learning is to occur, and therefore this is worth noting.

Start-ups were also asked how useful they regarded various expected interactive aspects of participating in a business test program at festivals/events. Figure 12 shows the responses as percentages. Getting feedback from people is evaluated most positively by all start-ups to which this aspect applied. The aspect of 'trying out if a prototype works' applied to the least number of respondents. This is in line with prominence of the test elements of showing and trying out a prototype with people.

Evaluate the quality of the information gathered via the test via the following statements:

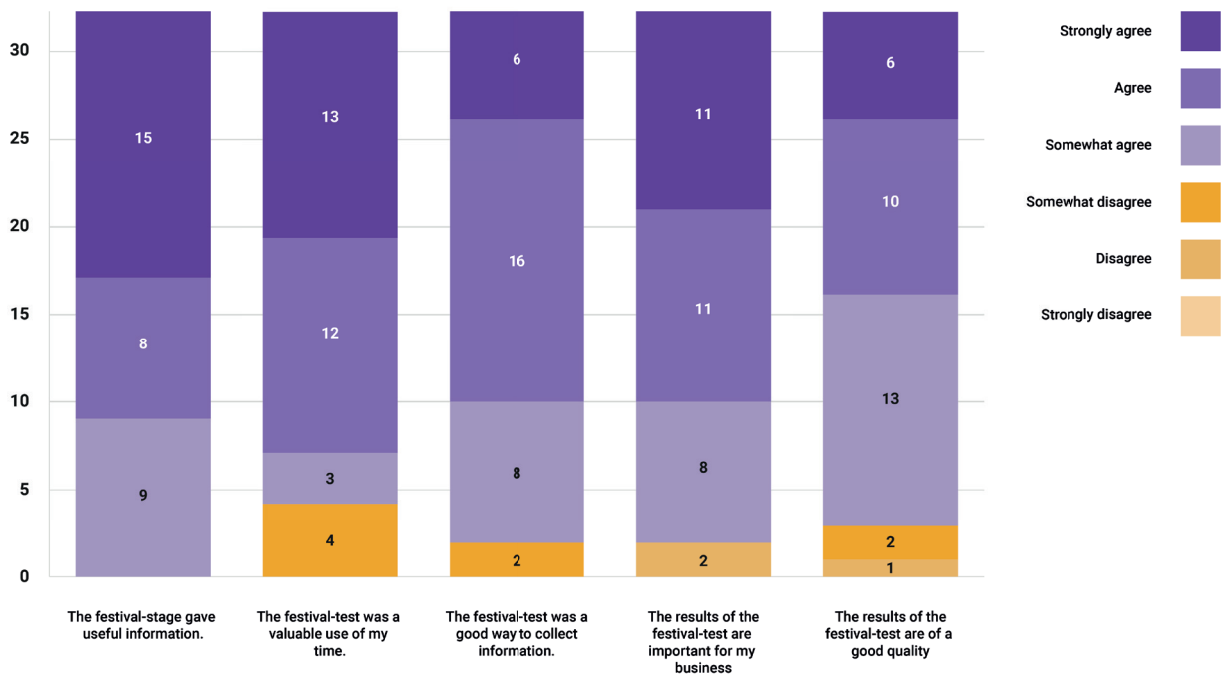


Figure 11: Evaluation by participants of the quality of information gathered via IQ tests.

Notably, the input from the team that helped organize the test is also found useful by most. This supports the idea that preparation and evaluation support are important. Some start-ups also regarded the aspect of developing entrepreneurial skills as useful. This suggests that participating in the business testing programs may not only support the improvement of the business model but could also boost the skills of the start-up. Least positively evaluated is the aspect of finding partners or investors, almost half of the start-ups to which this aspect applied regarded it useless to a degree.

Looking back at the test, how useful did you find the aspects below?

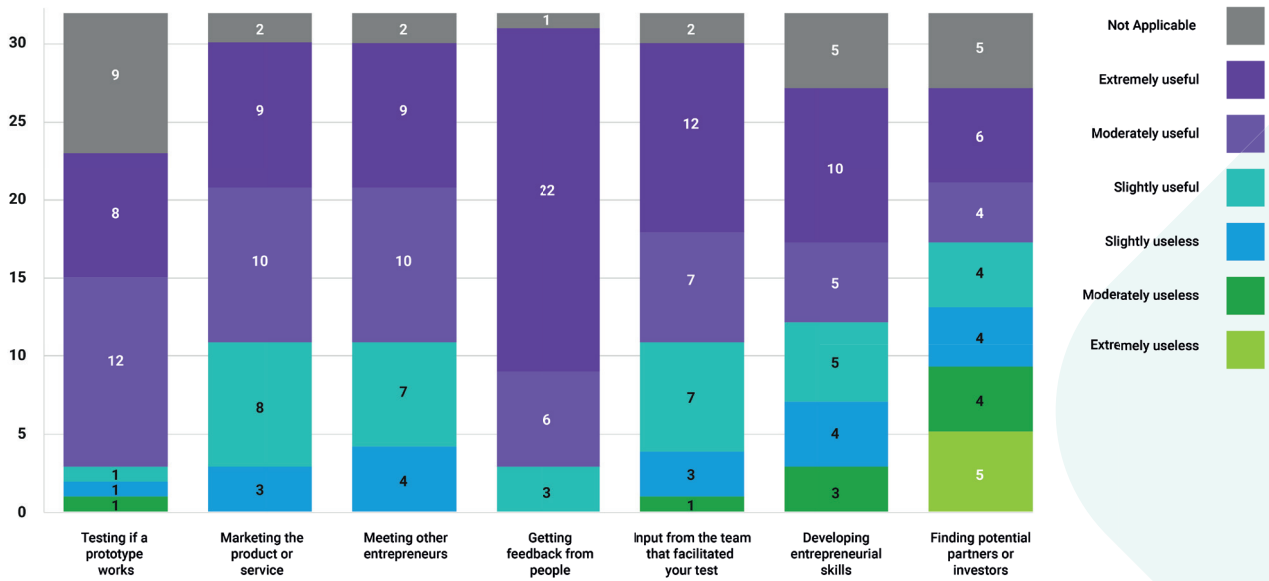


Figure 12: Evaluation of test aspect by participants.

Overall, participating start-ups gave a positive evaluation when asked whether testing at a festival/ event was a good way to generate insights. Of all the aspects of business testing programs, getting feedback is the most positively reviewed. Access to a lot of people in a short amount time, is one of the main motivations for facilitating tests at festivals, which seems to be useful to the program's participating start-ups. However, to the statement that the test results were of a good quality, many respondents selected 'somewhat agree'. This is important, because enabling the collection of good quality results is the main function of a business test program. Additionally, the input from the team is found useful by many, supporting the point that business support is an important aspect of the business testing programs.

4.4 SQ 1: How does business testing at festivals and events support innovative, sustainable start-ups?

To the question of how business testing at festivals and events supports innovative, sustainable start-ups, the following is concluded. The observed programs support one iteration cycle, focusing on the 'measure' step. The festival or event is used as a context to gain insights. The programs provide support during the preparation and evaluation steps before and after the test.

Start-ups typically test a product/service prototype via the business testing programs. The tests typically include showing or trying-out a prototype with people present within the festival/event space. Getting feedback from these people in festival/event space is generally found useful. The function of the festival/events space is understood to mainly revolve around access to many people in a limited amount of time.

The start-ups that participate are typically early stage and in the process of developing a new product or service. Based on their own input, they may all be understood to be sustainability minded. They were pre-selected by the innovation brokers based on their contribution to the SDGs.

When it comes to the scope of testing at festivals/events, the data suggests that the test aim of prototype development and the demonstration and use test types are most common. Overall, testing at a festival/event is generally evaluated as a good way of testing. This is important, because utilizing festivals/events as a test context is the distinguishing feature of this approach. Important in that regard is that the quality of the information gathered was also evaluated positively, but not very strongly.

As discussed in sections 4.1, defining the test aim, test type, and interaction plan are expected to improve the 'measurement' within the festival/events space. The aspect of business support guides this process. Section 4.2 provides a model that describes how IQ supports start-ups (figure 5). In the same section a model is offered with a set of questions, to inform the design of tests at festivals/events and ensure useful results (figure 6). This could potentially boost the quality of information gathered via the tests.

Chapter 5: **Business model learning**

IQ has defined the following expected results of business test programs at festivals/events: 1] specified business model learnings in participating start-ups and 2] increased market uptake of the start-up's innovations. The assumed additionality of IQ as a business testing method is that it offers an accessible realistic context wherein both business testing as market uptake of new innovations can be supported. In this chapter, SQ 2 is addressed: *How does business testing at festivals and events facilitate business model learnings in innovative, sustainable start-ups?*

To assess whether business model learning took place, a framework is developed that shows the scope business testing via a business test program of IQ in relation to the business model canvas. This canvas is the basis of the assessment of the rate of specified business model learning. In the following sections, the framework for measuring business model learning is described, after which the results from the questionnaire are described.

5.1 Specified Business Model Learning

It is expected that 70% of the start-ups derive specified business model learnings from testing at a festival/event. This means that it is assumed that a business test at festival/event can lead to specific learnings about elements of the business model that can be used to improve that business model. For the evaluation of the performance of the investigated test programs in terms of facilitating business model learnings, extant business model literature is used to define specified learnings.

The original business model canvas consists of nine blocks that represent key elements of how the business works [22]. IQ specifically set out to support sustainable innovation. Adaptations to the Business Model Canvas to include key elements for a sustainable business model have previously been proposed, e.g., the triple layered business model canvas [23] and the sustainable value proposition (people, planet, profit) [34]. To formulate specified business model learnings, it is useful to have a single level canvas wherein blocks have only one meaning. Therefore, a new adaptation of the business model canvas is made, considering the defining elements of a sustainable business model. Namely: “[...] business models that incorporate pro-active multi-stakeholder management, the creation of monetary and non-monetary value for a broad range of stakeholders, and hold a long-term perspective” [17, pp. 403–404].

To accommodate the dimension of sustainability, mission and purpose blocks are added to the original canvas. See figure 13 for the adapted Business Model canvas. The mission blocks (mission, beneficiaries, implementation, and mission achievement) are based on the mission model canvas [35], a variation on the business model canvas. The purpose block is based on concept of joint stakeholder purpose for sustainable development by Freudenreich et al. [36]. The purpose of the business is understood here to inform the business model and is also the level by which a business may select and inform their relationships with stakeholders (including customers) [24], [36]. For example, it has been proposed that shared values and goals can inform business opportunities and may inspire multiple businesses within in an entrepreneurial ecosystem to engage in new business model development [37]–[39].

The addition of the mission and purpose blocks is motivated by the observation that the start-ups that participated in the business test programs of IQ, worked towards sustainability more so than being sustainable at once. For example, because the start-up found that customers are not willing to pay the price for the best sustainable option yet. By adding these blocks, the canvas incorporates sustainability as a driver in the business development process, rather as an extant value. In the standard business model, there is no explicit block on the change the business would like to achieve in the world.

Because the business test method as applied by IQ revolves around interaction, it is assumed that the scope of testing with IQ concerns typically those business model areas that have to do with customers or partnerships. This is in line with the programs their focus on feedback collection and the plug-and-play type of tests. The scope is projected on the adapted business model canvas, see the highlighted areas (figure 13). These areas inform the formulation of specified business model learnings below.

Testing the offering (yellow box): Learning about customer interest and expectations regarding the offered product/service and the purpose

Testing the customer interaction scheme (light purple box): Learning about how to engage customers and learning on how or in what form customers would like to consume the product/service

Testing revenue expectations (blue box): Learning about sales strategies and pricing

Testing collaboration with stakeholders around purpose and resources (dark purple box): Learning about collaborating with partners (e.g., for circular innovation)

The formulated specified business model learnings were used to derive survey questions. Based on this survey the rate of business model learning among the participating start-ups is derived. This framework also highlights the categories of test questions the business testing at festivals/events method is expected to be most suitable for.

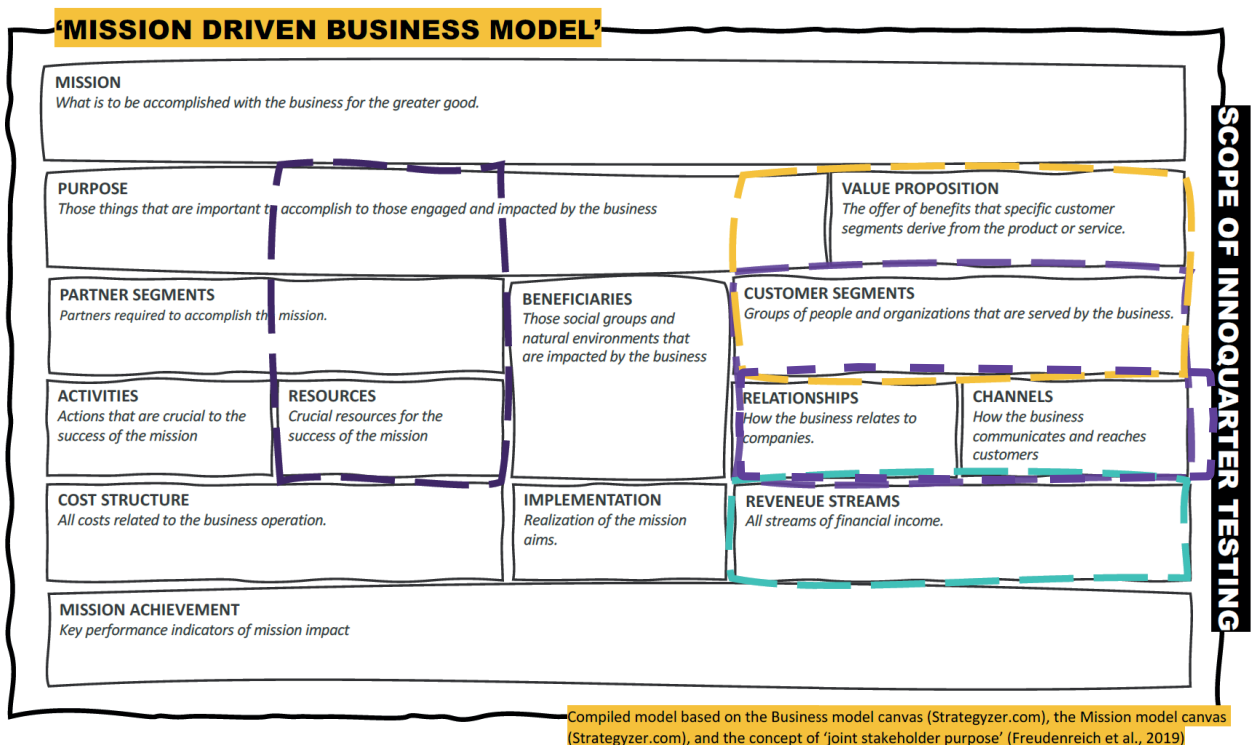


Figure 13: Mission-business model, based on [22], [35], [36]. First presented at IQ partner meeting March 2021.

5.2 Business model learning - findings

It is assumed that business testing at festivals and events informs specified business model learning. To claim success, business testing at festivals/events should at least support business model learning by 70% of its participants. From the questionnaire respondents, 83% reported that they had learned one or more things that would help them improve their business model. 13% reported that they had not learned anything that would help improve the business model. 3% reported they did not know. Among the sample of 32 start-ups, the expected value of 70% was thus achieved.

Based on the lists from the innovation brokers, the entire population of start-ups that tested at one of the included festivals/events from 2018-2022 is derived to be 121 (see Appendix II). This number excludes organizations that conducted a test at one of the festivals/events but are not a start-up. Start-ups that tested twice are counted only once. Given this total population of 121, the data suggests that 84% +/- 15% (confidence level 95%) gains business model learnings from participating the business test programs. In other words, it can be said with 95% confidence that between 69% and 99% of the 121 start-ups that tested at one of the programs included in this study, derived learnings that should help to improve their business model.

It was also asked what kind of business model learnings were derived (predefined options, multiple answers were possible). In table 12 they are ordered according to frequency of being selected by all participants. The reported business model learnings are also plotted on the 'mission-business model canvas' that was presented in the previous section (figure 14).

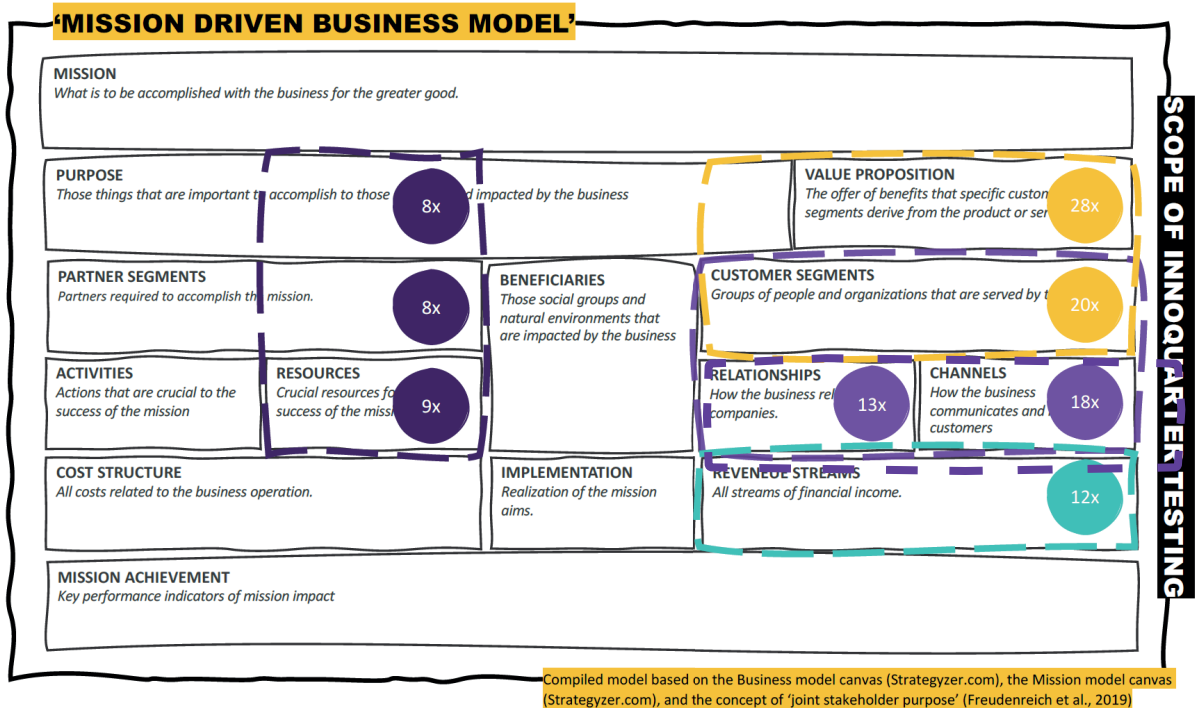


Figure 14: Reported Business Model learnings on the 'mission-business model canvas' (initially presented at IQ partner meeting March 2021).

The results displayed in table 12 show that learnings about customers were most often selected. Specifically, learnings grouped under 'testing the offering', relating to the value proposition and customer segments (yellow box in figure 14) were frequent. Learnings relating to collaborating with partners (dark purple box) were the least frequent. Among this sample, the respondents did not report any learning under 'other', suggesting that the predefined specified business model learnings cover the scope of business testing at festivals/events.

Table 11: Count of specified business model learnings.

Specified business model learnings	Times
Learning about customers expectations and opinions about the product and service	28
Learning about customers groups that are interested in the product/service	20
Learning about communication to customers	18
Learning about how the business should engage customers	13
Learning about the revenue model of the business, e.g. pricing or expected sales	12
Learning about how to collaborate with partners to achieve a sustainable business	9
Learning about business partners' expectations and opinions about the product and service	8
Learning about what partners are important for the success of the business	8
No learning took place	1
Other, namely: [textbox]	0

5.3 SQ 2: How does business testing at festivals and events facilitate business model learnings in innovative, sustainable start-ups?

The data from the questionnaire suggests that business testing at festivals/events supports business model learning for most participating start-ups. Learnings regarding customers were most frequent, which fits with prominent feature of feedback collection of business testing at festivals/events. Specifically, learning about customer interest and expectations regarding the offered product/service and the purpose of the business were prominent. It may be understood that business testing at festivals can facilitate business model learnings in all four predefined scopes (see 5.1 and figure 14) but particularly around customer interest and expectations (yellow box, figure 14).

It was also found that learnings relating to collaborating with partners and stakeholders (purple box) was least frequent. As discussed in Chapter 1, with regards to sustainable business model development, the extensive engagement with stakeholders required is an important challenge. Business testing at festivals/events may have potential to address that challenge but following the results of the questionnaire this does not seem to be a strong feature.

Chapter 6: Market uptake

This chapter addresses the second of the expected results of business testing at a festival/event: increased market uptake of the start-ups' innovations. IQ states that too many start-ups fail to bring their innovations to the market due to lack of testing [5]. With improved market uptake is meant that the odds of a start-up launching their innovation on the market successfully will be improved.

To assess improved market uptake, three aspects are considered in this report: the three-year survival rate of start-ups that test at a festival/event, the total amount of market launches after testing, and participants' self-assessment of improved market uptake after testing. In the following sections it is first defined how market uptake is measured, after which the results are presented. This chapter addresses SQ 3: *How does business testing at festivals and events support increased market uptake of innovative, sustainable start-ups?*

6.1 Market uptake

It is expected that a business test at a festival/event increases market uptake of a product/service. The IQ project expects market uptake of at least 30 products/services via the business test programs at festivals/events. After the 2018 and 2019 test program, it was clear that many start-ups do not launch immediately after their test. It was also found that a group of start-ups had launched their product or service prior to testing. Therefore, other indicators of market uptake are included, next to the count of products/services on the market after testing at a festival/event. Therefore, market uptake is also assessed through the survival rate of the participating start-ups over time (three years). In the questionnaire, the start-ups were asked whether they themselves thought that market interest was increasing.

Whether market uptake was increasing was assessed by comparing the three-year survival rate of start-ups that participated in a business test program at a festival/event with the survival rate of micro-enterprises in the countries of regions participating in IQ. It was also compared to a commonly expected start-up success rate. The survival rate was compared to both rates because both comparisons are a best-worst option. Therefore, the survival rate will be interpreted by means of both these available numbers.

Table 13: Country-level and EU level three-year survival rates of enterprises with zero employees (reference period 2020). Derived from EUROSTAT dataset Business demography by size class (from 2004 onwards, NACE Rev. 2) [32]

Reference period 2020	Sweden	Denmark	Germany	The Netherlands	Belgium	Mean rate countries of IQ regions	European Union - 27 countries (from 2020)
Three-year survival rate of enterprises (zero employees)	73,78	44,73	42,82	74,76	75,34	62,29	55,97

The comparison was made using the indicator ‘survival rate 3’ of the Business demography by size class (from 2004 onwards, NACE Rev. 2) dataset (last accessed on 16 November 2022) [32]. This indicator measures the “number of enterprises in the reference period (t) newly born in t-3 having survived to t divided by the number of enterprise births in t-3 – percentage” [32]. For the comparison, the business size class of zero employees is used. The reference periods for the start-ups that participated in a business test program at a festival/event in 2018 and 2019 are 2021 and 2022. The most recent reference period available from Eurostat is used for the comparison: 2020. Table 13 shows the survival rates from Eurostat, for the countries of the regions participating in IQ, their mean survival rate, and the overall EU survival rate.

New pre-launch start-ups would typically fall in the category of new enterprises with zero employees, i.e., only the founder(s) are working on it. However, the Eurostat sample is comprised of all business economy (minus holding company activities). It is commonly expected that start-ups fail more often than non-innovative businesses. Furthermore, Eurostat defines enterprise birth and death by starting and ceasing activity, defining activity of non-employer enterprises as having turnover. By that definition, start-ups before market launch do not count as being established yet and are not included. Meaning, that this statistic is about business that already have launched a product/service, which means that unlike the sample of start-ups in this study, those that failed before launch are already excluded from this statistic. Despite this, it is the best statistic available, as it exists for all participating regions countries and gives an impression of small business survival in the EU.

Hyytinen et al. [40] found through a study of three-year start-up survival in Finland, that a total group of 61% survived. This three-year survival rate followed the typical survival pattern of small businesses as found in Eurostat, according to Hyytinen et al. [40]. The study showed that in case of innovative start-ups, the survival rate was 7-8 percent lower; a mean of 56% survived over three years, while in case of non-innovative start-ups the mean was 63% [40]. This suggests that the three-year survival rate of innovative start-ups after-market launch may be expected to be approximately 7% lower than the Eurostat survival rates. Table 14 shows the adapted survival rates based on this finding.

Table 14: Three-year survival rates of innovative enterprises with zero employees (reference period 2020), derived from Eurostat dataset Business demography by size class (from 2004 onwards, NACE Rev. 2) [32] and adapted based on findings Hyytinen et al. [40]

Reference period 2020	Sweden	Denmark	Germany	The Netherlands	Belgium	Mean rate countries of IQ regions	European Union - 27 countries (from 2020)
Expected three-year survival rate of innovative enterprises (zero employees) (EUROSTAT RATES MINUS 7%)	66,87	37,73	35,82	67,76	68,34	55,30	48,97

Another available statistic is that of the US Bureau of Labor Statistics; Survival of private sector establishments by opening year. This statistic shows that the survival rate of new businesses opening in 2018 and 2019 in the US are respectively 62,0% and 63,6%, alike the Eurostat rates. An article in Harvard Business Review [21] that specifically concerns start-ups, mentions that most start-ups fail, as more than two third of start-ups never return on investment (meaning 33,33% or less have success). In practice, it is often said, that 9 out of 10 start-ups fail (10% success rate). However, the origin, timeframe, and context of this number is untraceable except for its mention in an article in Forbes magazine [41]. All in all, there is a gap in knowledge on innovative start-up survival in the pre-commercial stage.

Based on the available statistics, it can be said that the average survival rate of enterprises with zero employees in the IQ regions' countries three years after becoming active (i.e., from 2017 to 2020) was 62%. Innovative enterprises are expected to have a diminished survival rate, namely by 7%, which would result in an expected survival rate of 55%. Rates that specifically concern start-ups, mention success rates of 33% as well as 10%, but don't provide insight into how those rates were exactly derived. None of these rates are a great fit for the group of start-ups that participated in the test programs, because the programs' target group is participants in the pre-market launch stage. This group is likely to result in a lower survival rate, since the failures prior to becoming a business that generates turnover are excluded from the Eurostat, US Bureau of Labor, and Hyttinen et al. their rates. Statistics on how many nascent innovative start-ups typically see successful market launch were not found.

To interpret the survival rate of the start-ups that participated in a business test program at a festival or event, it will be said that if the rate is near the average adapted survival rate of 55% that means that the start-ups do well in terms of survival. If the rate is over 10% it is higher than the common expectation. By comparing the survival rate of IQ to these two statistics, an impression can be given whether testing at a festival/event supports market uptake. Survival is a good indicator because it gives an idea of the durability of the start-ups.

In addition to the survival rate, start-ups were asked about their own perception of market uptake after participating. Many start-ups did not launch to market directly after testing; therefore, it was asked if they experienced increased sales, but also whether they saw increased interest (in the form of followers on social media, newsletter subscriptions or website visits) and whether they felt in general if their participation in the program increased market uptake of their product/service.

These three approaches of 1] counting the amount of market launched product/services, 2] deriving the survival rate of participating start-ups, and 3] asking the start-ups themselves, are used to evaluate market uptake. Comparing the start-ups' survival rate with existing statistics, combined with start-ups own opinion, should give an insight into whether the method of business testing at festival/events can support market uptake of new innovations.

6.2 Market uptake - findings

The target set by the IQ project was to increase market uptake by 30 innovations. Of 121 start-ups that tested at a business test program at a festival/event (see Appendix II), 68 were reported to have launched their product or service to the market in their business lifetime. This includes 24 launches prior to testing, meaning that these start-ups tested after they launched their products/service to the market. Based on the innovation brokers' input, it is derived that 44 start-ups have launched their product/service after their test and before October 2022. Of the 121 participants, 38 start-ups were not found to have launched within that timeframe. Of 15 start-ups could not be determined with certainty if they had ever launched their product/service. Based on the reported market launches, it is found that overall, 36% of the 121 start-ups launched after their test. The proportions are shown in figure 15.

As discussed, the business test programs could not take place as planned from 2020 on due to the Covid-19 pandemic. This led to alternative set-ups. When only considering the programs in the period of 2018-2019 (on which the IQ test model was based, see 4.2), 20 out of 39 start-ups were reported to have launched their product in their business lifetime, of which 8 were reported to have launched after the test. In the period 2020-2022, 48 out of 82 start-ups were reported to have launched their product/service to the market in their lifetime, of which 36 were reported to launch after their test. This suggests that the number of launches did not decrease when alternative contexts were utilized.

To understand whether participation in a business test program at a festival/event increases market uptake, the survival rate of participating start-ups over three years is calculated. This rate is interpreted in relation to available relevant rates (see 6.1). Namely, the most recent mean survival rate of participating regions' countries as found in Eurostat [32], adapted according to the findings of Hytinen et al. [40]. As well as the common expectation that only 10% of start-ups succeed.

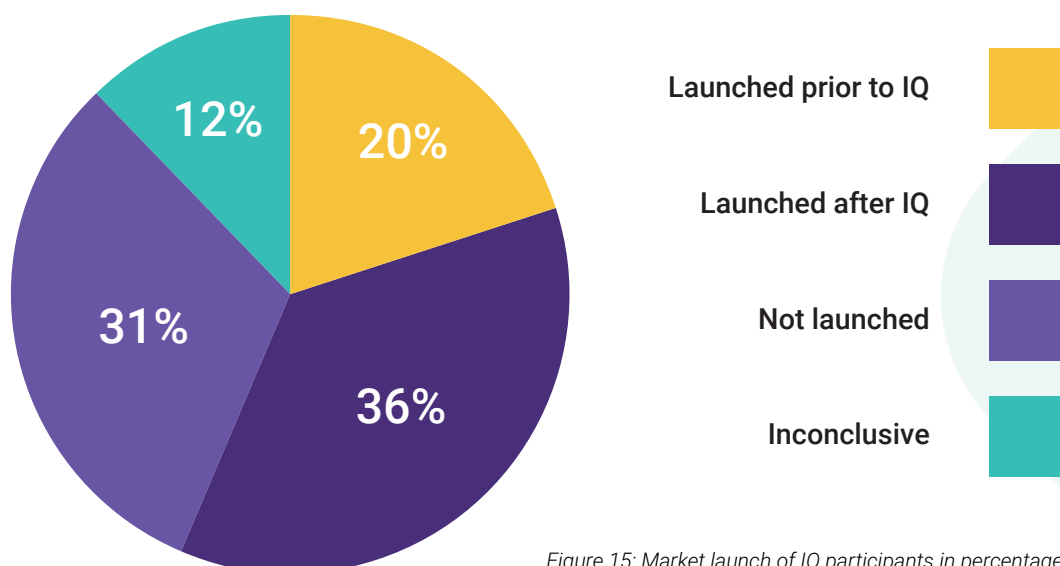


Figure 15: Market launch of IQ participants in percentages.

The three-year survival rate is based on the start-ups that tested with a business test program at a festival/event in 2018 and 2019. It is important to note that this is a different cohort than the one that filled in the questionnaire. Over the course of 2018 and 2019, 39 start-ups tested with IQ. There were 5 start-ups of which it could not definitively be determined whether they had survived or not and are therefore excluded of the derived rate. Of the remaining 34 start-ups, 19 survived over the course of 3 years. Based on this data, the survival rate of IQ that is found is 56%.

The rate per participating region's country is also derived (table 15). The Netherlands is not included because in the period of 2018-2019 DORP did not include (Dutch) cases that fit the definition of a start-up⁴. Due to the very small samples per country, these rates cannot be used to draw conclusions on the regional programs. However, overall, the survival rates are much higher than the commonly expected 10%, except for the program in Kortrijk, Belgium. Notably, all Kortrijk's start-ups tested at the Dutch DORP program to work on early-stage ideas, these may reasonably be expected to have a low survival rate.

The data suggest that overall, the three-year survival rate of the participating start-ups is on par with the countries' mean three-year survival rate of innovative enterprises with zero employees. Namely, 56% and 55% respectively. As previously discussed, this is understood to be a good survival rate for the type of start-ups (early stage, innovative, mostly pre-launch) that participate in the business test programs.

Table 15: Survival rate IQ overall and per region's countries.

Survival	ALL	BE	DE	SE	DK
NO	15	3	3	6	3
YES	19	0	10	7	2
Total participating start-ups ex. inconclusiveS (2018-2019)	34	3	13	13	5
SURVIVAL Rate participating start-ups/country	56%	0%	77%	54%	40%
SURVIVAL RATE INNOVATIVE ENTERPRISES (EUROSTAT MINUS 7%)	55%	75%	36%	67%	38%

⁴ Cases that do not fit the definition of a start-up are excluded from this evaluation, see chapter 3. In 2018, DORP only included international IQ start-ups which are grouped with the program of their country. In 2019, DORP did not include cases that fit the definition of start-up.

Table 15: Survival rate IQ overall and per region's countries.

Survival	ALL	BE	DE	SE	DK
NO	15	3	3	6	3
YES	19	0	10	7	2
Total participating start-ups ex. inconclusiveS (2018-2019)	34	3	13	13	5
SURVIVAL Rate participating start-ups/country	56%	0%	77%	54%	40%
SURVIVAL RATE INNOVATIVE ENTERPRISES (EUROSTAT MINUS 7%)	55%	75%	36%	67%	38%

Figure 16 shows the input of start-ups when asked about their test and market uptake. In terms of actual sales, the largest part of the start-ups (19 out of 32) reported that the product/service is not on the market yet (and thus cannot be sold). From the remaining 13 start-ups, 1 reported increased sales versus 7 that reported no increased sales, the rest reported they didn't know. This data suggests that most start-ups are not in a stage of business development where participation in the test-program could directly lead to customer adoption of the product/service in terms of sales. The data suggest, and given the apparent target group, that the test-programs should not be expected to lead to increased sales.

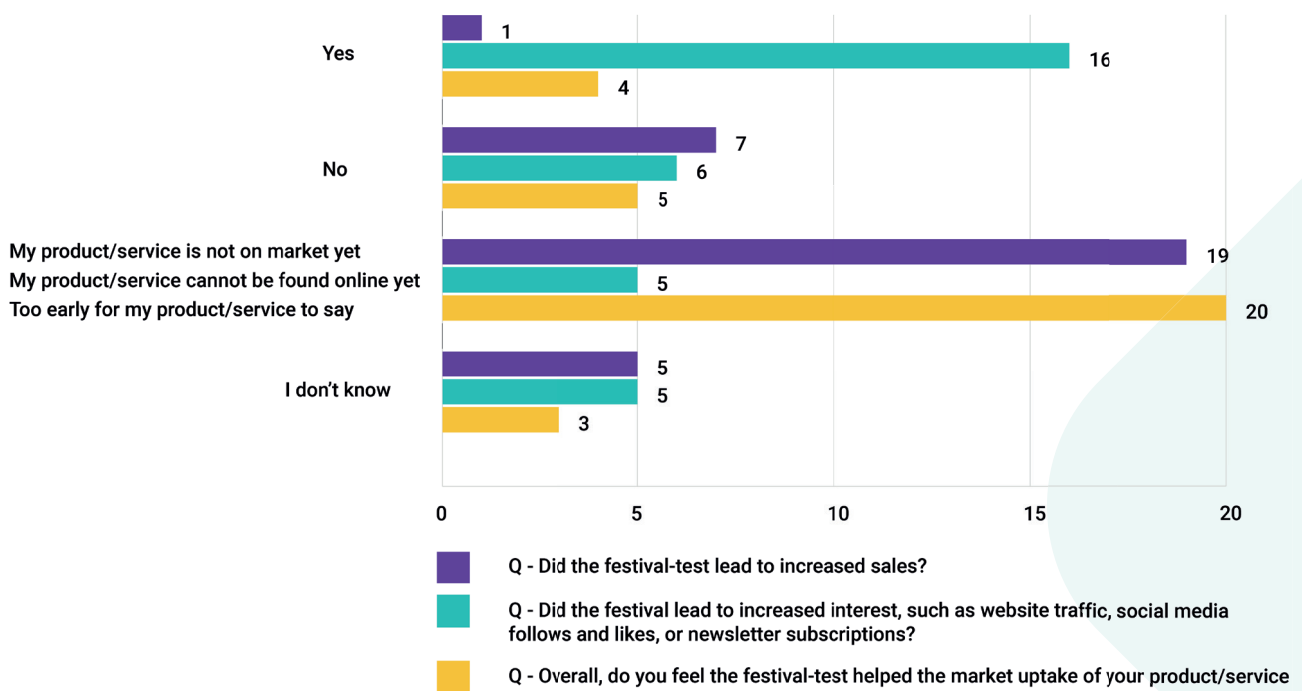


Figure 16: Market uptake via IQ according to questionnaire respondents.

Half of the start-ups (16 out of 32) reported that the test with IQ led to increased interest in terms of online traffic to the business its digital channels. On the other hand, six start-ups reported no increased online interest. With regards to increased online interest, 5 start-ups reported that their product/service could not be found online yet. Based on the data it is assumed that testing at a festival/event can support an increase of interest.

Start-ups were also asked if they felt the test helped market uptake of their product/service. Some start-ups (4) responded positively, but a similarly sized group (5) responded negatively. However, 20 out of 32 said it was too early for the product/service to say anything about market uptake. It is assumed that for a small group of start-ups a test at a festival/event may support market uptake directly. However, overall, the participating start-ups are too far removed from market launch at the time of testing for the test to support market uptake directly via a product/service launch after the test.

6.3 SQ 3: How does business testing at festivals and events support increased market uptake of innovative, sustainable start-ups?

Based on the lists provided by the innovation brokers, it is found that 36% (44 of 121 start-ups) launched their business at some point after the business test at the festival/event. In total, 56% of the start-ups (68 of 121) were found to have launched their product, either already before or at some point after the test. This alone does not mean that market uptake increased. Launching a product/service does not mean that the product/service is adopted by the market. Therefore, it was also investigated, what the survival rate is of start-ups that tested at a festival/event.

Regarding survival rate, it was found that 56% of the 2018-2019 group was still active three years after their test. The expected mean survival rate of established innovative microenterprises with zero employees of the participating regions countries is 55%. Based on the common assumption that most start-ups fail (see 6.1), it was expected that the survival rate would be lower.

To understand the role of the business test at the festival in the market uptake of the product/service, start-ups participating in 2021 were asked (via the questionnaire) whether they found that the test supported market uptake. Based on this input, it could be concluded that the test its contribution to market uptake revolves around the generation of interest rather than direct sales. This is related to the early development stage of the participating start-ups.

To the question if business testing at festivals/events supports increased market uptake of innovative, sustainable start-ups it can be said that among the 121 start-ups more than the expected 30 product/services were launched. Start-ups also seem to do well in terms of survival, although it must be kept in mind that the rates used for comparison are not ideal. If the method of business testing at festivals/events contributes to market uptake, it is expected to relate to generation of interest and not to direct sales. Indirectly, it could also relate to improvements to the business model through derived learnings (see Chapter 5), however respondents in the questionnaire mostly selected that it was too early to say for their product/service. Overall, it is concluded that many start-ups included in the programs are too far removed from market launch to presume a direct impact of the test on market success.

Chapter 7: **Conclusions and recommendations for further development**

The main research question in this report was: *To what extent does business testing at festivals and events support innovative, sustainable start-ups in their business development process?*

The following sub research questions had been formulated:

SQ 1: How does business testing at festivals and events support innovative, sustainable start-ups?

SQ 2: How does business testing at festivals and events facilitate business model learnings in innovative, sustainable start-ups?

SQ 3: How does business testing at festivals and events support increased market uptake of innovative, sustainable start-ups?

The following methods have been used:

Sub Research Questions	Methods
SQ 1: How does business testing at festivals and events support innovative, sustainable start-ups?	Observation, questionnaire
SQ 2: How does business testing at festivals and events facilitate business model learnings in innovative, sustainable start-ups?	Questionnaire
SQ 3: How does business testing at festivals and events support increased market uptake of innovative, sustainable start-ups?	Questionnaire, desk research

MQ: To what extent does business testing at festivals and events support innovative, sustainable start-ups in their business development process?

Based on the findings of our investigation, it can be concluded that the business tests at festivals/ events have led to business model learning for most participating start-ups. In that sense, business testing at festivals/events supports the business development process. The method of business testing at festivals/events specifically aimed to support sustainable, innovative start-ups. Business testing could potentially enable interactions with stakeholders around sustainable solutions. It was found that business model learnings concerning the collaboration with partners and stakeholders were supported, but it was the least prominent feature of testing at festivals/events. The business test programs did support the start-ups, but the programs were not found to specifically address sustainable business development challenges.

The added value of utilizing festivals and events as a test context was expected to be twofold. One, the large number of people and the infrastructure of the festival/event were expected to be a great source for collecting insights about the business. Two, the visibility and try-outs of innovations in the festival/event space were expected to boost market adoption. The opportunity to collect feedback at the festival was regarded as extremely useful by start-ups. It was also reported that the tests did lead to increased interest (although not directly to market adoption). These findings suggest that testing in a public environment such as a festival, event, online meet-up, etc., can add value to a business development process.

SQ 1: How does business testing at festivals and events support innovative, sustainable start-ups

The business test programs function as add-ons to ongoing business development processes, by offering tests at festivals and events. The programs provide both support and a context for business testing. Start-ups conduct one business test via the program (but they may participate more than once).

Prototype development was in most cases the prominent test aim of start-ups. Furthermore, the most reported test design was showing or trying out a prototype with people. The dominant set-up was the presentation of a prototype to people within the festival space to gain insights. Collection of feedback was the most positively evaluated aspect of the test programs.

The start-ups that tested via the business test programs were mostly young or nascent start-ups working on the development of a product/service. The start-ups were presumed to be innovative and sustainable, as these were selection guidelines the IQ partnership agreed upon. Participating start-ups reported overall that they weighed environmental and social impact of their business equally to profit. The support for these start-ups consisted of the facilitated business test.

SQ 2: How does business testing at festivals and events facilitate business model learnings in innovative, sustainable start-ups?

The questionnaire showed that 84% of the respondents derived business model learnings. Based on this sample, it may be expected (with 95% statistical confidence) that among the list of 121 start-ups that tested at a festival or event, between 69% and 99% gained business model learnings. With regards to the expected rate of 70% business model learnings, it may be concluded that the test programs have been successful. Due to Covid-19, the sample size was smaller than expected. Therefore, the margin of error (15%) is as large as it is.

Business model learnings relating to the value proposition and customer segment blocks were most often reported by the start-ups. It is important to know the market needs. A lack of market need is the second most reported reason for start-up failure. Therefore, a regional program such as IQ could play an important role in testing and improving the level of market competitiveness of new solutions, because IQ supports business model learnings on the value proposition.

It should be noted that due to the Covid-19 pandemic, from 2020 on, the test programs were organized in alternative ways. Many respondents of the questionnaire tested at alternative events. This means that the presented results relate to a diversity of events, and no conclusions can be drawn on the suitability of festivals or a specific type of event as a context for business model learning.

SQ 3: How does business testing at festivals and events support increased market uptake of innovative, sustainable start-ups?

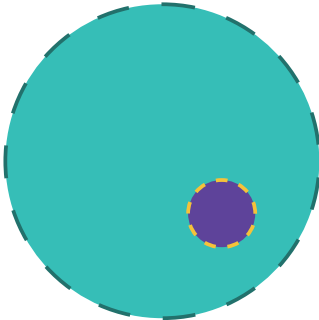

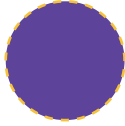
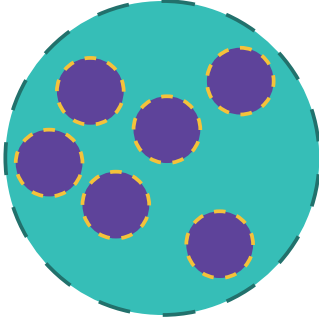

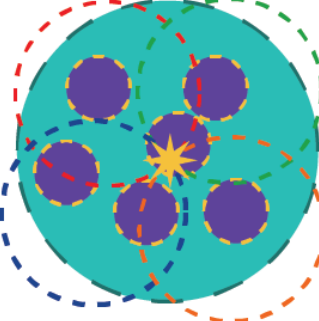

Based on the compiled overview of the 121 start-ups that tested at a festival/event, 44 start-ups launched their product/service to the market at some point after testing. Some start-ups had launched before, when including those, 68 of 121 start-ups have had a product/service on the market. By this count, the expected market uptake of 30 products/services is achieved.

To further understand if business tests at festivals/events support market uptake the three-year survival rate of IQ start-ups was calculated, which results in a percentage of 56%. This was on par with the region's expected average three-year survival rate of innovative enterprises with zero employees. This suggests that IQ start-ups do well in terms of survival, because the group of IQ start-ups is of an earlier development stage than the Eurostat group. It is also much higher than the common expectation that 9 out of 10 start-ups fail (10% survival rate). It should be kept in mind, that these comparison rates are not ideal.

While IQ hits the specified target of 30 market launches and the start-ups that participated in the IQ do well in terms of survival, this does not mean that IQ directly improves market uptake. Most participating start-ups do not launch directly after IQ, most questionnaire respondents reported it was too early to know if market uptake had improved. Half of the questionnaire respondents did report increased interest after participation.

For future development of the business test programs, it could be valuable to explore how the offered support and expertise can boost sustainability measures within participating business. The project has included sustainable impact as a criterion for participation, but this has not been specifically part of the test methods. It could be beneficial for the business test programs, as a regional institute for sustainable business model testing, to include specific test tools for sustainable business modelling in their preparation and evaluation tracks. With regards to supporting sustainable innovation, exploring the expansion of the festival-test instrument to include models besides the business fair model more often could be valuable. Table 16 illustrates the different conceptualized modes of festival testing. The focus of the IQ project was on the single business level and most often on prototype testing. The integrated test format (i.e., using the festival as an experimental space) was rarely utilized, and its potential remains mostly unexplored.

Table 16: Illustration of three modes of the festival as an innovation instrument. First version of this schematic was presented at European Roundtable for Sustainable Consumption and Production (ERSCP) 2021. Based on [18], [36], [42], [43].

FESTIVAL TESTING: FROM FAIR TO ECOSYSTEM		LEGEND
	<p>Festival as a fair</p> <p>Prototype: concrete version of product or service</p> <p>Aim: information gathering</p> <p>Type: validation</p> <p><i>Festival is used as a stage.</i></p>	<p>Festival space</p>  <p>Stakeholder groups</p> 
	<p>Festival as experimental space</p> <p>Prototype: fluid version of product or version</p> <p>Aim: co-creation</p> <p>Type: exploration</p> <p><i>Festival is used as a real-life context.</i></p>	<p>Test</p> 
	<p>Festival as ecosystem</p> <p>Prototype: version of a collaboration</p> <p>Aim: stakeholder alignment</p> <p>Type: pilot</p> <p><i>Festival is used as shared project.</i></p>	<p>Shared purpose or challenge of stakeholders</p> 

For sustainable innovation, it is necessary for businesses to see their own innovation in relation to other businesses, organizations, and innovation processes. Social learning between stakeholders with shared sustainability aims is important for sustainable innovation. The festival, given its complex but temporary infrastructures (energy, food, waste, security, water, etc.) might be a useful instrument in facilitating that process. A target group for this instrument would for example be businesses and organizations engaged in circular innovation. Further research could focus on how such an approach might be able to support more business model learnings on collaborating with partners and stakeholders in the future.

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Appendix I Questionnaire

Question	Answer options
Which of the focus points below fit your business best at the time of the test?	<ul style="list-style-type: none"> Developing an idea Developing (a part of) the product or service Developing a business model Growing the business Other, namely: <input type="text"/>
What is the intended market for the product or service you tested?	<ul style="list-style-type: none"> Business to business Business to customer Business to both businesses and customers I have not decided yet
How long has the business been registered? (At the chamber of commerce or your country's equivalent)	<ul style="list-style-type: none"> The business is not registered at this moment Less than 3 years Less than 5 years More than 5 years My organization is not a business. If so, please specify your type of organization:
Which of the options below describes the innovation you tested best?	<ul style="list-style-type: none"> Technological innovation Innovation of a product or service Innovation of a business model Innovation of a process Social innovation Other, namely
What size is the business? Based on income from sales of products and/or services ex. VAT (1.000.000 EUR = approx. 10.161.475 SEK or 7.435.814 DKK)	<ul style="list-style-type: none"> The business has had no income from sales yet The business has less than 2 million euro of income from sales annually. The business has had less than 10 million euro of income from sales annually. My organization is not a business
Indicate below, how much prioritization you give to profit, social impact and environmental impact within your business or organization:	<p>[slider]</p> <p>Low ----- Medium ----- Highest</p> <p>0 10 20 30 40 50 60 70 80 90 100</p> <p>Profit:</p> <p>Social impact:</p> <p>Environmental impact:</p>

Question	Answer options
<p>At which festival/event did you test (in 2021)?</p> <p>Only one answer is possible. If you will conduct tests at more festivals/events, you will receive this questionnaire for each test.</p>	<p>[text]</p>
<p>Was the test conducted online or not?</p>	<p>Online Not online</p>
<p>What elements did the test include: (Check all that apply)</p>	<p>Showing a prototype, product or service to people Trying out a prototype, product or service with people Trying out a collaboration with the event or other organization Sales test of a product or service Technical test of a prototype, product or service Attracting launching customers or investors Building a new prototype on site And/or something other, namely:</p>
<p>Looking back at the test, how useful did you find the aspects below? Testing if a prototype works Marketing the product or service Meeting other entrepreneurs Getting feedback from people Input from the team that facilitated your test Developing entrepreneurial skills Finding potential partners or investors</p>	<p>Extremely useless Moderately useless Slightly useless Slightly useful Moderately useful Extremely useful Not applicable</p>
<p>Evaluate the quality of the information gathered via the test via the following statements: The test gave useful information. The test was a valuable use of my time. The test was a good way to collect information. The results of the test are important for my business. The results of the test are of a good quality.</p>	<p>Strongly disagree Disagree Somewhat disagree Somewhat agree Agree Strongly agree Not applicable to my test</p>

Question	Answer options
<p>To what extent did the test support insight into customer needs regarding your product/service?</p> <p>Through the test I have gained insights into what customers expect from my product/service.</p> <p>The test was a good way to learn about customer demands and expectations.</p> <p>The test gave useful information about customers for the development of my business.</p> <p>The test was important for understanding the needs of my customer.</p> <p>I gained a good amount of insight into customer needs through the test.</p>	<p>Strongly disagree</p> <p>Disagree</p> <p>Somewhat disagree</p> <p>Somewhat agree</p> <p>Agree</p> <p>Strongly agree</p> <p>Not applicable to my test</p>
<p>To what extent did the test support insight into the customer experience of your product or service?</p> <p>Through the test I have learned about how my business should communicate with customers.</p> <p>The test was a good way to learn about how to engage with customers with my business.</p> <p>The gained insight about the experience of customers of my product/service is useful for developing my business.</p> <p>The gained insight about customer experience is important.</p> <p>I gained a good amount of insight into customer experience.</p>	<p>Strongly disagree</p> <p>Disagree</p> <p>Somewhat disagree</p> <p>Somewhat agree</p> <p>Agree</p> <p>Strongly agree</p> <p>Not applicable to my test</p>

Question	Answer options
<p>To what extent did the test support insight into the revenue model around your product or service?</p> <p>The test gave insight into how realistic my expectations about pricing, sales or profit are.</p> <p>The test was a good way to learn about expected revenue streams.</p> <p>The gained insights about my revenue model are useful for the development of my business. The gained insights about my revenue model are important. I gained a good amount of insight into my revenue model.</p>	<p>Strongly disagree</p> <p>Disagree</p> <p>Somewhat disagree</p> <p>Somewhat agree</p> <p>Agree</p> <p>Strongly agree</p> <p>Not applicable to my test</p>
<p>To what extent did the test support insight into collaborating with partners?</p> <p>The test gave insight into what is important for my partnerships with other businesses/ organizations to succeed. The test was a good way to learn about collaboration with other businesses/organizations. The gained insights about collaborating with partners are useful for developing my business. The gained insights about collaborating with partners are important. I gained a good amount of insight about collaborating with partners.</p>	<p>Strongly disagree</p> <p>Disagree</p> <p>Somewhat disagree</p> <p>Somewhat agree</p> <p>Agree</p> <p>Strongly agree</p> <p>Not applicable to my test</p>
<p>Overall, did the test lead to insights that you can use to improve elements of your business model?</p>	<p>Yes, I learned one or more things that will help me improve my business model.</p> <p>No, I did not learn anything that will help me improve my business model.</p> <p>I don't know</p>

Question	Answer options
<p>Check all business model learnings that apply to you.</p>	<p>No learning took place</p> <p>Learning about customers expectations and opinions about the product and service</p> <p>Learning about business partners' expectations and opinions about the product and service</p> <p>Learning about customers groups that are interested in the product/service</p> <p>Learning about how the business should engage customers</p> <p>Learning about communication to customers</p> <p>Learning about the revenue model of the business, e.g. pricing or expected sales</p> <p>Learning about what partners are important for the success of the business</p> <p>Learning about how to collaborate with partners to achieve a sustainable business</p> <p>Other, namely:</p>
<p>Did the festival-test lead to increased sales?</p>	<p>Yes</p> <p>No</p> <p>My product/service is not on the market yet</p> <p>I don't know</p>
<p>Did the test lead to increased interest, such as website traffic, social media follows and likes, or newsletter subscriptions?</p>	<p>Yes</p> <p>No</p> <p>My business cannot be found online by customers yet</p> <p>I don't know</p>
<p>Overall, do you feel the the festival-test has helped the market uptake of your product/service?</p>	<p>Yes</p> <p>No</p> <p>It is too early for my product/service to say anything about market uptake</p> <p>I don't know</p>

Appendix II List of IQ start-ups

Note: This list was made for the purpose of assessing whether the IQ method supports market uptake for start-ups, therefore cases that do not fit the definition of start-up (see Chapter 1) were excluded from this list, start-ups that tested twice are counted once, test that were cancelled are also excluded. Start-ups are anonymized in the list, but the names of the start-ups are known by the research team of IQ.

CODE START-UP	YEAR	FESTIVAL	COUNTRY OF HOST PROGRAM	LAUNCHED	3Y SURVIVAL
DP18A	2018	DORP/WTTV	SE	Inconclusive	inconclusive
DP18B	2018	DORP/WTTV	BE	No	No
DP18C	2018	DORP/WTTV	BE	No	No
SH18A	2018	Silicon Halli	SE	Inconclusive	inconclusive
SH18B	2018	Silicon Halli	SE	Launched prior	Yes
SH18C	2018	Silicon Halli	SE	Launched prior	Yes
SH18D	2018	Silicon Halli	SE	No	No
SH18E	2018	Silicon Halli	SE	No	No
SH18F	2018	Silicon Halli	SE	No	No
SH18G	2018	Silicon Halli	SE	No	Yes
SH18H	2018	Silicon Halli	SE	Yes	Yes
WP18A	2018	World Perfect (North-side)	DK	Launched prior	Yes
WP18B	2018	World Perfect (North-side)	DK	No	No
BN19A	2019	Breminale	DE	Launched prior	Yes
BN19B	2019	Breminale	DE	Launched prior	Yes
BN19C	2019	Breminale	DE	No	No
BN19D	2019	Breminale	DE	No	No
BN19E	2019	Breminale	DE	Yes	Yes
BN19F	2019	Breminale	DE	Yes	Yes
D19A	2019	DORP/WTTV	BE	No	No
MN19A	2019	M01N	DE	Launched prior	Yes
MN19B	2019	M01N	DE	Launched prior	Yes
MN19C	2019	M01N	DE	No	No
MN19D	2019	M01N	DE	Yes	Yes
MN19E	2019	M01N	DE	Yes	Yes
SH19A	2019	Silicon Halli	SE	inconclusive	inconclusive
SH19B	2019	Silicon Halli	SE	Launched prior	inconclusive
SH19C	2019	Silicon Halli	SE	Launched prior	inconclusive
SH19D	2019	Silicon Halli	SE	Launched prior	Yes
SH19E	2019	Silicon Halli	DE	Launched prior	Yes
SH19F	2019	Silicon Halli	SE	No	No
SH19G	2019	Silicon Halli	SE	No	No
SH19H	2019	Silicon Halli	SE	No	No

SH19I	2019	Silicon Halli	SE	No	Yes
SH19J	2019	Silicon Halli	SE	Yes	Yes
WP19A	2019	World Perfect (North-side)	DK	Launched prior	Yes
WP19B	2019	World Perfect (North-side)	DK	No	No
WP19C	2019	World Perfect (North-side)	DK	Yes	No
DP19A	2019	WTTV, Breminale, M01N, Machermesse	DE	Yes	Yes
PT20A	2020	Proto.type	DE	inconclusive	NA
PT20B	2020	Proto.type	DE	Yes	NA
PT20C	2020	Proto.type	DE	Yes	NA
PT20D	2020	Proto.type	DE	Yes	NA
PT20E	2020	Proto.type	DE	Yes	NA
PT20F	2020	Proto.type	DE	Yes	NA
SH20A	2020	Silicon Halli	SE	inconclusive	NA
SH20B	2020	Silicon Halli	SE	inconclusive	NA
SH20C	2020	Silicon Halli	SE	inconclusive	NA
SH20D	2020	Silicon Halli	SE	inconclusive	NA
SH20E	2020	Silicon Halli	SE	no	NA
SH20F	2020	Silicon Halli	SE	Yes	NA
SH20G	2020	Silicon Halli	SE	Yes	NA
SH20H	2020	Silicon Halli	SE	Yes	NA
SH20I	2020	Silicon Halli	SE	Yes	NA
CE21A	2021	Campus event	BE	No	NA
CE21B	2021	Campus event	BE	No	NA
CE21C	2021	Campus event	BE	Yes	NA
CF21A	2021	Campus Festival	DE	No	NA
CF21B	2021	Campus Festival	DE	No	NA
CF21C	2021	Campus Festival	DE	Yes	NA
FM21A	2021	Folk meeting	DK	Yes	NA
FM21B	2021	Folk meeting	DK	Yes	NA
IF21A	2021	Impactfest	NL	Launched prior	NA
IF21B	2021	Impactfest	NL	No	NA
IF21C	2021	Impactfest	NL	Yes	NA
GW21A	2021	Le Guess Who	NL	Launched prior	NA
GW21B	2021	Le Guess Who	NL	Launched prior	NA
GW21C	2021	Le Guess Who	NL	Launched prior	NA
GW21D	2021	Le Guess Who	NL	No	NA
GW21E	2021	Le Guess Who	NL	No	NA
GW21F	2021	Le Guess Who	NL	Yes	NA
GW21G	2021	Le Guess Who	NL	Yes	NA
OL21A	2021	Oerol	NL	Launched prior	NA
OL21B	2021	Oerol	NL	Launched prior	NA

OL21C	2021	Oerol	NL	Launched prior	NA
OL21D	2021	Oerol	NL	Yes	NA
OL21E	2021	Oerol	NL	Yes	NA
PP21F	2021	Prototypenparty	DE	No	NA
PP21G	2021	Prototypenparty	DE	No	NA
PP21H	2021	Prototypenparty	DE	No	NA
PP21I	2021	Prototypenparty	DE	No	NA
PP21J	2021	Prototypenparty	DE	No	NA
PP21K	2021	Prototypenparty	DE	Yes	NA
PP21L	2021	Prototypenparty	DE	Yes	NA
PP21M	2021	Prototypenparty	DE	Yes	NA
PP21N	2021	Prototypenparty	DE	Yes	NA
SH21A	2021	Silicon Halli	SE	inconclusive	NA
SH21B	2021	Silicon Halli	SE	inconclusive	NA
SH21C	2021	Silicon Halli	SE	inconclusive	NA
SH21D	2021	Silicon Halli	SE	inconclusive	NA
SH21E	2021	Silicon Halli	SE	inconclusive	NA
SH21F	2021	Silicon Halli	SE	inconclusive	NA
SH21G	2021	Silicon Halli	SE	inconclusive	NA
SH21H	2021	Silicon Halli	SE	No	NA
SH21I	2021	Silicon Halli	SE	Yes	NA
SM21A	2021	Stortemelk	NL	No	NA
SM21B	2021	Stortemelk	NL	No	NA
SM21C	2021	Stortemelk	NL	No	NA
SM21D	2021	Stortemelk	NL	No	NA
SD21A	2021	Sustainability Day	DE	Launched prior	NA
SD21B	2021	Sustainability Day	DE	Launched prior	NA
SD21C	2021	Sustainability Day	DE	Launched prior	NA
SD21D	2021	Sustainability Day	DE	Yes	NA
SD21E	2021	Sustainability Day	DE	Yes	NA
SD21F	2021	Sustainability Day	DE	Yes	NA
TT21A	2021	TT	NL	No	NA
WF21A	2021	Waddenfestival	NL	Launched prior	NA
WF21A	2021	Waddenfestival	NL	Launched prior	NA
WF21A	2021	Waddenfestival	NL	No	NA
WF21A	2021	Waddenfestival	NL	No	NA
FM22B	2022	Folke meeting	DK	Yes	NA
SO22A	2022	Scandinavian Mixed	SE	No	NA
SO22B	2022	Scandinavian Mixed	SE	Yes	NA
SO22C	2022	Scandinavian Mixed	SE	Yes	NA
SO22D	2022	Scandinavian Mixed	SE	Yes	NA
SO22E	2022	Scandinavian Mixed	SE	Yes	NA
SO22F	2022	Scandinavian Mixed	SE	Yes	NA
SO22G	2022	Scandinavian Mixed	SE	Yes	NA
SO22H	2022	Scandinavian Mixed	SE	Yes	NA
SO22I	2022	Scandinavian Mixed	SE	Yes	NA

