1. Introduction

The digital age, enveloped by digital technology, creates opportunities for start-ups to catch up [1]. Meanwhile, it increases the uncertainty in the operating environment [2]. Digital technology enables start-ups to acquire and integrate information resources at a lower cost to precisely carry out innovation activities [3]. Hence, it provides excellent conditions for start-ups to seize market opportunities to achieve disruptive innovation [4]. Furthermore, digital technology has also blurred the boundaries between competing entities. Therefore, the external business environment faced by enterprises has become increasingly complex and unpredictable [5].

Inevitably, it is difficult to use traditional innovation theories to successfully obtain insights into start-ups’ achievement of disruptive innovation in a digital context. A comprehensive application of the theory is rooted in dynamic complex environments and focuses on integrating, constructing and reconstructing internal and external resources to gain a competitive advantage, which can help companies to effectively identify and accurately judge innovation opportunities, thereby continuously improving the core competitiveness of enterprises [6]. Therefore, when facing an increasingly complex and volatile business environment, it is of great significance to investigate the development of the disruptive innovation of start-ups in the digital age by enhancing their dynamic capabilities. According to the previous literature, many scholars focus on issues such as dynamic capability theory and disruptive innovation paths and have achieved relatively fruitful results. However, a research gap remains in the deep understanding of start-ups’ disruptive innovation path in the digital context based on the perspective of dynamic capabilities.
The existing research mainly focuses on an analysis of the conceptual connotation [7], influencing factors [8], and diffusion paths of disruptive innovation [9]. Meanwhile, the research scope of disruptive innovation has expanded from focusing on technological innovation in products or services to product service, as well as business model innovation [10–12]. The essence of disruptive innovation is that latecomers subvert the existing value system by creating a new value system, and replacing the incumbent companies and their products [13]. Furthermore, disruptive innovation is not a concrete outcome, but an evolving process [14]. The disruptive innovation of start-ups mainly lies in upgrading the value network and the degree of business model innovation [15,16]. Meanwhile, the promotion of innovative activities in a digital context effectively poses a huge challenge for start-ups [17].

Furthermore, dynamic capability theory provides a theoretical basis for explaining disruptive innovation in the digital context. Investigating the driving effect of digital technology in the digital economy era from the perspective of dynamic capabilities can also further develop the theory of dynamic capabilities [18]. Different dimensions of dynamic capabilities drive enterprises to continuously build and update their resources and assets to quickly respond to variations in the external market environment [6]. This will provide opportunities for enterprises to integrate digital technology in the digital economy, empower innovative behaviours, and improve innovation efficiency [19,20]. Therefore, enterprises need to deeply investigate the enabling effect that digital technology has on dynamic capabilities.

Many valuable research results have been obtained based on the above research perspectives, plenty of valuable research results. However, there has been no research studying the specific path by which start-ups can achieve disruptive innovations in the context of digitalization. Meanwhile, the existing research only focuses on the definition of dynamic capabilities and dynamic capabilities’ impact on organizational innovation, but lacks an analysis of the evolution process of the disruptive innovation of start-ups from the perspective of dynamic capabilities’ transitions. Furthermore, digital technology is an important driving force for start-ups to achieve catch-up, and digital technology greatly amplifies market volatility. However, only with the support of dynamic capabilities can start-ups enable product innovation through digital technologies. Hence, based on a discussion of the existing literature, the relationship between digital technology and dynamic capabilities is not fully understood.

In view of this, this paper aims to investigate the realization path of the disruptive innovation of start-ups under the influence of different dynamic capabilities and digital situations. According to the evolutionary process of the disruptive innovation of start-ups, the double case study of two start-up sample enterprises was performed using the grounded theory method. Therefore, the findings of this study provide scientific guidance for related enterprises that, in the context of catching up, accurately and efficiently realize disruptive innovation using dynamic capabilities and digital technology.

The structure of this paper is as follows. The literature review presents the previous research, focusing on three aspects: digital technology, dynamic capabilities, and disruptive innovation. The research design introduces the specific content of the research method and case selection. The discovery section reveals the detailed process of implementing disruptive innovation at different stages in the case companies. The discussion proposes a model path that start-ups could use to achieve disruptive innovation driven by digital technologies and dynamic capabilities. The conclusion summarizes the contributions and deficiencies of this paper.

2. Literature Review
2.1. Digital Technology

A combination of information, computing and communication, digital technology plays an important role in promoting innovation, improving innovation efficiency, and broadening the boundaries of enterprise innovation [21]. Digital technologies have con-
tributed to the improvement and recombination of companies’ business processes, thereby optimizing their innovation activities [22]. Its scalability, accessibility, and versatility favours companies leapfrogging technology trajectories and increases their innovation efficiency [23]. The continuous penetration of digital technology allows for companies to effectively expand the boundaries of innovation. It also allows for customers, suppliers and even competitors to participate in organizational innovation, and then enables value co-creation through digital platforms [24].

It is well known that digital technologies provide new momentum and opportunities to start-ups [25]. A precise matching of supply and demand can be achieved by accelerating the information exchange between entrepreneurs and demanders, thereby improving the innovation efficiency of products and services [26]. Digital technologies can drive enterprises to build new business models by improving the efficiency of value creation and acquisition [19]. Digital technology can enhance the dynamic capabilities of enterprises with the help of entrepreneurial incubation platforms, and then perceive and create opportunities to integrate digital resources and quickly respond to market demands [27]. This can drive companies to achieve disruptive innovation by improving the adaptability, absorption and innovation capabilities of start-ups [28].

According to the analysis above, the existing literature on digital technology mainly focuses on an interpretation of its characteristics and importance, its connotations and the enhancement of value creation. This provides a reference for this paper to conduct and in-depth exploration of how to rely on digital technology to enhance enterprises’ dynamic capabilities, and then efficiently carry out disruptive innovation.

2.2. Dynamic Capability

To explain how enterprises can quickly respond to market and technological changes to gain a competitive advantage, Teece and Pisano proposed the concept of dynamic capabilities, and defined this as an enterprise’s ability to integrate, build and reallocate internal and external resources [29]. Building on dynamic capabilities is beneficial for enterprises to discover and capture new market opportunities and internalize them, increasing their knowledge and obtaining new technologies to form new competitive advantages [30]. Eisenhardt and Martin [31] suggested that dynamic capabilities include specific strategic processes, such as product development and strategic decision-making. Borch and Madsen [32] divided the dynamic capabilities of enterprises into four distinct dimensions: internal and external reconfiguration capabilities, resource reconstruction capabilities, self-learning capabilities and collaborative innovation capabilities. Zhou et al. [33] proposed that dynamic capabilities could be defined by three dimensions: perception capabilities, integration capabilities and resource allocation. With the gradual deepening of the research on dynamic capabilities, further analysis of the connotation of dynamic capabilities in specific situations to provide a more detailed interpretation is urgent.

Furthermore, relying on digital technology can change the decision-making method and decision-making basis of dynamic capabilities, thereby optimizing their mechanism [34]. The openness, relevance and editability of digital technology contributed to companies accurately identifying innovation opportunities by scanning and perceiving the external environment [35]. Its scalability and relevance enables businesses to quickly identify the resources that need to be pooled for value creation, and identify and acquire redundant resources [36]. In addition, the self-iterative nature of digital technology enables continuous innovation, adding new functionalities to a product or service after design and production. This enables disparate needs, experiences, and feedback to converge across time and space, thereby enabling businesses to meet increasingly diverse and personalized user needs [37].

Moreover, the rapid development of digital technology enables enterprises to innovate business models by trial and error at a lower cost, thereby continuously improving their core competitiveness [38]. Therefore, as a high-order enterprise capability, dynamic capabilities play a crucial role in the innovation process in the digital context [39].
In summary, the existing literature mainly focuses on the dimension division and characteristics of dynamic capabilities, and seldom looks at the structural dimensions that restrict the improvements in enterprise dynamic capabilities and their dynamic mechanism in the innovation process in depth. Therefore, this paper will combine the characteristics of the digital age to conduct and in-depth study of the concrete requirements that enterprises carry out disruptive innovation on dynamic capabilities.

2.3. Disruptive Innovation

Since Christensen [40] put forward the concept that disruptive innovation is the process by which products and services gradually infiltrate from low-end markets or new markets to mainstream markets, many scholars have conducted in-depth research on the realization path of the disruptive innovation of start-ups from different perspectives. For instance, Denning [41] proposed that latecomers should introduce products or services that differ from existing value propositions to attract emerging groups to seize new markets and quickly occupy mainstream markets to achieve disruptive innovation. Savino [42] proposed that demand reconfiguration could lead to disruptive innovation in enterprises. Kumaraswamy et al. [15] put forward the idea that digital innovation can enhance the value of products and services. Meanwhile, disruptive innovation is enabled by changing the value network of an enterprise. Oghazi et al. [43] proposed that the disruptive innovation of start-ups can be achieved through technological innovation and the reconstruction of the value network. In fact, disruptive innovation is a process, rather than a single event or concrete result [44]. According to this, much research has been conducted on the evolution of disruptive innovation and has also produced relatively rich research results. For example, Morizet et al. [45] believe that latecomers’ implementation of disruptive innovation needs to go through three stages: the learning stage, the use stage and the deprivation stage. O’Reilly et al. [46] divided disruptive innovation into three stages: idea generation, incubation, and scaling.

In sum, the existing literature mainly focuses on the identification of disruptive technologies, analysis of influencing factors, and the evolution paths of latecomer companies. However, the process of realizing the disruptive innovation of start-ups under the influence of dynamic capabilities in the digital context has been less discussed.

In view of this, this paper aims to reveal the entire process of the disruptive innovation of start-ups from the perspective of digital technology, enabling an improvement in dynamic capabilities using the dual case study method. In turn, this provides a scientific theoretical basis for late-stage start-ups to use digital technology to continuously improve their dynamic capabilities. Furthermore, a scientific theoretical basis has been proposed to accurately and efficiently carry out disruptive innovation.

3. Research Design

3.1. Research Methods

The case study method was chosen in this paper based on the following main considerations. First, this paper explores how the dynamic capabilities of startups in the digital context affect the disruptive innovation process, which belongs to the “How” and “Why”. Obviously, the application of the case study method can fully and objectively interpret the aforementioned issues to obtain a large amount of empirical material [47].

In addition, the case study method investigates the inherent laws and logical relationships contained in the process of enterprise innovation by utilizing the dissection of causes through detailed evidence presentation [47]. Then, this will reveal the dynamic mechanism of the whole process of disruptive innovation implemented by start-ups, and efficiently build an innovation path.

Moreover, compared with the single-case study method, the causal analysis evidence chain constructed by the double-case method contributed to accurately depicting the evolution of the disruptive innovation of start-ups in the digital context using a horizontal
According to the double-case study method, this paper mainly focuses on the investigation of start-ups’ path to achieve disruptive innovation from the perspective of dynamic capability improvements using digital technology. These findings provide a useful reference for late-stage start-ups to continuously improve their dynamic capabilities using digital technology, and accurately and efficiently achieve disruptive innovations.

3.2. Case Selection

As mentioned above, the double-case study method reveals the dynamic mechanism of the disruptive innovation of start-ups in the digital context based on the horizontal comparison of two sample companies. Therefore, the reliability and validity of the research are higher than that of a single case study.

The sample selection of the case study mainly considers the matching between the case object and the research questions. Specifically, the selection criteria for case companies in this paper are as follows. Initially, the case start-ups applied a high number of digital technologies, which met the requirements of the specific research context. In addition, the case start-ups carried out disruptive innovation activities and changed the market competition pattern in specific industry fields through improvements in dynamic capabilities. Moreover, the concrete path of disruptive innovation can be extracted from the development of case start-ups.

According to the aforementioned criteria, this paper selects the disruptive innovation case in the short video field of ByteDance and Kuaishou Technology (Kuaishou) as the study objects. The main reasons for this are as follows:

(1) The more expressive and immersive short video content delivers a new consumption model, which subverts the fragmented scene expression and socialization methods of the “busy era”, and thus has become an important outlet in the media industry. Digital technologies such as video mobilization, information video, and video socialization have accelerated the explosion of short videos. Inevitably, ByteDance and Kuaishou are following this trend to achieve disruptive innovation.

(2) Meanwhile, as of June 2021, the number of global monthly active users of ByteDance and Kuaishou, the two leading companies in the short-video field of the internet industry, exceeded 1.9 billion and 1 billion, respectively, which is far ahead of other companies in the same industry.

(3) Furthermore, ByteDance and Kuaishou both invested a lot of money in digital technology research and development, which broke through the shackles that restricted improvements in companies’ dynamic capabilities, thereby forming a “two-heroes competition” pattern in the short-video field.

(4) Moreover, the development history of ByteDance and Kuaishou is completely in line with the evolution of disruptive innovation. More importantly, dynamic capabilities have played a crucial role in the successful disruptive innovation of both ByteDance and Kuaishou.

3.3. Data Collection

The main original resources and materials used in this paper are as follows:

(1) Internal documents of the enterprise: research reports, technical manuals, statistical data and corporate annual reports of ByteDance and Kuaishou.

(2) Public literature: published papers on ByteDance and Kuaishou, official website information, public speeches by executives, news reports, interview dialogues and patent information from authoritative media.

(3) Observation of the platforms of ByteDance and Kuaishou and their anchors, as well as the personal experience notes of the members of the research group on Kuaishou (Kuaishou Technology, Beijing, China), Douyin (a short video app launched by ByteDance) (ByteDance, Beijing, China) and other products.
To avoid the common method bias, this paper uses triangulation to cross-check and complement the collected data to improve the reliability and validity of “theoretical sampling” [47].

3.4. Data Analysis

Based on the coding technique proposed by Corbin and Strauss [49], the aforementioned data need to be coded in three categories: open coding, axial coding and selective coding.

Open coding aims to comprehensively sort out the collected data and to simplify and abstract common phenomena. This process includes three steps: labelling, conceptualization and categorization. That is, through conceptualization operations such as comparative analysis, summarization and induction, the whole process of categorizing entries is condensed.

Axial coding aims to establish the relationship between the categorical expressions refined in the open-coding stage, and further deepen the mining and interpretation of the material.

Selective coding aims to capture the core category by describing the phenomenon and sorting out the relationship between the main categories. Through a series of iterations and encodings, this study found a logical relationship between the initial encodings. The initial category is divided into seven main categories. These initial encodings and main categories represent the case coding result presented in Figure 1. To ensure the reliability of the coding, it is necessary to continue to revise the existing data until no new tags appear in the data analysis. At this point, the theoretical saturation is considered to be reached.

![Figure 1. The case coding result.](image)

4. Findings

The coding results of ByteDance and Kuaishou show that digital technology can enhance the dynamic capabilities of start-ups by increasing the digital environment awareness, digital resource integration, digital innovation, and market development potential of enterprises. In turn, an asset-light competitive advantage is formed, driven by digital technology, which allows for enterprises to be subverted after accurate and efficient completion.

However, the coding results given above struggle to clearly explain the internal logical relationship and dynamic mechanism of dynamic capabilities and the disruptive innovation path of start-ups in the digital context, which may affect the objectivity of path identification. Therefore, it is also necessary to follow the “motive–action–result” paradigm [50] and combine the motives and dynamic capabilities of ByteDance and Kuaishou to investigate the disruptive innovation paths that are affected by dynamic capabilities in the digital context.

4.1. The Sprout Stage of Disruptive Innovation

With the carrier provided by digital technology, a short video has subverted the traditional means of information dissemination. When faced with the predicament of survival, enterprises need to build a model driven by digital technology and dynamic capabilities, to promote enterprises entering the sprout stage of disruptive innovation. This paper sorts out the motivations, actions, action basis and results of the two sample companies in the sprout stage of disruptive innovation, as shown in Table 1.
Table 1. The sprout stage of disruptive innovation by ByteDance and Kuaishou.

<table>
<thead>
<tr>
<th>Code Type</th>
<th>Core Category</th>
<th>Main Category</th>
<th>Initial Encodings</th>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation</td>
<td>Stress of living</td>
<td>Technology-driven</td>
<td>The entrepreneurial team lacks professional technical support.</td>
<td>ByteDance’s Douyin team did not have relevant professional skills at the beginning of its establishment.</td>
</tr>
<tr>
<td></td>
<td>Stress of living</td>
<td>Difficulty surviving</td>
<td>Difficulty surviving in the early stage of business.</td>
<td>The Douyin team was not favoured by the head office in the early days, and it was very difficult for the team to survive. In 2016, the short-video industry entered a golden period of development, and short-video companies represented by Kuaishou became the “big wall” of the industry.</td>
</tr>
<tr>
<td></td>
<td>Stress of living</td>
<td>Market-driven</td>
<td>The short video market is developing rapidly.</td>
<td></td>
</tr>
<tr>
<td>Action</td>
<td>Technology identification</td>
<td>Enterprises carry out technology identification based on the needs of young people.</td>
<td>Relying on young people, the team carried out technical identification around product innovation from the perspective of subversive innovation.</td>
<td></td>
</tr>
<tr>
<td>Action</td>
<td>Technology utilization</td>
<td>Content distribution methods are constantly updated.</td>
<td>The Douyin team introduced Toutiao’s advanced recommendation algorithm model to ensure the efficiency of content distribution.</td>
<td></td>
</tr>
<tr>
<td>Action</td>
<td>Technology iteration</td>
<td>Content distribution methods are constantly updated.</td>
<td>With the continuous changes in digital technology, Douyin promotes the continuous upgrading of content distribution methods.</td>
<td></td>
</tr>
<tr>
<td>Action basis</td>
<td>Product development</td>
<td>Develop disruptive products.</td>
<td>To solve the “pain points” of users, Douyin’s 15-second short video “turned out” to realize subversive innovation on the basis of meeting user needs.</td>
<td></td>
</tr>
<tr>
<td>Action basis</td>
<td>Product iteration</td>
<td>Continuously update products.</td>
<td>Following the release of the Douyin app, ByteDance has updated a total of 25 new versions of Douyin within a year.</td>
<td></td>
</tr>
<tr>
<td>Action basis</td>
<td>Low-order dynamic capabilities enabled by digital technologies</td>
<td>Digital technology helps enterprises to deploy new businesses.</td>
<td>ByteDance utilizes digital resources, with low trial and error costs, keeps trying to innovate, and launches short-video apps.</td>
<td></td>
</tr>
<tr>
<td>Action basis</td>
<td>Low-order dynamic capabilities enabled by digital technologies</td>
<td>Digital technologies help companies test the needs of the video market.</td>
<td>Kuaishou takes the lead in realizing the online test video-search function by using rich short-video resources.</td>
<td></td>
</tr>
<tr>
<td>Action basis</td>
<td>Low-order dynamic capabilities enabled by digital technologies</td>
<td>Digital technologies help businesses sense user needs.</td>
<td>ByteDance’s precise recommendation algorithm enables short-video delivery to precisely reach “thousands of people and thousands of faces” for different user needs.</td>
<td></td>
</tr>
<tr>
<td>Action basis</td>
<td>Digital innovation capability</td>
<td>Digital technology facilitates rapid product iteration.</td>
<td>Behind many of ByteDance’s disruptive products is a rapidly iterative organizational structure supported by digital technologies such as algorithms and artificial intelligence.</td>
<td></td>
</tr>
<tr>
<td>Action basis</td>
<td>Digital innovation capability</td>
<td>Digital technology changes the way information is distributed.</td>
<td>ByteDance upgraded the traditional editing and distribution model to a personalized distribution model based on big data and machine learning.</td>
<td></td>
</tr>
<tr>
<td>Action basis</td>
<td>Digital innovation capability</td>
<td>Digital technologies facilitate access to knowledge.</td>
<td>Kuaishou’s big data analysis group learns from the interaction methods of other short-video software.</td>
<td></td>
</tr>
<tr>
<td>Result</td>
<td>Sprout stage</td>
<td>User experience improvement</td>
<td>Product updates bring continuous improvements to the user experience.</td>
<td>From September 2016 to April 2017, Douyin focused on the continuous improvement in product functions, thereby continuously improving the user experience of the Douyin app.</td>
</tr>
<tr>
<td>Result</td>
<td>Sprout stage</td>
<td>Market segment entry</td>
<td>Douyin successfully entered the short-video segment.</td>
<td>Douyin’s new product interface subverts the original short-video application function and successfully entered the short-video market segment.</td>
</tr>
</tbody>
</table>

Through case analysis, it was found that, in the sprout stage of disruptive innovation, both sample companies are driven by the pressure of survival. For instance, ByteDance’s Douyin team had less than 10 members in its initial period and lacked the relevant professional skills. Hence, it is difficult for them to enter the short-video market. Another example is that, at the early stage of the transformation of short videos, Kuaishou was only a mobile application community that made GIF pictures and lacked support from a strong digital team. Therefore, after its transformation into a short-video community in 2012, the number of daily active users fell sharply, and the company’s survival pressure was enormous. This indicated that both ByteDance and Kuaishou faced the dilemma of an urgent need to build low-order dynamic capabilities to cope with the severe survival pressure at this stage.
Facing survival pressure at the nascent stage of disruptive innovation, both case companies used digital technologies to innovate their technology and products. Initially, this was reflected in the order of technological innovation. For instance, ByteDance used the digital environment’s perception ability to identify mature short-video technologies and subverted the short-video industry’s mode of operation with the help of digital technologies such as vertical screens and full-screen playback. In addition, by using digital innovation capabilities, Kuaishou optimized the distribution of short videos. At the same time, with the help of advanced recommendation algorithms, the efficient distribution of videos was realized. Therefore, the works of ordinary users can reach larger audiences, meaning that more content will be released. This paved the way for the explosive growth in short videos.

Furthermore, this is reflected by the order of product innovation. For example, ByteDance uses digital technology to continuously develop new products and tap new functions to further fill the gap in demand. The birth of the 15-second short subverted user needs. In addition, Kuaishou used marginal utility theory for product traffic regulation and the forward-looking use of digital technologies, such as big data and cloud computing, which improves the monetization efficiency of short-video traffic pools.

In sum, in the sprout stage of disruptive innovation, ByteDance and Kuaishou rely on digital environment perception capabilities to perceive user needs and gain insight into market opportunities, with low trial and error costs. By relying on digital innovation capabilities, the company achieved steady growth in the number of users in the short-video industry and the continuous optimization of product functions, thereby successfully improving user experience. At this stage, the dynamic capabilities of ByteDance and Kuaishou were mainly based on digital environment perception capabilities and digital innovation capabilities, which are low-order dynamic capabilities enabled by digital technology.

Moreover, based on the paradigm model of “causation–action–result” [51], this paper found that the basis of action was linked to the motivation of the sprout stage of disruptive innovation when analyzing the low-order dynamic capabilities enabled by digital technology. The results of the sprout innovation have a continuing effect on this action basis. In turn, enterprises can use digital environment perception capabilities and digital innovation capabilities to innovate technology and products, thereby improving user experience and successfully breaking into the short-video market. After the sprout stage, the enterprise’s external environment rapidly changes, and the internal resource base is updated, which provides a leap opportunity and foundation for the dynamic capabilities of ByteDance and Kuaishou. The disruptive innovation path model at the sprout stage is shown in Figure 2.

![Figure 2. The disruptive innovation path model at the sprout stage.](image-url)
4.2. The Growth Stage of Disruptive Innovation

The results of the sprout of disruptive innovation drives the low-order dynamic capability to jump to the medium-order dynamic capability; furthermore, the medium-order dynamic capability pushes the enterprise to enter the stage of disruptive innovation growth.

This paper sorts out the motivations, actions, action basis and results of the two sample companies in the growth stage of disruptive innovation, as shown in Table 2.

<table>
<thead>
<tr>
<th>Code Type</th>
<th>Core Category</th>
<th>Main Category</th>
<th>Initial Encodings</th>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation</td>
<td>Market pressure</td>
<td>Product driven</td>
<td>Douyin products are gaining popularity in the short video market.</td>
<td>ByteDance boosted Douyin product exposure by sponsoring entertainment shows.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Market competition</td>
<td>How to expand the market becomes the main issue at this stage.</td>
<td>After successfully developing the product, how to attract more customers and expand the market became the issue of most concern for Douyin team members.</td>
</tr>
<tr>
<td>Action</td>
<td>Market exploration</td>
<td>Market exploration</td>
<td>Continue to explore market potential.</td>
<td>Douyin applied disruptive technology to tap market potential.</td>
</tr>
<tr>
<td></td>
<td>Market utilization</td>
<td>Market utilization</td>
<td>Utilize the head office’s market resources to meet customer needs.</td>
<td>Douyin quickly responded to users’ needs by using ByteDance’s short-video market resources.</td>
</tr>
<tr>
<td></td>
<td>Market Development</td>
<td>Market Development</td>
<td>Expand overseas markets.</td>
<td>In September 2017, Douyin began to enter overseas markets under the name of TikTok.</td>
</tr>
<tr>
<td></td>
<td>Product marketing</td>
<td>Product marketing</td>
<td>Expand market share through product promotion.</td>
<td>ByteDance gained a larger market share through advertising sponsorship and celebrity promotion.</td>
</tr>
<tr>
<td></td>
<td>Advertising operation</td>
<td>Grab marketing</td>
<td>Realize preemptive marketing through advertising and other methods.</td>
<td>ByteDance realized word-of-mouth marketing through advertising and interpersonal and group communication.</td>
</tr>
<tr>
<td>Action basis</td>
<td>Digital environment</td>
<td>Digital environment</td>
<td>Digital technology analyzes data in real-time.</td>
<td>The soaring data of online celebrity live broadcasts showed the huge market potential of short videos in the new format of e-commerce diversion.</td>
</tr>
<tr>
<td></td>
<td>awareness</td>
<td></td>
<td>Digital technology senses globalization trends and actively innovates.</td>
<td>By collecting and analyzing overseas short video product data terms, ByteDance developed globalized and localized product content.</td>
</tr>
<tr>
<td></td>
<td>Digital innovation</td>
<td></td>
<td>Digital technology facilitates organizational innovation.</td>
<td>ByteDance’s organizational structure is a “big, middle, and small front desk” structure, driven by digital resources.</td>
</tr>
<tr>
<td></td>
<td>ability</td>
<td></td>
<td>Digital technology helps open overseas markets.</td>
<td>TikTok, the overseas version of Douyin, captured more overseas markets with its powerful recommendation algorithm technology.</td>
</tr>
<tr>
<td></td>
<td>Market development</td>
<td></td>
<td>Digital technology helps market operations.</td>
<td>Kuaishou hired a number of well-known advertising companies to use advanced recommendation algorithms to help it efficiently advertise on the most popular social platforms.</td>
</tr>
<tr>
<td></td>
<td>potential</td>
<td></td>
<td>Digital technologies broaden verticals.</td>
<td>Kuaishou continued to explore the growth potential of vertical fields, such as education, games, and e-commerce.</td>
</tr>
<tr>
<td></td>
<td>Digital resources</td>
<td></td>
<td>Digital sources keep Douyin growing.</td>
<td>Douyin’s perfect recommendation system comes from ByteDance’s strong Internet background and digital resources.</td>
</tr>
<tr>
<td>Result</td>
<td>Growing phase</td>
<td>User retention rate</td>
<td>Douyin users surge.</td>
<td>The number of Douyin users significantly increased, and the user retention rate significantly increased.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>improvement</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Market position</td>
<td>Douyin gradually invades the mainstream market.</td>
<td></td>
</tr>
</tbody>
</table>

From the table, the two case companies are shown to be driven by the pressure of market competition in the growth stage of disruptive innovation. For example, the popularity of ByteDance was low and the number of users grew slowly when it first entered the short-video market. There was an urgent need to break out of the short-video market, which was dominated by Kuaishou. Meanwhile, in 2016, social incidents frequently occurred in the video community of Kuaishou. At the time when the short-video market
was booming, there was an urgent need to upgrade the community image to consolidate the market position. Obviously, with the increasing pressure of market competition, both ByteDance and Kuaishou needed to achieve a jump in dynamic capabilities at this stage. Low-order dynamic capabilities required a jump to medium-order dynamic capabilities in order to cope with the rapid growth in the short-video market pressure.

Facing pressures in the growth stage of disruptive innovation, both case companies leveraged digital technologies to innovate their business models. This was initially reflected in the market development. ByteDance understood the urgent demand for digital content consumption in overseas markets through its digital environment perception capabilities. As a result, Tik Tok, a short video product for overseas markets, was launched in a targeted manner, which greatly expanded its overseas markets. Meanwhile, while the popularity of domestic e-sports continued to rise, Kuaishou shifted the focus of the short-video platform to the game live-broadcast market. By building a vertical market space, it quietly entered the fast lane of top players.

In addition, innovative business models are also reflected in their advertising operations. ByteDance used fan marketing methods to invite celebrities to join Douyin, which won a large number of brand exposure opportunities in a short time and attracted a considerable number of celebrity fans. It also focused on offline promotion activities to promote a sense of identity, community integration and belonging among Douyin users, which helped it to achieve a sharp increase in the number of short-video users. Furthermore, Kuaishou placed a large number of outdoor print advertisements in airports and subways in major cities as a marketing grabbing strategy, using digital technology to open up new businesses. Kuaishou also placed a large number of TVC advertisements in major theatres across the country, which attracted more attention, expanded the brand’s popularity, and greatly improved Kuaishou’s public image, thereby achieving a geometric increase in the number of users.

Based on the above discussion, ByteDance and Kuaishou continued to develop new markets by relying on their digital environment perception capabilities during the disruptive innovation and growth stages, which released the huge market potential of short videos in new e-commerce diversion formats. Their digital innovation capabilities helped to optimize the companies’ organizational structure. Companies open up new markets and expand the vertical market space, which can be attributed to the market development potential. With the help of digital resource integration capabilities, companies keep up with the rapid growth trend of the short-video industry, successfully enhancing their core competition power, greatly improving the user retention rate, and ultimately improving their market position. At this stage, the dynamic capabilities of ByteDance and Kuaishou are mainly based on the digital environment perception capabilities and market development potential, supplemented by digital innovation capabilities and digital resource integration capabilities. They belong to the medium-order dynamic capabilities enabled by digital technology.

Based on the results of the sprout stage and the paradigm model of “motive–action–result”, this paper analyzed the medium-order dynamic capabilities enabled by digital technology as the action basis for the growth stage of disruptive innovation (the connection point with the sprout stage). This action was found to be fundamentally linked to the motivation of the disruptive innovation growth stage, and the results of innovation growth have a continuous promotion effect on this. Then, enterprises can use the digital environment perception ability and market development potential to continuously develop new markets and products. The digital innovation ability can also be used to optimize the organizational structure and the digital resource integration ability can be used to enhance the core competitiveness of the enterprise. Substantial improvements were achieved in the user retention rate and market position. After the growth stage, the market influence of ByteDance and Kuaishou increased. The company also sufficiently accumulates resources such as technology, capital and human resources, which provide opportunities and resource guarantees for dynamic capabilities, as shown in Figure 3.
4.3. The Expansion Stage of Disruptive Innovation

The disruptive innovation growth drove the transition from medium-order dynamic capabilities to high-order dynamic capabilities. In a further step, companies were pushed into disruptive innovation expansion by high-order dynamic capabilities.

This paper sorted the motivations, actions, action basis and results of the two sample companies in the expansion stage of disruptive innovation, as shown in Table 3.

The table shows that, in both cases, companies were driven by pressures from value co-creation in the stage of disruptive innovation expansion. Facing the situation of slowing user growth and peak traffic dividends, ByteDance is gradually shifting the focus of innovation from user expansion to the construction of content ecology. Kuaishou screened and optimized inventory programs with the help of relevant policies, which not only seized the fragmented time of a large number of users but also has many economic benefits. Meanwhile, its short-video content ecology has entered the fast lane, forming a virtuous circle. This indicates that ByteDance and Kuaishou need to achieve another jump in dynamic capabilities based on this stage, from medium-order dynamic capabilities to high-order dynamic capabilities, in order to cope with the pressure of value co-creation. This could be achieved by constantly standardizing the quality of short videos and carrying out product innovation to enhance the perceived user value. Hence, the ability to create product value will be improved.

Facing the pressure of value creation at the stage of disruptive innovation and expansion, ByteDance and Kuaishou conducted product improvements, value co-creation and value sharing through digital resource integration capabilities. This is reflected in product improvements. ByteDance makes up for the defects in machine audits by increasing manual auditing. To further improve the quality of short videos, ByteDance designed a comprehensive video review mechanism. Kuaishou built a content review mechanism by establishing a community self-discipline committee and inviting media to enter the platform for supervision, thereby realizing the continuous innovation of high-quality short-video content.
### Table 3. The expansion stage of disruptive innovation by ByteDance and Kuaishou.

<table>
<thead>
<tr>
<th>Code Type</th>
<th>Core Category</th>
<th>Main Category</th>
<th>Initial Encodings</th>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Motivation</strong></td>
<td>Value co-creation</td>
<td>Revenue Growth</td>
<td>The increased willingness of users to pay, and growth in disposable income, will</td>
<td>The increased willingness of users to pay, and growth in disposable income, will further drive users to pay for high-quality content. Relevant policies in 2019 stipulate that online audio and video information service-providers should authenticate users' real identity information. The content of short-video platforms has gradually formed a virtuous circle, and high-quality content has further stabilized the development of the industry.</td>
</tr>
<tr>
<td></td>
<td>pressure</td>
<td>Promotes User Engagement in Value Creation.</td>
<td>further drive users to pay for high-quality content. Relevant policies in 2019 stipulate that online audio and video information service-providers should authenticate users' real identity information.</td>
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<tr>
<td></td>
<td></td>
<td>Policies and regulations are more stringent for short videos.</td>
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<tr>
<td></td>
<td></td>
<td>Only high-quality video content can achieve a virtuous circle.</td>
<td></td>
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<tr>
<td><strong>Action</strong></td>
<td></td>
<td>Value Creation</td>
<td>The increased willingness of users to pay, and growth in disposable income, will</td>
<td>The video quality review method, based on artificial intelligence and supplemented by artificial intelligence, continuously improves video quality. Dovin improves users' sense of value acquisition by allowing 5-min videos. By building a community platform for information feedback and creative communication, a closed loop of high-quality content ecology was built. Dovin can improve product value based on user feedback. The Douyin platform has gathered a high number of resources such as customers, technology and traffic. Dovin shares high-quality resources and technical architecture with partners.</td>
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<tr>
<td></td>
<td></td>
<td>Product quality</td>
<td>The content of short-video platforms has gradually formed a virtuous circle, and high-quality content has further stabilized the development of the industry.</td>
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<tr>
<td></td>
<td></td>
<td>improvement</td>
<td>The Douyin platform has gathered a high number of resources such as customers, technology and traffic.</td>
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<tr>
<td></td>
<td></td>
<td>Product Innovation</td>
<td>By building a community platform for information feedback and creative communication, a closed loop of high-quality content ecology was built.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Value co-creation</td>
<td>Dovin can improve product value based on user feedback.</td>
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<tr>
<td></td>
<td></td>
<td>Value enhancement</td>
<td>The Douyin platform has gathered a high number of resources such as customers, technology and traffic.</td>
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<td></td>
<td></td>
<td>Resource aggregation</td>
<td>Dovin shares high-quality resources and technical architecture through the platform.</td>
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<tr>
<td></td>
<td></td>
<td>Value sharing</td>
<td>Dovin shares high-quality resources and technical architecture through the platform.</td>
<td></td>
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<tr>
<td><strong>Action basis</strong></td>
<td></td>
<td>Digital environment</td>
<td>With the improvements in computing power, the two sample companies rely on big data and deep learning to continuously analyze and perceive new trends and new policies in the development of the industry.</td>
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<td></td>
<td></td>
<td>awareness</td>
<td>Kuaishou learns Tencent’s data-processing capabilities and powerful algorithm upgrade capabilities to expand the boundaries of technology.</td>
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<td></td>
<td></td>
<td>digital innovation</td>
<td>ByteDance screened high-quality short videos by improving the reporting and review mechanism and gained a higher market share. Kuaishou strengthened online cooperation with the media, small and medium-sized merchants and universities, etc., and is committed to achieving mutual benefits and win–win resources.</td>
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<td></td>
<td></td>
<td>capability</td>
<td>The short-video platform gathered a large number of available traffic resources for enterprises and users.</td>
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<td></td>
<td></td>
<td>market development</td>
<td>Content producers and consumers and partners can share resources through digital video platforms.</td>
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<td></td>
<td></td>
<td>potential</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>Digital resource</td>
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<td></td>
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<td></td>
<td></td>
<td>integration capability</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Result</strong></td>
<td></td>
<td>Increased user</td>
<td>As the quality of Douyin video content continued to improve, user click-through rate and product usage time increased. Dovin broke the original “one dominant” market pattern, achieved a market breakthrough, and formed a situation where two powers compete for hegemony.</td>
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<td></td>
<td></td>
<td>stickiness</td>
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<td></td>
<td></td>
<td>The market structure is</td>
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<td></td>
<td>stable</td>
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<tr>
<td><strong>Expansion phase</strong></td>
<td></td>
<td>User stickiness grows</td>
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<td></td>
<td></td>
<td>steadily</td>
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<td></td>
<td></td>
<td>The competition pattern</td>
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<td></td>
<td></td>
<td>of the short video</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>market is stable</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
creation. This is reflected in the aspect of value sharing. ByteDance attracted Douyin users to travel in poverty-stricken areas by opening a distinctive short-video column. This relies on the digital content platform to realize platform users’ value-sharing in poverty-stricken areas, such as tourism resources and digital technology resources. In the same way, Kuaishou built an information flow advertising marketing platform that integrates artificial intelligence technology and data analysis technology. Based on this, it formed more dimensions and higher-order requirements for users. Thereby, the replacement and sharing of resources can be realized.

In conclusion, ByteDance and Kuaishou rely on digital environment perception capabilities to help companies respond to new changes in industry regulation in the stage of disruptive innovation and expansion. Digital innovation capabilities help companies to upgrade existing technology systems to expand technology boundaries and enable commercial advertising to be monetized. Relying on the market development potential, product quality and user-value acquisition of enterprises continuously improved the review. In addition, with the help of digital resource integration capabilities, enterprises built a short-video platform and shared high-quality resources and technical frameworks with partners to realize value co-creation and sharing. This successfully increased user stickiness, and finally formed a new competition pattern in which the two giants competed for hegemony in the short-video market. The dynamic capabilities at this stage are mainly based on digital resource integration capabilities, which are supplemented by dynamic capabilities in other dimensions: high-order dynamic capabilities enabled by digital technology.

In addition, based on the results of the growth stage, the high-order dynamic capabilities, enabled using digital technology as the action basis (and the connection point with the growth stage) of the disruptive innovation expansion stage, were analyzed. The action basis that connects the motivations of the disruptive innovation expansion stage, which contributed to the innovation expansion stage, was found to have a continuous promotion effect. Then, enterprises use their ability to perceive the digital environment to respond to changes in the industry, use digital innovation to expand the technological boundaries, use the market development potential to continuously improve user stickiness, and use digital resource integration to cooperate with partners to achieve value co-creation and sharing. Hence, the user stickiness is successfully improved. Finally, a new competition pattern of two powers competing for hegemony in the short-video market was formed, as shown in Figure 4.

Figure 4. The disruptive innovation path model at the expansion stage.
5. Discussion

Dynamic Capabilities and Disruptive Innovation

The innovation process of the sprout, growth and expansion stages of ByteDance and Kuaishou’s disruptive innovation is presented in a chain diagram, which can vividly outline the path by which start-ups can achieve disruptive innovation in the digital context, as shown in Figure 5.

![Disruptive innovation paths influenced by dynamic capabilities in a digital context](image)

**Figure 5.** Disruptive innovation paths influenced by dynamic capabilities in a digital context.

The start-ups, ByteDance and Kuaishou, showed dynamic changes in their focus on the four dimensions of dynamic capabilities at different stages of realizing disruptive innovation, as shown in Table 4. When a company cannot cope with internal and external pressures, only by building dynamic capabilities or facilitating a jump in dynamic capabilities can dynamic matching between enterprise capabilities and the external environment be achieved, promoting disruptive innovation.

**Table 4.** Dynamic capability dimensions of disruptive innovation at different stages.

<table>
<thead>
<tr>
<th>Encoding Result</th>
<th>Measure Variable</th>
<th>Sprout Stage</th>
<th>Growth Stage</th>
<th>Expansion Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynamic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>capabilities</td>
<td>Digital environment awareness</td>
<td>+++</td>
<td>++</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Digital innovation capability</td>
<td>+++</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Market development capability</td>
<td>+++</td>
<td>+</td>
<td>+++</td>
</tr>
<tr>
<td></td>
<td>Digital resource integration capability</td>
<td>+</td>
<td>+++</td>
<td></td>
</tr>
</tbody>
</table>

Note: “+” indicates the strength of the ability, the more “+”, the stronger the ability.

Furthermore, the interpretation of the disruptive innovation path modelling the impact of dynamic capabilities in the digital context (Figure 5) is as follows.

With the help of digital technology, ByteDance and Kuaishou focused on the iterative optimization of technology and products in the sprout stage of disruptive innovation. Through the continuous polishing of, and innovation in, technology and products, the product functions were continuously improved to establish the keynote product of disruptive innovation. Finally, the company successfully entered the short-video market, which provided opportunities and resource guarantees for the jump from low-order dynamic capabilities to medium-order dynamic capabilities.

In the growth stage of disruptive innovation, ByteDance and Kuaishou focused on market development, product operation and advertising operations. By optimizing and
superimposing processes such as operation and innovation, they finally successfully improved the user-retention rate and market position. This provided resource support for the transition from medium-order dynamic capabilities to high-order dynamic capabilities.

In the disruptive innovation expansion stage, ByteDance and Kuaishou focused on improving user stickiness by improving the quality of short videos. This created a good business ecosystem for co-creation and shared value with partners.

Considering these three stages on the horizontal axis, their evolution process is consistent with the characteristics of disruptive innovation. From the entry of the segmented market to the expansion of the mainstream market, a new market pattern is formed. These three stages dynamically evolved to enable disruptive innovation for start-ups. At the same time, the dynamic capabilities enabled by digital technologies also underwent a continuous evolution.

It can be seen from Figures 2–5, that the continuous improvement in dynamic capabilities, with the help of digital technology, throughout the ByteDance and Kuaishou’s entire process, achieved disruptive innovation. This matches both the motivation of disruptive innovation and the action basis for realizing disruptive innovation. Therefore, in the digital context, dynamic capabilities are an important driving force for disruptive innovation. Meanwhile, the changes in the internal and external environment of the enterprise brought about by the innovation results promote a step-up in dynamic capabilities. Namely, the dynamic capabilities of enterprises in the digital context are accompanied by the continuous improvement in the evolution of disruptive innovation. Dynamic capabilities and disruptive innovation complement each other and jointly promote the growth and expansion of enterprises.

Based on the above analysis, this study makes the following proposals:

Proposition 1. Disruptive innovation by start-ups in the digital age is a dynamic and incremental process. This path can be divided into three stages: sprout stage, growth stage and expansion stage.

Proposition 2. Startups that enable disruptive innovation in the digital age have two key pillars: digital technology and dynamic capabilities. Their dynamic interactions support this process.

Proposition 2a. Digital technologies are infrastructures that play multiple roles in the disruptive innovation process. This is the inducing condition for enterprises to achieve disruptive innovation in the digital age.

Proposition 2b. The transition of enterprises’ dynamic capabilities promotes the evolution of disruptive innovation, and the results of enterprises’ disruptive innovation can provide a guarantee for the transition of dynamic capability. That is, the two continue to interact.

6. Conclusions

This paper applied an exploratory dual-case study approach to conduct a grounded analysis of two start-ups: ByteDance and Kuaishou. Following the evolution of disruptive innovation, this paper investigated the evolution of start-ups affected by different dynamic capabilities in the digital context, which achieved disruptive innovation. The theoretical contributions, management implications and research shortcomings of this paper are summarized as follows.

6.1. Theoretical Contribution

Initially, this paper expands on the theoretical scope of dynamic capability research. The previous literature mostly focused on the dimension division and characteristic interpretation of dynamic capabilities. However, the combination of digital technology and dynamic capabilities, which can be used to divide the dynamic capabilities of enterprises in the digital context, as well as the analysis of the effect that digital technology has on the path of disruptive innovation, has not been studied. This paper provides a comprehensive analysis from the perspective of digital technology, dynamic capabilities and the disruptive innovation evolution process. The paper also investigated the structural dimensions of enterprise dynamic capabilities in the context of digitalization. A discussion of its dynamic change mechanism in the innovation process revealed the co-evolution mechanism of a leap
in dynamic capabilities and disruptive innovation. Therefore, this paper investigated the disruptive innovation path of start-ups based on the leap in enterprise dynamic capabilities. The findings broadened the research field of dynamic capability theory. It also provides an important theoretical reference value for start-ups to make full use of digital technology to continuously improve dynamic capabilities.

In addition, this paper expands the theoretical boundary of research on the realization of disruptive innovation. The process of disruptive innovation is divided into the sprout stage, the growth stage and the expansion stage. The evolution process of start-ups that offers the dynamic capabilities needed to achieve disruptive innovation using digital technology is revealed. The findings of this paper are significant for start-ups to conduct disruptive innovation and formulate the necessary strategies and tactics to face the survival pressure of the market.

Finally, this paper revealed the co-evolution of start-ups’ dynamic capabilities and disruptive innovations. The related literature has rarely explored the co-evolution process of dynamic capability transitions and disruptive innovation. However, looking at the exploratory case studies of ByteDance and Kuaishou, this paper found that enterprises focus on different dynamic capabilities at different stages of disruptive innovation. The transition in enterprise dynamic capabilities promotes the evolution of disruptive innovation, and the results of enterprise disruptive innovation can provide a guarantee for the transition of dynamic capability.

6.2. Managerial Implications

The management implications of this paper mainly contain the following three aspects:

(1) Start-ups should use the “dual integration” model enabled by digital technology, which is driven by dynamic capabilities to carry out disruptive innovation. With the widespread development of digital technology, start-ups should focus on the deep integration of innovation capabilities and dynamic capabilities to accurately perceive and predict the timing of disruptive innovation. Meanwhile, start-ups should also focus on building a “dual integration” of digital technology and a dynamic capabilities model, which lays the foundation for companies to seize market opportunities and carry out disruptive innovations.

(2) Start-ups should control their multi-dimensional dynamic capabilities to conduct disruptive innovation. With the increasing uncertainty in the competitive environment, start-ups should focus on strengthening the organic integration of digital technology and dynamic capabilities in all dimensions to subvert the market structure. Meanwhile, start-ups should also focus on their own situation and the nature of the window of opportunity to provide a guarantee by which enterprises can improve their multi-dimensional dynamic capabilities and reduce innovation risks.

(3) Start-ups should capture the huge opportunities that digital technology brings to enterprises through dynamic capabilities. Initially, enterprises should focus on building a digital technology innovation system and realize latecomer subversion through the digital transformation of innovation paradigms. In addition, enterprises should focus on using digital technologies such as big data, cloud computing and artificial intelligence. Based on dimensions such as digital environment perception capabilities, digital resource integration capability, digital innovation capabilities and the market development potential of dynamic capabilities, the ability to transform digital technologies into innovative start-up outputs will continuously improve.

6.3. Limitations

This paper still has some limitations. First, most of the information collected in this article is second-hand, which may deviate from the enterprise’s real situation. Thus, it is necessary to further revise and improve the research conclusions by supplementing primary data in future research. Secondly, the two companies selected in this paper, ByteDance and Kuaishou, are typical internet companies, which may affect the universality of the research conclusions. Future research needs to be extended to multi-industry and multi-
field research to provide a better understanding of the mechanism of the effect of dynamic capabilities on disruptive innovation.

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**References**


22. Chu, Y.; Chi, M.; Wang, W.; Luo, B. The impact of information technology capabilities of manufacturing enterprises on innovation performance: Evidences from SEM and fsQCA. *Sustainability* 2019, 11, 5946. [CrossRef]


27. Franco, M.; Minatogawa, V.; Durán, O.; Batocchio, A.; Quadros, R. Opening the dynamic capability black box: An approach to business model innovation management in the digital era. *IEEE Access* 2021, 9, 69189–69209. [CrossRef]


36. Chu, Y.; Chi, M.; Wang, W.; Luo, B. The impact of information technology capabilities of manufacturing enterprises on innovation performance: Evidences from SEM and fsQCA. *Sustainability* 2019, 11, 5946. [CrossRef]


46. Chu, Y.; Chi, M.; Wang, W.; Luo, B. The impact of information technology capabilities of manufacturing enterprises on innovation performance: Evidences from SEM and fsQCA. *Sustainability* 2019, 11, 5946. [CrossRef]


56. Chu, Y.; Chi, M.; Wang, W.; Luo, B. The impact of information technology capabilities of manufacturing enterprises on innovation performance: Evidences from SEM and fsQCA. *Sustainability* 2019, 11, 5946. [CrossRef]


