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Research Article

Digital Innopreneurship 2: The Evaluation of Collaboration Between Corporates and Startups in the Digital Economy

Tobias Kollmann[1,*], **Niklas Kollmann**[2]

[1]Faculty of Computer Science, University of Duisburg-Essen, Essen, Germany
[2]Nova School of Business and Economics, Carcavelos, Portugal

Abstract

According to the previous article (Part 1), the term "Digital Innopreneurship" describes the creation of a joint digital innovation and transformation capability of startups and corporates, which is made up of the digital innovation power of startups (Digital Entrepreneurship), the digital transformation power of corporates (Digital Intrapreneurship) and the digital synergy power (Digital Interpreneurship) between these two actors. In order to unleash this power, corporates and startups must work together to shape the Digital-Innovation-Capability, Digital-Innovation-Development and Digital-Innovation-Culture in a mutually beneficial way for both sides without disregarding their respective strengths and weaknesses. Against this backdrop, the players involved naturally ask themselves what such a collaboration could look like and what attributes both sides can use to check in advance whether they really fit together and which cooperation or participation model is most suitable. This article (Part 2) is intended to illustrate this conceptually and describe an initial possibility for evaluating such a cooperation between corporates and startups.

Keywords

Digital Innopreneurship, Corporate, Startup, Cooperation, Evaluation, Information Economic Theory

1. Corporate-Startup-Collaboration as a Competitive Factor

Large companies, often called “corporate”, can be characterised as established, resource-rich organisations primarily focused on efficiency and scalability in their operations [1]. Digitalisation, in particular, addresses this efficiency and scalability in the context of automation and cost degression [2]. This result addresses the digital transformation of existing business models and processes to digitalise the associated products, processes and platforms (Digital Innopreneurship - Part 1): At the same time, large companies are threatened in their (real) existing business by digital change, which is determined in particular by digital innovations that supplement or replace the old real business models and processes with new digital variants [3]. Digital Startups are particularly active in this area, developing their own digital innovations quickly and flexibly and trying to bring them to market in order to steal customers away from established large companies and thus redistribute market shares [4]. The advantage of startups is their enormous digital innovation capacity, while at the same time, they have the disadvantage of limited resources and limited market access at the beginning (Digital Innovation - Part 1).

*Corresponding author: tobias.kollmann@uni-due.de (Tobias Kollmann)

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Against this backdrop, startups and corporates are two organisational forms that could hardly be more opposite at first glance [5]. Startups (small companies and, depending on the definition, no more than 5 or 10 years old) are characterised by their digital innovative strength and high growth orientation [6]. Their digital innovations and digital business models address the power of digital data with an associated digital value chain [4], p. 202 ff. In this context, digital startups strive to optimally exploit the potential of this digital value chain through their digital innovative strength, agility, willingness to take risks and growth orientation [7, 101]. On the other hand, startups also have to overcome structural disadvantages such as limited financial resources, a lack of experience and a lack of market access [8]. Despite these disadvantages, startups want to develop their innovative digital solutions disruptively (Digital Entrepreneurship; [9, 10]) and quickly turn them into marketable products or services [11, 12]. This endeavour is favoured by a high degree of flexibility, which enables them to act quickly and without the restrictions of established hierarchies or bureaucratic structures [13].

Corporates (large and older companies that have generally been established on the market for many years; [1]), on the other hand, may not be as fast and flexible as startups due to their organisational and decision-making structures, but they can also be innovative and entrepreneurial for digital transformation (Digital Entrepreneurship). As already described (Digital Innopreneurship - Part 1), they are also under pressure to implement advanced digital technologies in order to renew and transform existing business models in their existing business [14]. In contrast to startups, however, they already have more significant financial and human resources as well as established market access with a greater or lesser number of customers. However, they are always limited in quickly building up digital expertise and implementing digital innovations within the usually rigid corporate structures. Furthermore, they are not as willing to take risks when dealing with new opportunities, which also harbour the risk of damaging the established brand name and reputation in the event of failure.

From an overall perspective, the previous article (Digital Innopreneurship - Part 1) has already established that the strengths and weaknesses of corporates and startups almost balance each other out regarding the common challenge of digital change and that cooperation in this area is almost obvious. This applies both to the micro-level of the players involved in their companies and to the macro-level of the associated national economy in which they are located. Against this backdrop, the area of innovation-promoting cooperation between startups and established companies is receiving increasing attention ([15]: Digital Innopreneurship - Part 1).

Both sides can, therefore, benefit from the associated cooperation (Digital Interpreneurship). The experience, entrepreneurial expertise, and industry knowledge of a corporation are advantages for a startup. Furthermore, the corporation can support a startup financially or with additional resources to promote its growth. Conversely, the corporate can access the startup's rapid development of digital innovations and integrate them into its own value creation for the (real) existing business as well as the (digital) innovation business as part of a cooperation. Both sides can/should thereby increase their digital transformation and innovation capabilities and, at best, jointly develop new business models in the digital economy. At the same time, the collaboration promotes the transfer of knowledge and technology in both directions, which also increases or should increase the (respective) competitiveness of both players.

In the previous article (Digital Innopreneurship - Part 1), the necessity of digital transformation for large companies was discussed in detail against this background and the associated digital transformation was described. The necessity for digital innovations from the perspective of both large (corporates) and small companies (startups) was also presented and the associated digital innovation capability for both sides as a competitive factor was demonstrated. As a result, the concept of Digital Innopreneurship was presented, in which the Digital-Transformation-Strength (Digital Intrapreneurship), the Digital-Innovation-Strength (Digital Entrepreneurship, [4, 9]) and the Digital-Synergy-Strength (Digital Interpreneurship) were combined from the respective perspectives of corporates and startups ([10]; Digital Innopreneurship - Part 1). In this context, it has already been established that a Corporate-Startup-Collaboration within the framework of an overarching Digital Innopreneurship promises many opportunities and high development potential for both sides if the addressed synergy potential on the product, market, organisation, management and investment side is actually realised. Then, and only then, would Corporate-Startup-Collaboration become a competitive factor for both parties involved.

In order to enable a successful Digital Innopreneurship, this synergy potential should/must be analysed by both sides in the best possible way prior to a collaboration between a corporate and a startup. The result was the consideration of a triad of Cooperation Object, Cooperation Mode and Cooperation Actors for Digital Innopreneurship (see Figure 2 in Digital Innopreneurship - Part 1). This triad for an associated test model refers accordingly to the selection of suitable attributes and an associated analysis of a product/market fit (Cooperation Object), an organisational/cultural fit (Cooperation Mode) and a management/individual fit (Cooperation Actors) from the respective perspective of the corporation and startup that want to enter into an associated cooperation [16]. Accordingly, the two perspectives should be analysed both separately and together.

It was also pointed out that, in contrast to an isolated Digital Interpreneurship (in the sense of a "pure Corporate-Startup-Collaboration"), Digital Innopreneurship (in the sense of an "advanced Corporate-Startup-Collaboration") also requires a joint agreement on the cooperation model (working level) with associated governance (on the behaviour of both partners)

(Digital Innopreneurship - Part 1). In addition, there had to be coordination with regard to a joint participation model (investment level), which also considers the type of participation, the associated governance and the corresponding behaviour of both partners for the joint growth and exit scenario. In conclusion, it was emphasised that a Corporate-Startup-Collaboration cannot eliminate the need for an independent digital transformation force on the corporate side and the need for an independent digital innovation force on the startup side.

If we now assume that a Corporate-Startup-Collaboration is advantageous in the context of a Digital Innopreneurship and if we can understand the associated framework conditions from the first part of this article (Digital Innopreneurship - Part 1), then the supplementary research questions that must first be answered conceptually for the evaluation of a collaboration between corporates and startups in or for a digital economy(s) now arise for the subsequent article:

1. What types/models of collaboration exist between corporates and startups and how can they be categorised?
2. Which attributes can be used to analyse cooperation between corporates and startups?
3. What can a decision model look like in which the evaluation of the selected attributes leads to a specific type/model for collaboration between corporates and startups?

1.1. Theoretical Perspectives of a Corporate-Startup-Collaboration

The literature on collaboration between corporates and startups dates back to the early 1990s, when Oakey [17] examined the role of small companies in the development of the biotechnology industry [16]: Since then, research has expanded to different angles to reflect today's understanding of the phenomenon. These include, in particular, the areas of "performance", "attributes", "types/models", and "decision models". Nevertheless, the development of the current state of research is atypical: more than 50 per cent of the literature has been published in the last four years, which indicates that academia has only fully recognised the importance of the topic for practice in recent years after it first emerged in principle 30 years ago [18, 16]. Against this background, it makes sense to closely examine the individual areas.

Research on the first area, "Performance", has been in focus from the very beginning and the output of a collaboration between corporates and startups has been analysed here in particular. Zahra [19], for example, analysed the differences in the performance of biotechnology startups with and without the support of a corporation. In addition, Sorrentino/Williams [20] analysed the relationship between corporates and startups and investigated the question of how overlaps or differences between the two parties influence the performance of startups. In the course of the investigations in this first area, the first important results of a corporation-startup collaboration were defined, such as innovation, organisational and strategic performance on the side of the corporates and innovation, market and financial/growth performance on the side of the startups [18] and later taken up again and again by other researchers.

The research on the second area, "Attributes", was characterised by the search for concrete success or influencing factors for cooperation between corporates and startups. These are also treated as "antecedents" in the literature. With this in mind, various selection attributes were analysed: According to Giglio et al. [18], the literature on antecedents can be divided into four categories. Firstly, the literature deals with decision criteria at an individual level. In addition, it deals with company-related criteria. Furthermore, network-related attributes and ecosystem-related criteria were analysed as a basis for decision-making. According to Dizdarevic et al. [1], the analysis of this effect was mainly conducted from the perspective of corporates [16]: Only a fraction of the literature was dedicated to the startup perspective e.g. [21, 22].

Research on the third area "Types/Models", on the other hand, was characterised by describing the various possibilities for collaboration between corporates and startups [23-25]. The literature deals with various forms of collaboration, such as venture clienting, corporate venture capital, corporate accelerators and corporate incubators. In this respect, scholars have not only dealt with the models, but also with the implementation process of such collaborations [26]. However, these collaboration types or models were often only described and differentiated from one another without any associated decision-making models that could have been subjected to concrete application. Demir/Lukes [27] have also critically noted this and developed a decision model based on various selection features/attributes, which ultimately leads to a decision matrix for determining forms of cooperation, which is determined by the two axes "capital participation" and "start-up maturity".

Therefore, research in the fourth area, "Decision Models", is still in its infancy. Demir/Lukes [27] have paved the way for more practice-based decision models with their decision matrix. In this respect, there is an opportunity to conduct further research and contribute to the scientific community. Little or no consideration has been given in the research to the fact that various moderators can/should be taken into account within the decision models, which can influence the evaluation of various attributes and, thus, the selection of the appropriate type or form of cooperation. Furthermore, the effects that the respective cooperation type or model must have on the design of the associated cooperation governance and cooperation behaviour in order for the hoped-for success to materialise have hardly been examined to date. In this context, an associated venture governance and venture behaviour must also be defined in the event of an investment. Many practical examples show that Corporate-Startup- Collaborations that were tested and launched with great euphoria have subsequently failed precisely because of this:

1. Google bought the smart home startup Revolv to promote integration with Nest products. However, following the

acquisition, Revolv was discontinued, and support for existing customers was completely cancelled. This led to great resentment among customers and a loss of Google's reputation, as the takeover was not put to good use.
2. Walmart bought Jet.com in 2016 for 3.3 billion US dollars to strengthen its position in the e-commerce sector against Amazon. Despite the high investment, Jet.com was unable to deliver sustainable results. In 2020, Walmart discontinued the brand and integrated it into its main platform. The quick demise showed that the cultural and strategic differences had not been overcome.
3. eBay acquired Skype in 2005 for 2.6 billion US dollars to promote communication between buyers and sellers. However, the integration failed due to the lack of fit between eBay's business model and Skype's core function. In 2009, eBay sold Skype at a loss to a group of investors before it was later acquired by Microsoft.

Also, still largely unnoticed is how the respective tasks, developments and necessities on both sides of the partnership (must) continue for further Digital Transformation, irrespective of the agreed cooperation. On the one hand, the corporate must/can/should not give up its own activities for a digital transformation. On the other hand, the startup must/can/should not refrain from its activities to develop further Digital Innovations. There must be a balance between dependence and independence within and outside the chosen form of cooperation, significantly, as further isolated activities in their development could also influence the cooperation. This is why a much more comprehensive approach is necessary, and the concept of "Digital Innopreneurship" starts at precisely this point, as already described (Digital Innopreneurship - Part 1).

Even if the following explanations cannot fully consider all perspectives of cooperation between corporates and startups against this background, the aim is to build on the four previous research areas in the literature and motivate a conceptual expansion or a change of perspective for further theoretical and empirical examination. We, therefore, want to present a decision-making model for Corporate-Startup-Collaboration that

1. condenses the numerous cooperation types/models into three central categories and makes these the subject of a decision for implementation from the perspective of a corporation or a startup (research area "Types/Models"),
2. condenses the numerous attributes into three central groups and makes them the object of an impact relationship on the decision in favour of one of the three central cooperation categories (research area "Attributes"),
3. presents and motivates a moderating influencing factor on this impact relationship between individual attributes and groups and the three central cooperation categories with the information-economic properties (research area "Attributes"; research area "Decision Models"),
4. and finally offers a first simple evaluation scheme via a scoring procedure, with which the first direction towards a decision in favour of or against a cooperation category can be determined (research area "Decision Models").

Finally, the effects on the work level (agreement/behaviour) and the investment level (agreement/behaviour) and thus on the implementation structure should be considered (see Figure 2 in Digital Innopreneurship - Part 1) and once again the holistic perspective of a Digital Innopreneurship should be considered, which can/will have a significant influence on the success of the cooperation and the individual development of both the corporation and the startup (research area "Performance").

1.2. Practice-orientated Categories for Corporate-Startup-Collaboration

Numerous cooperation types/models for collaboration between corporates and startups are presented in the literature. The rough directions run along the two axes of "entrepreneurial support/cooperation between corporate and startup" and "financial commitment/participation of the corporate in the startup". The various cooperation types/models can be characterised along these two axes, whereby they either focus on one axis, the other axis or both axes equally. Even if no prioritisation seems possible/necessary at first, it is clear that the question of corporate participation in the startup is one of the central components of a collaboration, if not the central component. This fundamental decision distinguishes a normal customer-partner relationship (low-level cooperation) from a venture-partner relationship (high-level cooperation). Accordingly, we will summarise the numerous cooperation types/models into the three central cooperation categories "non-Equity-Collaboration" (without participation/shares of the corporate in the startup), "Minority Investment" (with participation/shares of the corporate in the startup < 50%) and "Acquisition" (with participation/shares of the corporate in the startup > 50%).

non-Equity-Collaboration

The literature centres on the concept of "venture clienting," which is also known as "startup supplier" programmes [28, 29]. In this context, corporations seek to develop digital innovations or solutions for their own (digital) transformation with the assistance of a startup, without investing financially in the startup [16]. According to Haarmann et al. [23], p. 345, venture clienting occurs when "established companies become early customers of startups [...] and conduct a pilot project to develop a proof of concept and validate it under real-life conditions." In other words, the venture-client model enables both parties to collaborate without making financial commitments through equity or intellectual property [30, 16]. The venture-client model was originally developed by the German car manufacturer BMW and introduced in 2014 as part of the "BMW Startup Garage". It enabled the company to harmonise disruptive technologies with its current business model, products and service offering [23].

The concept of "venture clienting" has various advantages for both parties [16], p. 6: Companies can access new (digital) technologies and validate them under real conditions without having to provide significant financial resources, as the company only acts as a customer or development partner and not as a shareholder [26]. In addition, companies can operate the venture-client model at relatively low fixed costs [30], as the model is usually only designed for six months, and the results are realised quite quickly [26]. From a startup's perspective, the venture client model offers the opportunity to refine and expand its products or services by testing them under real-life conditions, gaining access to a high-quality customer base with customer feedback for business growth and further scaling of the business model [28, 31, 30]. However, venture clienting also harbours some risks for both sides [32, 33]: For example, the corporation must fear that the unsuccessful use of the startup technology will lead to damage to its own customers' image, while the startup must fear that the transfer of technology and expertise after the model project will lead to the development of its own solution on the corporate side.

In addition to "venture clienting", there are other forms of support for startups by corporates that do not necessarily focus on financial participation or providing their own customer base. These include models such as incubators, company builders and accelerators, which are often used in practice in a contradictory and non-overlapping manner. Several established companies use these structured programmes to work together with external startups on innovative projects. Corporates first want to learn and observe the further development of innovation before any further decisions are made regarding collaboration with the startup at customer or participation level [5]. In this case, corporates provide, for example, "various services such as office space, mentoring, training and networking opportunities" [34], p. 1761. The development of a joint "open innovation" approach can also be anchored here, in which both sides share their knowledge, technologies and resources in order to drive innovation jointly.

Regardless of whether incubators, company builders or accelerators are used for collaboration, these types of cooperation enable the corporate to gain access to innovations and talent and to utilise the innovative mindset of the startup [35]. Furthermore, Kanbach/Stubner [34] argue that these types/ models are suitable for a corporate to explore innovations without making significant investments. The problem about an overarching categorisation or classification is that incubators, company builders or accelerators are associated in the literature and in practice both with and without a participation component from the corporate in the startup. Either a share in the startup is demanded for the resources provided in return for support, or the support services are also associated with a generally smaller financial investment from the outset. In these cases, the incubators, company builders or accelerators would not belong to the form of "non-Equity-Collaboration" but to the form of "minority investment", where they are now presented in more detail.

Minority Investment

The concept of "corporate venture capital", also known as strategic equity capital, takes centre stage in the literature [36, 37]. This type of cooperation between corporates and startups is one of the most frequently analysed cooperation models. CVC may be called as a "direct minority investment by established companies in privately held companies" [38], p. 153. The beginnings of corporate venture capital investments date back to the mid-1960s and have developed into a significant source of innovation, with almost 25% of all global transactions being supported by a CVC vehicle in 2020 [39]. CVC vehicles represent another tool for companies to leverage innovation and access novel technologies and companies that are primarily aligned with their strategic objectives rather than maximising financial returns [25]. Therefore, the results of CVCs tend to be more volatile compared to traditional VC investors [40]. The most significant advantage of CVCs for companies is the access to new technologies, increasing company value [40]. However, CVC vehicles are costly and have lengthy processes [32]. There is a risk that they discourage high-quality startups that fear the exploitation of the intellectual property of their breakthrough technologies [22].

Nevertheless, startups may want to involve a large company for several reasons [16], p. 7: First, CVC investments provide another funding source besides traditional VCs [41, 35]. Secondly, startups can access additional resources (including mentoring and networking, [42]), test the marketability of their products and use the corporate image as a seal of quality [43]. On the other hand, as with CVC, there is also a risk here that the corporation will use access to the startup's expertise for its own development of innovations and that the startup's independence will be lost as a result of the corporation's involvement [33]. Collaboration with a large established company, therefore, harbours the risk for the startup of losing especially the flexibility and freedom to take a different direction [32].

Corporate accelerators (with an equity component) are another instrument of collaboration between companies and startups that has been extensively researched in academia [16], p. 7: Corporate accelerator programmes are designed to implement the open innovation process in large companies by bringing together several companies in a growth programme that usually lasts three months [41]. According to Moschner et al. [35], the accelerator format helps established companies to validate ideas more quickly. Kanbach/Stubner [34] also argue that accelerators enable corporates to explore innovations without having to make significant investments, as initially "only" the resources and services already mentioned above are used, and the additional investment capital that may be used in the startups is initially manageable [44]. Sometimes, even the service alone is offset as "investment capital" against shares without any real CVC being provided. However, the result is the same in both cases: the corporate has a minority stake in the startup [45].

Incubators represent an alternative for collaboration between companies and startups. Weiblen/Chesbrough [32], p. 71 state that "incubators provide newly emerging startups with funding, shared premises, expertise and contacts". In contrast to accelerators, incubators provide support at a stage where the startup does not yet have a clear structure or a finished product [46]. Accordingly, the incubator aims to develop the idea, shape a business model and create the basis for a future company that is also of interest to corporate [47, 46]. In the accelerator concept, on the other hand, corporates support startups that already have a business model, a product (often a minimum viable product, MVP) or initial market experience [41]. The aim here is for a corporation to literally "accelerate" the growth and market maturity of the startup in a short period. Otherwise, the services and resources deployed and the use of (additional) investment capital in return for shares are similar in both cases [45].

Acquisition

The literature focuses here on the description of the prerequisites and implementation of so-called "takeovers", in which a large and financially superior company (corporate) usually takes over a smaller and less well-funded company (startup/scale-up) with a majority of shares (>50%) or buys it outright [48, 16]. In this respect, takeovers in the context of CVC cooperations are not uncommon. A distinction can be made between two cases: On the one hand, a corporate acquires a majority stake in a startup in which it already holds a minority stake. On the other hand, the corporate was not yet involved in the startup and directly acquired a majority stake or took over 100% of it. According to Kohler [41], p. 349, an acquisition provides the established company with a "fast and effective way to acquire complementary technologies or capabilities that solve specific business problems", leading to direct control over the startup [16]. This can create a competitive advantage by opening new markets or expanding existing offerings [41]. Nevertheless, acquiring a promising startup usually represents a considerable financial burden, so a review is also critical. In addition, integrating a startup into the structures and culture of a large company can be challenging [49]. This is because there is a risk that the innovative and agile way of working of the startup will be lost or that conflicts will arise between the different corporate cultures, which can reduce the efficiency and success of the acquisition [50, 51].

From the startup's perspective, the main advantage of acquisition by a corporate is that you generally have unrestricted access to the extensive resources of the corporate [49, 52]. These include financial resources, infrastructure, market knowledge, an established sales network and industry contacts. This support can significantly accelerate the startup's growth and enable it to realise its ideas faster and on a larger scale [52]. The main disadvantage from the startup's perspective is the potential loss of entrepreneurial independence. After the takeover, the corporate could intervene more strongly in the strategic direction, product development or corporate culture [53, 54]. This could impair the innovative strength and dynamism of the startup, especially if the founders' ideas clash with the corporation's interests [52]. In practice, it is not uncommon for founders to leave their own company after a certain period following the takeover by a corporation.

Against this background, it can be stated that the numerous cooperation types/models between corporates and startups can be summarised in three central cooperation categories [16]:

1. The "non-Equity-Collaboration" category includes the venture client model as well as the models of incubators, company builders or accelerators without (!) corporate participation in the startup.
2. The "Minority Investment" category includes the corporate venture capital model as well as the models of incubators, company builders or accelerators with (!) corporate participation in the startup.
3. The "Acquisition" category includes the majority or complete takeover as part of a continued or new participation of the corporate in the startup.

To make the right/suitable selection for a specific cooperation category (provided that this selection can be made "freely" for both a corporate and a startup for political, monetary, or other reasons), evaluation criteria in the form of attributes must now be introduced. These criteria form the basis for such a decision.

2. Framework-Model for Corporate-Startup-Collaboration

There are now many references in the literature to attributes that influence cooperation between corporates and startups or the selection of a specific cooperation model. It is easy to see that these are generally formulated from the perspective of corporates. In contrast, there are hardly any considerations from the startup perspective. Whether this postulates that the large partner (corporate) has a choice while the small partner (startup) does not, especially at the beginning, remains to be seen. However, there is no evidence why the (most) criteria/attributes from the corporate perspective cannot/should not be used from the startup's perspective to select the right cooperation partner. Numerous practical examples show that startups also had the choice of which corporate they wanted to work with. For example, the partnership between OpenAI and Microsoft is one such case [16]: OpenAI chose Microsoft as a partner mainly due to the capacity of its cloud infrastructure to develop its language models further. Accordingly, we first want to assume that the attributes can play a reciprocal role for both corporates and startups, even if the literature cannot prove or disprove this.

With this in mind, we first want to extract a relevant number from the many references to relevant attributes and

categorise them for ease of use. This is initially limiting, but it is expedient with regard to the actual development of a decision model and the construction of an associated logic. As a result, a triad of cooperation object (cluster 1), cooperation mode (cluster 2) and cooperation actors (cluster 3) with the associated attributes is initially formed.

2.1. Decision Attributes for a Corporate-Startup-Collaboration

Before categorising the decision attributes into the three clusters, let us first derive them based on the existing literature. In the literature on Corporate-Startup-Collaborations, some researchers provide a systematic overview of which attributes are or can be relevant e.g. [55-57, 16]. As there is still no empirical evidence as to which attributes are more or less important, the following selection is made subjectively based on the frequency or intensity with which they are described in the literature.

Compatibility

The first prevalent attribute in this context is "compatibility", which often refers to the (digital) product and technology level [57]. This involves looking at how the digital product/service, digital value creation or digital technology of a startup is in line with the current offering/project of the corporate or could strengthen it [58, 59]. A distinction can be made between content (objectives, functions or content), technical (requirements, interfaces or platforms) or economic compatibility (target group, price segment or investment; [60, 22]). This compatibility refers to the overarching combination of two products/services, technologies, developments, industries, platforms or processes, which appears possible from the perspective of both the company and the startup as part of a joint value chain. One example is a corporate from the logistics sector that would like to rationalise its shipping processes with the help of an AI-supported software solution from a startup.

Synergies

In addition to compatibility, researchers are also looking at the associated (digital) synergies as an attribute of Corporate-Startup-Collaboration e.g. [61, 57]. This refers to the additional value created by integrating a digital product/service, digital value creation or digital technology from a startup into a corporate's offering/project. This can result in synergies in the areas of product/offer, service, marketing or cross-selling. The resulting joint product should offer both the corporate and the startup additional, tangible (real/digital) added value or (real/digital) benefits (also from the customer's perspective) that the individual offerings alone would not provide. One example is a company from the retail sector that can better process customer enquiries in the service area with an AI-controlled chatbot from a startup. At the same time, the startup can use these customer enquiries to train its AI model better.

Proposition

Continuing the chain of thought, compatibility together with synergy should lead to a common competitive advantage or market positioning, which is determined by a common (value) proposition. In this context, a proposition is an easily understandable reason why a customer should utilise a joint (digital) offering. When considering a Corporate-Startup-Collaboration in this context, we often speak of an associated unique selling proposition (USP), a unique brand proposition or a unique market proposition [57, 62, 63]. Whether the result is really always "unique" remains to be seen. The associated explanations in the context of a Corporate-Startup-Collaboration refer both to the assumption that a cooperation creates a new uniqueness concerning the innovation business (digital innovation) but also to the assumption that a previous competitive disadvantage is offset in relation to the existing business (digital transformation). Irrespective of this, however, both players want to strengthen their market position against the competition. An example of this is a company in the automotive industry that works with a startup in the charging infrastructure sector for its e-cars to offer customers a joint end-to-end solution in the field of electromobility, which strengthens the market position of both partners.

> *The attributes "Compatibility", "Synergies", and "Proposition" can be summarised in a cluster with an associated "Digital-Product/Market-Fit", as the attributes relate to decision features in which a mutual evaluation takes place for an expected strategic or operational advantage at the level of the "Cooperation Object" (product, process, platform, market, competition) under the influence of digital change.*

Commitment

Another attribute repeatedly found in the literature is commitment [64, 57]. Since Corporate-Startup-Collaboration focuses in particular on the connection between two organisational forms, commitment in this context can be understood as the bond or obligation that motivates an organisation to maintain a relationship, activity or goal despite possible difficulties [32]. Of course, the respective commitments of individuals or teams [57] on both sides also play a role here. However, in the end, it is (also) about an overall picture which should initially be considered here in aggregated form. It is, therefore, about the organisation's overall commitment on the corporate and startup side for (or against) digital collaboration, which also includes the respective commitments of individual players, both positive and negative. This commitment to digital change at the organisational level [65] motivates the commitment to Corporate-Startup-Collaboration in Digital Innopreneurship. One example is a corporate from the consumer goods sector that wants to develop an innovative app for sales that enables the personalisation of products and is cooperating with a startup to do so. The mutual commitment is determined, among other things, by the fact that there

should be a long-term and prioritised partnership for the development and use of the app with an associated significant investment and use of additional resources on both sides.

Capability

The term "capability" appears both directly and indirectly in the repeatedly mentioned attributes. Directly, for example, when talking about a "team-related qualification" (investor capabilities) or a "technological capability" or generally about a collaboration capability on the part of a corporation or startup [66, 60, 67, 57]. In this context, Enkel/Sagmeister [68] also speak of the goal of increasing the "dynamic capabilities" of a corporate organisation through collaboration with a startup. Indirectly, however, the "capability" can also be found in the question of how quickly and flexibly joint decisions can be made from the perspective of the startup, but also in a structured and considered manner from the perspective of the corporate organisation (Digital Flexibility versus Digital Reflexivity; Digital Innopreneurship - Part 1). It is repeatedly stated here that the different organisational cultures on the respective sides in the area of conflict between the necessary, more dispositive, agile and flexible decisions of a startup for the innovation business and the more organisational, rigid and formal decision-making structure of a corporation for the existing business become a central sticking point for the success of a Corporate-Startup-Collaboration [69, 32, 70]. One example is a corporate from the real estate sector that wants to work with a startup to develop an IoT platform that makes buildings more energy efficient by analysing data from sensors in real-time and enabling automated controls. The property company must have both the digital know-how for data management and the internal resources and processes to manage the project efficiently and make the associated decisions. On the other hand, the startup must understand how the data from this area is structured and which associated algorithms need to be built for data analysis and how to handle sensitive data in general. It must also accept that, due to the sensitive data from the corporate's customer area, the corporate wants to examine the associated use on the IoT platform intensively before making a deployment decision.

Combination

The term "combination" can be identified as a further attribute, even if it is not always directly recognisable with this term. It refers to the formal, structural and close linking of units, actors and procedures at the organisational level of corporate and startup [7, 71-73]. While this task appears simple at first glance on the startup side due to the small size, flat hierarchies and manageable number of employees, it is immediately recognisably more difficult in a large company with deep hierarchies, many departments and distributed responsibilities as well as a large number of employees [74]. However, even in a startup of a specific size, it is not always possible to identify the actual know-how carriers directly from the corporate. However, the right mutual contact and implementation partners are particularly important for both sides. However, this area is not just about connecting the right people in joint project teams, but also about combining the respective rules, procedures and associated compliance for the employees of both sides in the other organisational area of the cooperation partners. It is often the startup side that has to get used to, and adapt to the "organisational manual" and compliance rules of the larger corporates. As a solution to this problem, the corporate sometimes establishes its own digital or innovation units or hubs in order to be able to operate more freely via this vehicle, which is separate from the parent company, and thus meet the requirements of a joint "digital organisation" [65], p. 29 ff. with a startup in terms of agility and flexibility [32, 75, 76]. One example is a corporate in the steel industry that wants to work with a startup to build a platform for global steel trading. For rapid realisation, the corporate establishes its own digital unit, which is closely linked to the startup. This means that the cooperation is structurally far enough away from the corporate to be able to work creatively but still close enough to the Group to utilise the expertise and access to customers and suppliers.

The attributes "Commitment", "Capability", and "Combination" can be combined into a cluster with an associated "Digital-Organisation/Culture-Fit", as the attributes refer to decision characteristics in which a mutual evaluation of an expected strategic or operational link takes place at the level of the "Cooperation Mode" (structure, standards, procedures, compliance) under the influence of digital change.

Professionalism

Of course, the literature also examines decision attributes that are more orientated towards the individual level of the respective actors. In this context, a first attribute that is repeatedly mentioned is that of professionalism [77, 78]. This primarily pertains to the structural nature of a collaboration, through which corporate and startup management meet their agreed obligations and engage in focused communication [57, 64]. This includes, for example, detailed project reports in which the issues addressed, the lessons learnt and potential problems are presented to mitigate potential risks to the planned development. By submitting detailed reports to corporate with a proactive element regarding achieving objectives, the startup showcases a certain degree of professionalism, as does corporate, which is regularly available for coordination and decision-making meetings. However, this field also includes mutual quality awareness, politeness, the ability to solve problems together, and confidentiality in dealing with sensitive data. One example is a corporate from the perfume industry that wants to work with a startup to develop innovative software for blending fragrances. The aim is to use digitalisation to speed up the blending process for promising extracts. The corporate precisely sets out the collaboration's expectations, requirements and goals, while the

startup transparently explains its technical possibilities and limitations. Regular, well-structured meetings are arranged to discuss progress or obstacles to development.

Reliability

In addition to the structural character of cooperation between individuals, the literature also identifies attributes that address the behavioural character even more deeply and thus focuses even more on the personalities of the actors involved. These include, in particular, reliability with regard to honouring agreed deadlines and promises [79-82]. This reliability is essential for smooth planning and implementation of the collaboration and reduces the risk of delays and misunderstandings. Even though professionalism and reliability are closely related, they go in different directions because, despite a professional manner in communication and appearance, there can be a lack of reliability in the implementation and fulfilment of one's commitments, which significantly impairs cooperation [83, 84]. Agreements, such as financial contributions or project contributions, on the part of corporate stakeholders, for example, should be fulfilled without renegotiation. On the other hand, the stakeholders from the startup formulate clear and binding statements without vague promises, thus creating clarity and trust in the associated implementation. Another aspect in this area is the ability to compromise, which involves a mutual willingness to agree on fair and pragmatic solutions. In addition, both sides provide human, financial, and technological resources as agreed. One example is a corporate from the automotive industry that wants to develop a new traffic detection system with a startup. Reliability is demonstrated by the startup delivering all the agreed milestones on time and proactively informing about potential problems (e.g. with interfaces). At the same time, the corporate ensures that necessary resources, such as access to vehicle data, telemetry systems or contact persons are provided on time.

Appropriation

With regard to the individual behaviour of actors in a Corporate-Startup-Collaboration, the fear of the mutual appropriation of data, knowledge, designs, findings, trade secrets, processes, inventions, etc. is also repeatedly described in the literature [85, 33, 86]. The risk of appropriation is usually formulated from the perspective of the startup and assumes that the corporate may adopt the innovative digital ideas, technologies, processes or business models of the startup without fair compensation or recognition [87]. This can happen consciously or unconsciously and is, therefore, both recognisable but not always directly observable. As a result, however, this poses a significant threat to the startup, as it often depends solely on these own innovations. However, these concerns can also arise the other way around, for example, if a startup receives customer data from the corporate and then approaches them independently or recognises the corporate's market development systems and adopts them for its own sales. Another issue is the possible mutual poaching of employees. One example is a pet food company that wants to work with a startup to develop a GPS tracker for pets with an associated tracking and subscription model. After going through many joint workshops and developing a prototype, the collaboration was cancelled, and the resulting product was brought to market by the corporate alone - much to the surprise of the startup.

The attributes "Professionalism", "Reliability", and "Appropriation" can be combined into a cluster with an associated "Digital-Management/Individual-Fit", as the attributes refer to decision characteristics in which a mutual evaluation of expected strategic and operational behaviour takes place at the level of the "Cooperation Actors" (personality, character, motivation, values) under the influence of digital change.

In a further step, we now want to use information economics to consider a possible moderator for the respective attributes and the superordinate clusters, which can have a not insignificant influence on the evaluation. The evaluation of a future collaboration can only take place based on information about the company or startup at the time of the decision. At this point in time, some information may already be clear and assessable, but other information is not yet recognisable, assessable or tangible. This is where the information economics theory comes in with its types of search, experience and trust properties.

2.2. Character of the Attributes for a Corporate-Startup-Collaboration

Information economics theory deals with the economic properties of information and its effects on markets and organisations [88-90]. Initially, the properties of information were analysed in relation to the determination of prices and qualities of goods. In this context [16], information economics refers to the economic analysis of the procurement of information about a specific object [88]. Nelson [91] subsequently argued that goods can either be a search good, whose quality can be observed before purchase, or an experience good, whose quality can only be observed after purchase. Building on this, Darby/Karni [92] expanded the view by adding credence/trust goods to the terminology and pointing out that the quality of these goods would not be revealed at all after the purchase or only with great effort or only after a long period of time. However, this simplistic view of three types of goods was replaced by the consideration that a good, in principle, possesses all three characteristics and is thus individually composed of search, experience and credence/trust qualities or properties (SEC-Framework; [92-94]). This has been proven empirically many times e.g. [95, 93, 62].

In addition to products/goods, entire purchasing and decision-making processes have also been analysed in the literature with the help of the search, experience and credence/trust qualities (we will further choose only the term “credence”) of

associated information [94, 96]. Adler [93], p. 79 also points out in this context that “every purchase decision is actually also an information decision”. In addition, the concept was dynamised with regard to the expansion or abandonment of just one transaction point (before the purchase) in favour of a transaction process with several decision points, for example, as part of an investment process for venture capital funds [62]. It was found that the proportion of the characteristics can vary or move dynamically over time, without the existence of the three basic characteristics having to be discarded [62]. Following this, it can be stated that the decision-making process for or against cooperation between corporate and startup can/must also be interpreted as a dynamic process, but an initial decision to launch must somehow be made.

We will initially focus on this initial decision in the sense of an initial consideration of the decision space for or against cooperation, and, for the sake of simplicity, we will initially ignore the dynamics. For the consideration/evaluation of the decision attributes, however, the properties of the associated information should/must continue to be considered. In line with the literature [62, 93, 92], we define "Search Qualities" as properties for which information is recognisable with more or less effort before the start of the cooperation and can be evaluated by the corporate or startup (depending on the perspective). "Experience Qualities", on the other hand, are properties for which information can only be recognised and evaluated by the respective partners after the start of the cooperation, but without great effort. Finally, "Credence Qualities" are those properties for which information can only be recognised and evaluated by the respective partners (if at all) after the start of the cooperation with difficulty or great effort or only after a longer period.

It is obvious that the way in which the decision attributes are linked to the information-economic qualities influences the certainty or uncertainty in the assessment or evaluation of an upcoming cooperation opportunity and guides or should guide the decision for or against a cooperation or a cooperation category/form. The more difficult it is to obtain and evaluate the necessary information and the higher the proportion of experience and credence qualities, the greater the uncertainty surrounding a cooperation decision. The corresponding screening and signalling activities [97, 98] of corporates and startups as uncertainty reduction strategies follow on from this. But first of all, a basic assignment of decision attributes to the information-economic properties must be made. As there is no empirical measurement in this regard yet, logically justified assumptions must first be made as to which information-economic quality is primarily in the foreground for the analysis and whether other qualities play a significant secondary or tertiary role [16].

Cluster 1: Digital-Product/Market-Fit

Compatibility = Search Qualities (Primary)

Whether and to what extent a startup's digital product/service, digital value creation or digital technology is in line with the corporation's current offering/project or could strengthen it can be analysed relatively well in advance of a collaboration through corresponding content or technical audits. The startup can also use the corporation's current resources, products and processes to determine whether these can be combined with its own offering and whether this strengthens or complements its own development. Examples: Checking interface compatibility for data exchange within the digital systems or checking target group compatibility with regard to addressing the same customer needs. Accordingly, search qualities are primarily used here (see Figure 1).

Synergies = Search Qualities (Primary), Experience Qualities (Secondary)

Many potential synergies in the areas of product/offer, service, marketing or cross-selling can already be assessed well before the cooperation. Nevertheless, certain empirical values remain open, which only emerge on the basis of customer feedback on the market. This could also be estimated in advance through a proactive customer survey, but the real effects only emerge after the actual interaction with the customer. Examples: Testing the service synergy between the real product of the corporate and the digital customer portal of the startup or testing the product synergy with regard to the joint added value of a new function. Accordingly, primarily search but secondarily also experience qualities come into play here (see Figure 1).

Proposition = Search Qualities (Primary), Experience Qualities (Secondary)

Whether a competitive advantage or better market positioning can be achieved through the cooperation can initially be predicted on the basis of the associated competition and market analyses. Nevertheless, a certain degree of uncertainty remains as to how the market and the competition will actually react to the cooperation. Examples: Checking whether a joint new product function is or can also be offered by the competition or how the new joint offering in the market differs from the competition in terms of its uniqueness and how this promises added value for the customer. Accordingly, search qualities play a primary role here, but experience qualities also play a secondary role (see Figure 1).

In the overall analysis of the attributes for the "Digital-Product/Market-Fit", it can be stated that this cluster is primarily determined by search qualities and is supplemented secondarily by experience qualities (see Figure 2).

Cluster 2: Digital-Organizational/Cultural-Fit

Commitment = Experience Qualities (Primary), Search Qualities (Secondary)

Whether and to what extent the respective organisation of a partner gets involved in the mutual cooperation can be communicated and signalled in advance, but the actual commitment or obligation to fill the upcoming cooperation

relationship with life only becomes apparent when it is actually implemented. Examples: The willingness to cooperate can be assured by the corporate and tested in advance, but quickly diminish under the actual burden of day-to-day business or the startup's concentration on the corporate as a premium partner can be impaired by new market opportunities, contrary to the promise. Accordingly, experience is the primary factor here, but search qualities also play a secondary role (see Figure 1).

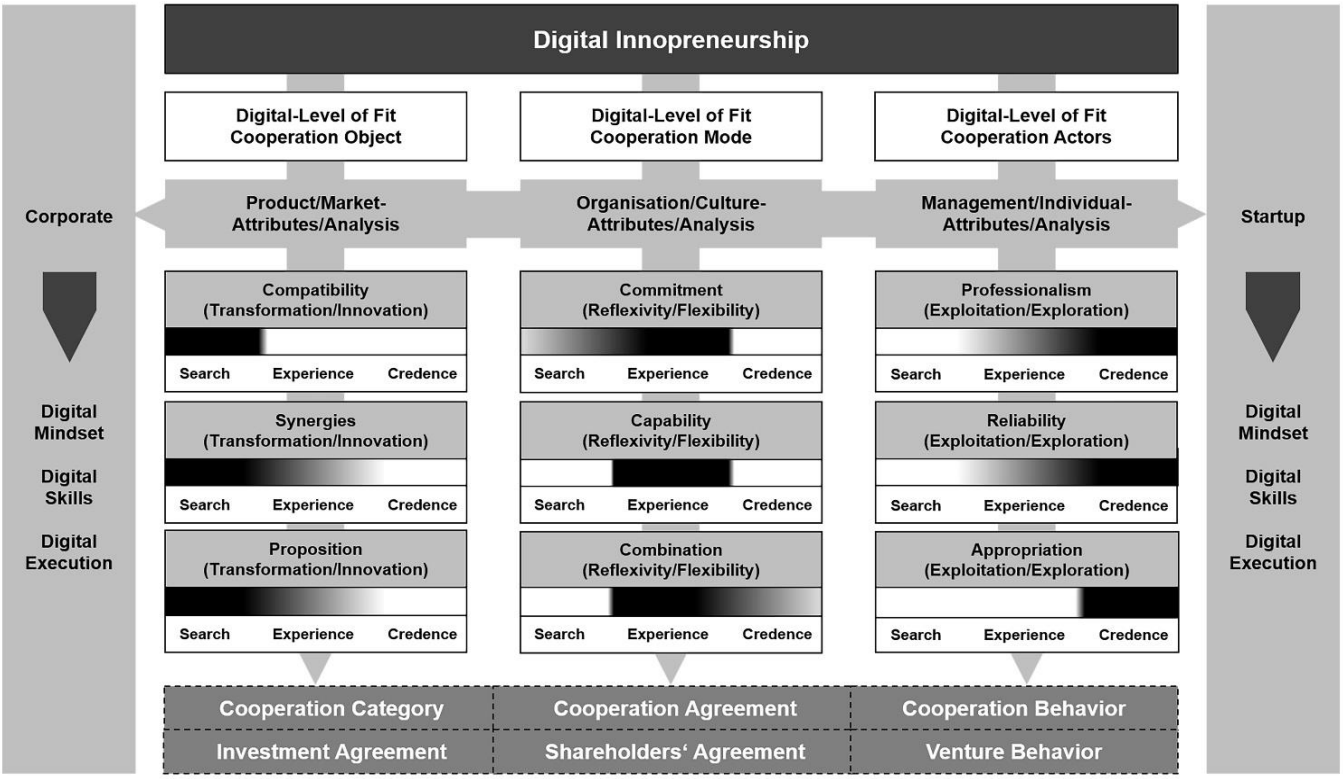


Figure 1. *Classification of Attributes on the Basis of Information-Economic-Properties.*

Capability = Experience Qualities (Primary)

How the mutual ability will develop with regard to the necessary decisions between the demand for agile and flexible handling (startup) and rigid and formal handling (corporate) can usually only be experienced after the start of a cooperation. Examples: The willingness of the corporate organisation to make quick decisions only becomes apparent in the specific application within a collaboration or the acceptance of slow decisions by the startup is ultimately not as pronounced as expected. Accordingly, it is primarily the qualities of experience that come into play here (see Figure 1).

Combination = Experience Qualities (Primary), Credence Qualities (Secondary)

Although it is possible to plan in advance whether the right units, players and procedures are linked with each other at the organisational level, the actual results and type of cooperation only become apparent after the start of a collaboration. In addition, there is a residual uncertainty as to whether the best possible set-up for the organisational connection between corporate and startup with all the associated rules, procedures, and compliance has really been found. Examples include the actual composition of the project teams with the associated rules and the resulting efficiency of collaboration or the repeated need to involve higher decision-making bodies. Accordingly, primarily experience, but secondarily also initial credence qualities come into play here (see Figure 1).

In the overall view of the attributes for the "Digital-Organisation/Culture-Fit", it can be stated that this cluster is primarily determined by experience qualities and is supplemented secondarily by search and credence qualities (see Figure 2).

Cluster 3: Digital-Management/Individual-Fit

Professionalism = Credence Qualities (Primary), Experience Qualities (Secondary)

Regardless of how professional the actors involved appear in advance, the actual behaviour only becomes apparent in the concrete day-to-day work of the cooperation. It can also be seen that this professionalism can manifest itself differently under pressure and that experience in this regard is not always

indicative of future behaviour. Both sides must therefore trust that this professionalism will manifest itself over the entire period of co-operation and under the most diverse conditions and external influences. Examples are (regardless of the probability of occurrence) the reactions of the startup if the financial air becomes thin due to delays on the corporate side or the reaction of the corporate if customer data is hacked or lost via the startup systems. Accordingly, it is primarily credence, but also experience qualities, that comes into play here (see Figure 1).

Reliability = Credence Qualities (Primary), Experience Qualities (Secondary)

The reliability of the implementation of commitments or adherence to deadlines also only becomes apparent after a cooperation has been implemented. In addition, this reliability cannot be fully established right at the beginning, only in the long term. In particular, the ability to deal with conflict does not arise automatically but on a case-by-case basis so that it remains in the area of trust. In addition, internal and external problems may only arise during the collaboration that affects compliance with reliability. Examples include honouring financial commitments even if the results of the cooperation do not initially meet the targets or the clarity of communication decreases as problems increase. Accordingly, it is primarily credence, but also experience qualities, that comes into play here (see Figure 1).

Appropriation = Credence Qualities (Primary)

It is often very difficult to judge before and during the collaboration whether a corporate may intentionally or unintentionally appropriate innovative ideas, technologies, processes or business models from the startup or adopt them for further projects. This also applies to the appropriation or adoption of unique approaches to market operation, monetisation or customer acquisition on the part of the corporate by the startup. Trust is particularly important here before and during the cooperation. Examples include the non-transparent use of data from the respective partners on the other side or the use of known or new expertise both within and outside of the cooperation. Proof is usually difficult or even impossible. Accordingly, credence qualities primarily come into play here (see Figure 1).

In the overall view of the attributes for the "Digital-Management/Individual-Fit", it can be stated that this cluster is primarily characterised by credence qualities and is supplemented secondarily by experience qualities (see Figure 2).

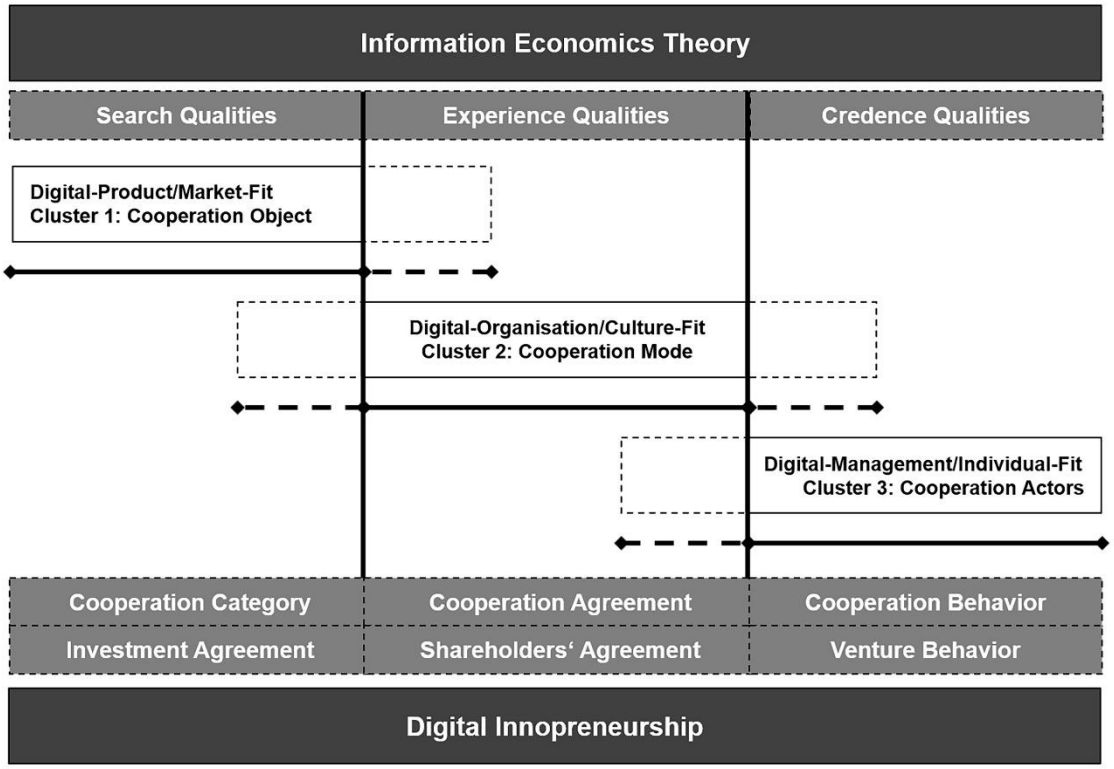
Against this background, while Figure 1 focuses more on the individual perspective of allocating information economy qualities, Figure 2 provides an overview of the aggregation at the superordinate cluster level. Of course, the inclusion and allocation of further attributes can and must be a future goal for refining the model. In both figures, the respective assignments to the clusters are supplemented with the framework conditions of Digital Entrepreneurship, which, on the one hand, refer to the basic components of digital mindset, digital skills and digital execution (Digital Leadership; [65]) as necessary prerequisites. Also included are the effects on selecting a cooperation category (see above), which must also be implemented in an investment agreement for which the Digital-Product/Market-Fit is the dominant sufficient prerequisite. In addition, the Digital-Organisational/Cultural-Fit is the predominantly sufficient prerequisite for the design of a cooperation and a shareholders' agreement in which the type and manner of cooperation and social integration is regulated. Finally, the Digital-Management/Individual-Fit describes the dominant sufficient prerequisite for the behaviour of the actors involved within the cooperation as well as the possible participation of the corporate in the startup.

3. Decision-Making-Model for Corporate-Startup-Collaborations

Now that the central attributes for evaluating a Corporate-Startup-Collaboration have been derived from the literature categorised into groups and moderated by the information-economic characteristics, a first associated evaluation and decision model will be presented. Since no causal-analysis or regression-based models exist in this context and the associated impact relationships between drivers, moderators and forms of cooperation have not yet been investigated, a simplified procedure must be used here. In connection with the evaluation of business ideas and product innovations, so-called scoring models have been used in many places in the literature to assess the realisation potential of an idea. Richman [99] laid the foundation for this by developing a scoring model to assess the compatibility of product innovations with existing internal resources. Weiber et al. [100] utilised this approach to evaluate the potential use of a product idea grounded in a company's resources potential. Kollmann [4], p. 196 ff., in turn, used the scoring model method to evaluate the realisation potential of a possible implementation of a digital business idea from a startup perspective. Therefore, the scoring model's core concept is also an obvious choice for evaluating the realisation potential of individual attributes and deriving a decision for a specific category of cooperation types/models based on this.

Figure 3 outlines the initial considerations for a scoring model for selecting a suitable category of collaboration types/models in the context of a Corporate-Startup-Collaboration, and this is structured as follows [16]: Firstly, the identified attributes are listed within the associated clusters (column 1; Figure 3). This list can be expanded by identifying other important attributes as the research progresses. It is also possible to further differentiate the individual attributes with sub-forms. The individual clusters are given relative weight by the user (depending on the perspective of the corporate or startup) about their importance to each other or about the

assessment of their importance for the upcoming cooperation. This group weighting for the individual cluster must then undergo a distribution about the individual attributes contained here, which, however, adds up to the total value of the group weighting (column 2; Figure 3). Depending on the situation and the user's assessment, this allocation of the relative weights to the respective attributes will vary from case to case. The distribution used in the figure is, therefore, only an example. As a rule [16], however, the sum of the individual weights of the attributes must always correspond to the total weight of the cluster, and the sum of the total weights of the clusters must equal 1, whereby each cluster must have at least a weight of 0.1 and each attribute at least a weight > 0 (column 2; Figure 3).



Source: In Extension of [16], p. 19.

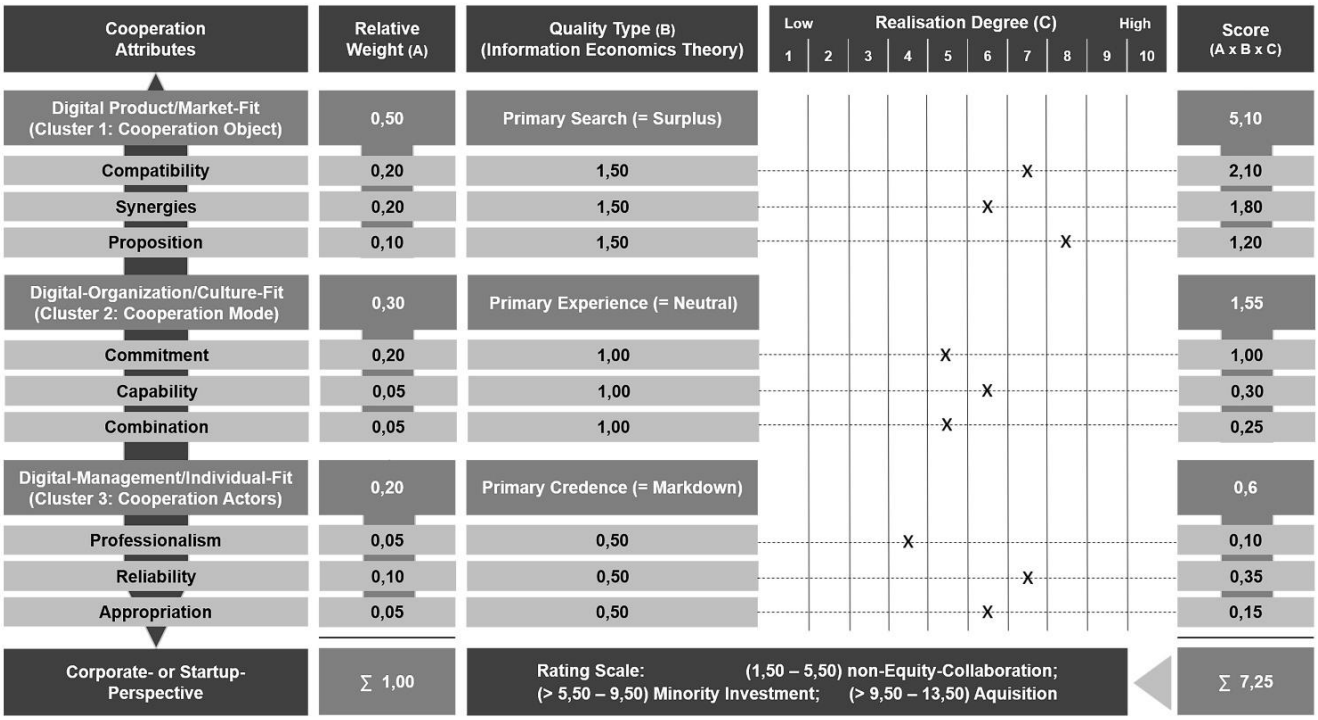
Figure 2. *Classification of the Fit-Clusters on the Basis of Information-Economic-Properties.*

In the next step, the moderation effect due to the information-economic properties comes into play. Depending on the case, there is either a multiplication-related premium, a discount or neither, which considers the evaluation possibility or the associated uncertainty prior to the cooperation decision. Since search properties already appear to be more or less specific to be assessable before the start of the cooperation, cluster 1 (cooperation object, Figure 2), which is dominated by them, receives a premium of 0.5 and thus a multiplication factor of 1.5 (column 3; Figure 3). Since experience properties do not appear to be assessable (or only to a limited extent) before the start of a cooperation, but at least after the start more or less quickly and more efficiently, Cluster 2 (Cooperation Mode, Figure 2), which is dominated by them, receives neither a premium nor a discount and thus remains at a neutral multiplication factor of 1 (column 3; Figure 3). As trust characteristics cannot be evaluated either before the start of the cooperation or immediately afterwards, or only with a great deal of effort, Cluster 2 (Cooperation Actors, Figure 2), which is dominated by them, receives a discount of 0.5 and thus a multiplication factor of 0.5 (column 3; Figure 3). At this point, it must be pointed out that the premiums and discounts can also be selected differently (e.g. 0.25 or 0.75). This is up to the user of the scoring model and represents a further possibility for individual adjustment, whereby we recommend the suggested values of +0.5 (premium) and -0.5 (discount). The effects of this system become visible in the following score evaluation.

Now, the actual points are awarded. The degree of realisation for the respective attribute is entered on a scale from 1 (= low) to 10 (= high) (column 4; Figure 3). If the user assumes, for example, that the compatibility between the products, processes and platforms of the corporate and startup is given or is specific due to the joint innovation development, they

will award a correspondingly high score here. If the user doubts the potential partner's reliability, they would only award a low score here. At this point, the effects of moderating the information-ecological properties can also be clearly seen because even if the user had no doubts about the reliability of the potential partner, the question would still arise as to whether and how they can really judge this since it is primarily a question of trust. The associated discount in the scoring model incorporates this uncertainty and protects the user from perhaps overly euphoric evaluations. Conversely, the security and verifiability of the compatibility assessment based on the assessability of a search property before the start of a cooperation is rewarded by the surcharge. However, should problems arise when checking compatibility, a correspondingly lower score for this attribute, even multiplied by the markup value, would limit the range of results upwards relatively significantly. The integration of information-economic properties, therefore, creates more balance in the scoring model, regardless of the user's personal perception.

Finally, the individual point values per attribute (column 4) are multiplied by the relative weighting (column 2) and the factor value of the primary information-economic property (column 3) and entered as a result in column 5. The individual results in column 5 are then added together to form an overall score and interpreted on an associated overall scale. This overall scale ranges (for the possible/achievable results) from 0.65 (lowest score with maximum weighting of the trust characteristics) to 13.5 (highest score with maximum weighting of the search characteristics) and is divided into three result areas, which are assigned to the three collaboration categories presented above: "Non-Equity Collaboration" (> 1.5 - 5.5), "Minority Investment" (> 5.5 - 9.5) and "Acquisition" (> 9.5 - 13.5) (see Figure 3), with the range from 0.65 - 1.5 being categorised as a range without recommendation. Which specific form of cooperation is then chosen within the resulting cooperation category must be decided on a case-by-case basis based on the existing framework conditions. This may depend, for example, on the degree of maturity of the startup's innovative idea, the timing of the cooperation or the existing cooperation structures on the corporate side. Existing experiences from other collaborations can also influence the assessment in the scoring model and the selection of the form of collaboration.



Source: Based on [99, 100, 4, 16]

Figure 3. *Scoring-Model for evaluating a Corporate-Startup-Collaboration.*

The scoring model with all the associated theoretical principles results in the corresponding recommendation that collaboration should initially be implemented as part of a "non-Equity-Collaboration" if the overall score is low. This seems understandable, as this result is probably determined both by uncertainties in the realisation potential (scoring) and by the mechanisms of theoretical influences (information-economic multiplication effects), leading to further uncertainties for evaluating a collaboration option. Accordingly, a cooperation should have the lowest possible degree of com-

mitment and no social participation at the beginning and only be evaluated neutrally at a different point later in time (dynamisation of the model and the information-economic properties). The cooperation agreement is accordingly straightforward (e.g. letter of intent), and the cooperation behaviour is rather non-binding (see Figure 1). Conversely, a very high scoring value can lead to considerations in the area of "acquisition". In this case, the cooperation agreements would be much more complex and would have to be described in detail. The cooperation behaviour of the partners would also have to be highly aligned. Added to this are the sometimes extensive conditions and agreements for the investment and shareholders' agreement (such as purchase price, rights and drag-along or tag-along, call or vesting rules; [102, 103]). The respective exit ideas must also be harmonised with regard to venture behaviour (see Figure 1). And if there is no agreement or consensus in these areas, then even a high value from the scoring model will not help.

In addition, the user can influence the basic setting of the scoring model concerning their individual needs and requirements in the following ways [16]: Firstly, the relative weights can be adjusted based on the user's preferences and needs. Some corporates may emphasise Digital-Management/ Individual-Fit more than others. Secondly, minimum values can be defined for individual attributes or clusters that must be achieved in order to interpret the overall score. Thirdly, the result ranges can be shifted within the resulting overall scale in order to do justice to the user's risk propensity. For example, a result range for a "minority investment" could start at 3 and not at > 5.5 points.

4. Discussion, Limitations and Outlook

At the centre of a Digital Innopreneurship – as a connecting element of the individual perspectives into an overall perspective – is undoubtedly the cooperation/collaboration between a corporation and a startup and thus a Digital Interpreneurship. However, a one-dimensional view or even equation of both terms or the associated aspects is not intended by the new approach of Digital Innopreneurship. It is also hazardous for the joint success of both players (Digital Innopreneurship - Part 1). In this context, the development of a framework for evaluating and selecting suitable forms of collaboration (within the framework of "Digital Interpreneurship") between both parties based on predefined decision attributes is the starting point. Against this background, we have made an initial proposal for such a framework in this article. We therefore respond to the call by De Groote/Backmann [104], Giglio et al. [18] and Kollmann [16] to enhance the understanding of types of collaboration by discussing and structuring the decision attributes that influence collaborative forms and analysing and evaluating them in terms of their impact using information economics attributes. The work thus extends the scientific understanding of such attributes by applying a proven theoretical foundation to existing decision attributes. Finally, with the help of the scoring model based on Kollmann [16], we address the demand of Demir/Lukes [27], who would like to see a practice-oriented decision-making framework for the actors involved.

With regard to a specific "Digital Interpreneurship" and a superordinate "Digital Innopreneurship", not only were the attributes and the associated clusters formed but these were also placed in the overall context of a two-sided view from the perspective of the corporation and the startup. It was also emphasised that the attributes are influenced by the basic predisposition to the digital mindset, digital skills and digital execution on both sides of the actors involved. This basic disposition can significantly influence both the assessment and the result of a cooperation/collaboration. In addition, our framework introduces a kind of "buffer" as a moderator effect with the influence of the information-economic property on the respective attribute and, thus, cumulatively on the resulting clusters. This rewards the research of the search properties and prevents overly uncertain judgements in the area of trust properties. Another aspect was that the respective recommendations for the forms of cooperation presented must be placed in the context of the accompanying cooperation, investment and shareholdings agreement. These can also significantly influence the cooperation decision, implementation and execution (cooperation and venture behaviour).

Overall, our framework offers both a detailed and an overarching perspective on the phenomenon of "Corporate-Startup-Collaboration", especially in the area of digital innovation capability. It is intended to motivate both further theoretical consideration and practice-orientated applicability for "Digital Innopreneurship".

Limitations

In order to enable the theoretical robustness of the explanations, the limitations in particular must be addressed in further studies. This includes, for example, empirical evidence that the attributes presented play a relevant and significant role in the valuation from the perspective of both corporates and startups. Currently, the literature mainly deals with the corporates' perspective, but the startups also have a decision to make in the end and do not have to accept every cooperation offer. This actual proof of the reciprocal importance of the attributes has yet to be provided but cannot be refuted at the moment. At the same time, it must be noted that the importance of the attributes is partly derived from the general consideration of cooperations/collaborations between companies. It is not always differentiated whether it is a cooperation between two large established companies or a cooperation between a large (corporate) and a small company (startup). The transferability must be checked accordingly, which both this paper and many others have not yet fully achieved. Furthermore, it must be noted that the assignment of the attributes to the respective clusters was subjective and cannot prove any empirical background. Proof of this is, therefore, still pending.

Further methodological limitations arise from the inherent limitations of the chosen theoretical foundation and decision modelling framework. Information economics might provide a reasonable consensus on the primary feature type of each attribute; however, when considering the secondary dominant feature type, interpretations vary based on the subjective selection processes [16]. Similarly, the use of a scoring model also comes with inherent limitations. Such limitations relate to validity, which depends on the user's qualifications and database, particularly in the area of realisation level, which is heavily dependent on information. By specifying the areas and their attributes, the decision model limits the scope of the data and its representation of reality. In this respect, the model only offers a highly simplified view and could provide a false sense of security if the user relies too much on such models. Another limitation is the currently still given values for different weights (premium, neutrality and discount) for the clusters of attributes due to the information-economic properties. On the one hand, a causal-analytical model with the information-economic characteristics as moderator or mediator variables might be more suitable here in order to obtain a valid result on the influence. On the other hand, the weights in the scoring model can be critically discussed and adjusted.

In addition, the decision model is limited to a practically applicable value range of 0.65 to 13.5. The marginal values before and after this range are either not achievable in mathematical logic or can only be used to a limited extent, particularly in the lower range (KO-Range). The categorisation of the result areas in the scoring model for the individual forms of cooperation was also subjective, albeit equally weighted. In addition, a result (particularly in the case of a narrow point value on the edge between two possible forms of cooperation) must always result in an additional evaluation and interpretation or discussion. Due to these problems, scoring models should not simply be "blindly" transformed in a strictly numerical sense. Their advantage is to be seen in the quasi "enforced" systematic approach and the associated heuristic potential.

Outlook

The presented "Framework for the Evaluation of a Corporate-Startup-Collaboration" with regard to a joint digital innovation capability opens up much potential for future research with regard to a theoretical, empirical and practice-oriented perspective. The significance of decision-making characteristics and their information-economic aspects for various forms of collaboration between corporations and startups should be further examined theoretically. The aim is to determine whether and to what extent the allocation of information-economic feature types to different decision features works and what effects result from the relevant modelling or mediation effects. From an empirical perspective, measurement models for the decision framework can now be created that include the importance of variables, scales and causal relationships for different forms of collaboration between corporates and startups. Furthermore, either a static or dynamic approach to data collection ought to be considered for analysing the measurement model in relation to the collaboration decision over time. In this regard, it is certainly also helpful to consider feedback from the field in the form of qualitative and quantitative surveys regarding the applicability of decision models in the area of Corporate-Startup-Collaboration. Findings in this area (Digital Interpreneurship) should also be placed in the overall context of "Digital Entrepreneurship" in order to consider the overarching connection between the respective perspectives of "Digital Intrapreneurship" (corporate) and "Digital Entrepreneurship" (startup), as the individual perspectives may be necessary, but are hardly sufficient to describe a common digital innovation capability. This will certainly depend on the respective preconditions on both sides, the respective network effects, and the effects of individual further development on the corporate and startup sides, which are also isolated from this. This is, therefore, a highly complex and dynamic field, and the large number of failed collaborations in practice shows that it should be easier to grasp. Whether the call for more data, analyses and decisions with the help of artificial intelligence could be a solution remains to be seen. However, human leadership is already increasingly being replaced by "Artificial Leadership" [105], in which the machine makes the selection decision in the form of artificial intelligence. Perhaps it will also assign the right cooperation partners in the future.

Conflicts of Interest

The authors declare no conflicts of interest.

Appendix

First Part: Digital Innopreneurship 1: The Basics of Collaboration between Corporates and Startups in the Digital Economy, Science Journal of Business and Management 2025, Vol. 13, No. 2, pp. 118-134.

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