

THE ROLE OF DISRUPTIVE INNOVATION IN START-UPS AND TRANSFORMING SMALL BUSINESS OPERATIONS IN THE DIGITAL ERA

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ARTICLE INFO

Article details

Submitted by authors 6 May 2024
Accepted for publication 31 Oct 2024
Available online 13 Dec 2024

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DOI

<http://dx.doi.org/10.7166/35-4-3035>

ABSTRACT

In the digital era, start-ups benefit from expanded reach, faster scaling, and access to vast data sets, yet face heightened competition and the challenge of staying current with emerging innovations. Their role in the modern economy is amplified as they collaborate with incubators, investors, and academic institutions to foster innovation and growth. Agile development methods and disruptive innovation bolster their competitiveness against larger incumbents. Leveraging digital technologies and combining resources are further recognised as pivotal success factors driving disruptive innovations in start-ups.

OPSOMMING

In die digitale era trek beginnerondernemings voordeel uit uitgebreide reikwydte, vinniger skaal en toegang tot groot datastelle, maar staan verhoogde mededinging in die gesig en die uitdaging om op hoogte te bly van opkomende innovasies. Hul rol in die moderne ekonomie word versterk namate hulle met broeikaste, beleggers en akademiese instellings saamwerk om innovasie en groei te bevorder. Behendige ontwikkelingsmetodes en ontwrigtende innovasie versterk hul mededingendheid teenoor groter posbeksleërs. Die gebruik van digitale tegnologieë en die kombinasie van hulpbronne word verder erken as deurslaggewende suksesfaktore wat ontwrigtende innovasies in beginners aandryf.

1. INTRODUCTION AND BACKGROUND

Disruptive innovation changes a market's performance metrics or consumer expectations by providing radically new functionality, discontinuous technical standards, or new forms of ownership [1]. In simpler terms, disruptive innovation is an innovation that establishes new markets and value networks and that is capable of completely transforming an existing market or creating a new one. The theory was first developed and popularised by Clayton M. Christensen in his seminal work *The innovator's dilemma*, published in 1997 [2]. The book explored why established, well-managed companies often fail, and emphasised the value of understanding that markets are not homogeneous. It also highlighted the role of value networks, which enable the creation and delivery of products or services, establishing the tipping point from which disruptive innovations emerge. Christensen's work has been cited in diverse disciplines and research fields [3]; however, a broad consensus regarding some critical issues has not been reached, allowing the theory to be applied haphazardly. This has led to significant confusion about the concept [4], [5], often leading researchers and scholars down a path of subjective interpretation and judgement [6]. With the pervasive influence of information technology, digital technology, and innovation development, businesses must evolve with the evolving dynamics of the world as we know it [7]. Disruptive innovations can emerge and progress as distinct phenomena on a uniquely defined trajectory. If exploited and implemented correctly, these have the ability to satisfy the levels of demand required in other value networks such that they invade it, knocking out established enterprises and technologies with stunning speed [2].

Today's business environment differs fundamentally from that of 20 years ago; with the advancement of computing technologies and the digital era, an unprecedented opportunity has been created. A perfectly positioned business that may benefit from these opportunities is the 'start-up'. Start-ups are typically innovative and aggressive young firms seeking a repeatable and scalable business model that is driven by technology or innovation, which can generate substantial competitive advantage and revenue growth [8]. These new technologies or innovations that may bring success do not make things easy, pushing start-ups to operate under uncertainty about whether the business will fail [7]. These opportunities provide the perfect platform for start-ups to leverage technology in redefining how small businesses operate and compete in the global marketplace. Typically, those who adopt these technologies earliest survive and prosper, while those who refuse to do so are likely to fail [6], [9]. The disruptive innovation of start-ups is potentially achieved by taking hold of new and reconstructing existing value networks [10], [11] and using the theory of disruption from the viewpoint that it is a complete and progressive process rather than a single event or occurrence [12], [13]. However, the process of integrating disruptive innovations in the digital era is not without its difficulties, and little established research exists on how start-ups achieve disruptive innovations in the context of digitalisation [14]. As a result, this article reviews the published academic research and literature to answer the following two questions:

- I. What defines disruptive innovation, and how do start-ups typically embody this concept in their operations in the digital era?
- II. What critical success factors enable start-ups to leverage existing and emerging technologies effectively in order to drive disruptive innovation in the digital era?

By systematically evaluating and synthesising a wide range of published research and literature, the results of the review could provide insights that identify key themes related to the topic and possible opportunities, improvements, and strategic initiatives that foster innovation and entrepreneurship in the digital age.

2. REVIEW METHODOLOGY

This paper used the updated and most recent 'Preferred reporting items for systematic reviews and meta-analyses' (PRISMA) 2020 statement [15] alongside the seminal framework proposed by Arksey and O'Malley [16] as a guideline to undertake the scoping review. This included but was not limited to the following stages in the review methodology process: (i) specify the eligibility criteria; (ii) specify the search strategy and selection process; and (iii) outline the method of data extraction, analysis, collation, and synthesis. The aim of undertaking the scoping review according to the guidelines was to map the key concepts that underpin the proposed research questions [16].

2.1. Eligibility criteria

Owing to the large quantity of available information, an essential aspect of the scoping review was to retrieve relevant results to map and identify potential gaps in the literature [17], [18]. As a result, the following inclusion and exclusion criteria were considered for the review:

- Publications indexed in Scopus or Web of Science.
- No unpublished developments in the field; only peer-reviewed articles were considered.
- In most cases, information gathered from books, book chapters, and other materials of a similar nature was excluded. An exception was made for the works published by Clayton Christensen, who was at the developmental forefront of disruptive theory.
- Did not consider publications that were not published in English.
- Studies focused on specific geographic locations were avoided where possible to capture diverse perspectives and contexts on a global scale.
- No limitation was imposed on a specific time or date of publication, given the newness of disruptive theory and the ambiguity about the exact year when the digital era began. However, the review prioritised relevant and current findings about contemporary society and business operations.
- Only publications that were available electronically were considered.
- Only publications with relevance to the research questions were considered.

2.2. Search strategy and selection process

A systematic search was conducted in the second stage to identify studies relevant to the research title. Studies were identified to uncover any literature that could provide insights into existing theoretical research that would underpin our study. Descriptors were selected to encompass various terms related to start-up companies, disruptive innovation, small business operations, and the digital era. The search phrases were designed to retrieve published literature that contained the keywords in their titles, abstracts, or summary keywords. A combination of the Boolean operators “AND” and “OR” and truncation (*) was used to broaden and narrow the search as necessary. When searching the Web of Science database, “TS” (topic search) was used interchangeably with “TI” (topic) to locate relevant papers. The search was conducted in the Scopus and Web of Science databases using the search phrases in Table 1.

Table 1: Search phrases used

Database	Search terms
Scopus	TITLE-ABS-KEY (“start-up” OR “start-ups” OR “startup” OR “startups” OR “entrepreneurship”) AND (“disruptive innovation*” OR “innovation” OR “digital innovation” OR “disruptive technology*” OR “technological innovation” OR “innovative technologies”) AND (“small business” OR “small businesses” OR “SMEs” OR “business operations” OR “entrepreneurial operations” OR “organisational operations”) AND (“digital era” OR “digital age” OR “digital transformation” OR “digitalisation” OR “digital technologies” OR “information technology” OR “internet technology”) AU (“Christensen, Clayton M.”) OR (“Raynor, Michael E.”)
Web of Science	TS=(“start-up” OR “start-ups” OR “startup” OR “startups” OR “entrepreneurship”) AND TS=(“disruptive innovation” OR “innovation” OR “digital innovation” OR “disruptive technology*” OR “technological innovation” OR “innovative technologies”) AND TS=(“small business” OR “small businesses” OR “SMEs” OR “business operations” OR “entrepreneurial operations” OR “organisational operations”) AND TS=(“digital era” OR “digital age” OR “digital transformation” OR “digitalisation” OR “digital technologies” OR “information technology” OR “internet technology”) AU=(Christensen Clayton*) / AU=(Raynor Michael*)

3. RESULTS

3.1. Disruptive innovation theory

The origins of disruptive innovation are in the article published by Bower and Christensen [19] that initially described the concept of ‘disruptive technology’, focusing on how technologies improved over time and slowly surpassed the dominant technologies in specific markets [6], and emphasising how innovation is a driver of corporate growth [20], [21]. This concept was later expanded into a broader concept of ‘disruptive innovation’, which included aspects such as products and business models in addition to technological disruptions [6], [10], [22], [23]. However, through the years, issues have arisen from the misuse of the disruptive theory as a synonym for any threat or change rather than as a theoretical concept [24]. Many researchers and scholars have established that disruptive theory and its concepts have not been clear and concise [1], [25], leading to the widespread misunderstanding of its core principles [24]. It is essential, therefore, to define clearly both the basic concept of the theory and its connotation [22], [26], in order to avoid the theory of disruptive innovation being interpreted and applied subjectively, and being led down the incorrect path of further development [6].

The definition of disruptive innovation proposed by Nagy *et al.* [1] redefined the theory by focusing on the innovation characteristics of functionality, technical standards, and ownership. Cozzolino *et al.* [27], on the other hand, emphasised two phases in the disruptive innovation process: the entry phase, which involves establishing itself in a position in a low-end or untapped market; and the transformation phase, in which it gradually attracts market share by improving through an effective business model. This only highlights two pieces of research, illustrating how different researchers and scholars subjectively identify the key factors that must be considered when applying disruptive theory. As a result, a clear and concise explanation of what disruptive innovation means in today’s world is required, as the understanding of the phenomenon has evolved and been redefined over time. Si and Chen [6] explored a variety of these definitions and found that the most significant reason for the confusion in the concept lay in the idea of basing the definition on the effect of the innovation, illustrating how innovations that do not conform to the characteristics of the theory still potentially disrupt incumbents and existing markets. However, as indicated by Alberti-Alhtaybat *et al.* [28], although the theory has various explanations and has been applied in numerous ways, it remains true to its core characteristics. Accordingly, Antonio and Kanbach [29] noted that innovations drastically change established performance trajectories or redefine value networks and markets [19], and that innovation is first introduced in small/emerging markets or new markets [10]. With these core characteristics at the forefront of their understanding, Si and Chen [6] proposed that the main characteristics that disruptive innovations should satisfy were the following:

- I. It is a process, not a specific or single outcome.
- II. The initial objective is to focus on low-end or new markets.
- III. Typically, its products and services are inferior to existing ones that are valued and that attract the interest of consumers, although they meet the needs of their target market (i.e., cheaper, simpler, more convenient, etc.).
- IV. It develops on newly defined non-linear growth trajectories.
- V. Continuous improvements will be made until the needs of consumers in the mainstream market are met, gradually penetrating and disrupting existing networks and competitors.

When differentiating disruptive innovation from other forms of innovation, researchers and scholars should remain cognisant of the core tenets that underpin disruptive theory and that are outlined above. This would facilitate the identification of genuine applications of the theory.

3.2. How start-ups embrace disruptive innovation in their operations

As incumbent businesses focus on improving their existing products and services by sustaining innovations [24], the disruptive innovation framework has the potential to answer the growth imperative of most small enterprises and start-ups [10], [30], [31]. However, the uncertainty under which start-ups run and whether the businesses might fail leads to questions about their potential success [7]. As a result, start-ups and small businesses face incredible difficulties when competing against established market incumbents.

According to Wessel and Christensen [12], disruptors must assess how easily they can overcome five key disadvantages that might keep them from successfully infiltrating a low-end or new market in the future. These so-called ‘barriers to disruption’ include the *momentum* barrier, which describes how easily the status quo that customers are used to can be overcome; the *tech-implementation* barrier, which considers how new technology may be used successfully to overcome existing technology in a specific field; and the *ecosystem* barrier, which looks at changes that need to occur in the business environment for the disruption to be successful. The others are the *new technologies* barrier, which considers what new technologies need to be developed to change the competitive landscape, and the *business model* barrier, which challenges the disruptor to avoid adopting the business model of the incumbent [12]. Sharzynski and Gibson [32] also outlined three critical issues in their analysis of successful and unsuccessful disruptors. They were: the ability to recognise and respond to market changes and unfulfilled consumer needs, including changes in customer preferences, technological advancements, and updated regulations; the ability to connect incremental and breakthrough innovations; and the ability to recognise disruptive innovation to inform strategy, and vice-versa. In addition, small businesses and start-ups may struggle to differentiate their goods and services from larger companies [33]. As a result, the problems that start-ups face in embracing disruptive innovation in their operations must be approached with extreme adaptability, innovation, and strategising [34].

In today’s technologically advanced society, a high degree of market uncertainty and fluctuation exists, leading to consistently raised levels of competitive volatility [6], [35], [36]. As a result, there is a significant shift in how small businesses operate and compete with larger companies, which highlights the importance of digital transformation for their survival and future growth [21]. The ability of digital technologies to enable small businesses and start-ups to acquire and integrate information at lower costs in order to carry out innovation activities precisely provides the perfect conditions for them to seize market opportunities, leading to the eventual displacement of the incumbents [14], [37]. Therefore, the ability of a start-up to use its capabilities to leverage both external and internal resources to implement and exploit opportunities and turn them into feasible, potentially profitable disruptive innovations is of utmost importance [31]. The rapid advancement of digital technologies such as quantum/cloud computing, big data, artificial intelligence (AI), and blockchain requires their ongoing adaptation and adoption to stay abreast with the required skills in their industry in order to promote the start-up’s ability to address untapped market needs efficiently [14], [38]. This is typical of disruptive innovation today. Previously, digital transformation was viewed as an outcome of disruptive innovation, with its own challenges and opportunities for incumbent companies. However, in recent times digital transformation has become an essential part of developing disruptive innovations [39].

Startups are agile, willing to experiment and embrace risk which equips them to leverage emerging technologies and tap into underserved markets, enabling them to create value and maintain a competitive edge [6], [28], [38]. Therefore, for the commercialisation of disruptive innovation to be successful, the key lies in combining market strategies and innovative management [36]. According to Weilbach *et al.* [33], some of the critical drivers in enhancing small business or start-up operations are increasing technological capabilities, commercialising innovative technologies, optimising production, increasing efficiency, and leveraging data effectively. Khuan *et al.* [38] emphasised the importance of technology-driven strategies to prioritise customer feedback and engagement, as these are more likely to see long-term success. Considering these factors and the delicate market position in which small businesses and start-ups typically find themselves, the focus must be on the correct implementation and exploitation of the opportunities that may arise [2]. Offering similar and potentially superior performance at lower costs in often overlooked markets allows these small businesses and start-ups to avoid direct competition with larger firms [10]. By applying a unique business model and enabling technology in their operations, these disruptive innovations used by small businesses and start-ups become more competitive over time [31]. This creates the perfect platform from which to increase their chances of survival while positioning them perfectly to create competitive advantage, new opportunities, and major market disruption [34].

Digital transformation has also empowered start-ups and small businesses to establish a competitive market, compelling larger corporations and companies to adopt start-ups’ inherently agile development processes [40], [41]. In addition, it compels them to engage the start-up community, allowing start-ups and small businesses to gain customer input, improve products, and pivot their strategy with the help of established resources and capital [38]. Given the circumstances, digital transformation is crucial for start-ups and small businesses effectively to leverage disruptive innovation and to capitalise on opportunities in established sectors [33]. It provides the necessary platforms, technological infrastructure, and support for innovation adoption, product development, and research and development (R&D) to realise fully the potential of disruptive innovations [33], [34], [42].

Still, difficulties remain. Start-ups often operate with limited resources, such as a lack of funding, limited expertise, and a lack of infrastructure, which can hinder their ability to scale their operations and compete effectively [43], [44], [45]. In addition, the rapidly evolving digital landscape often presents regulatory uncertainties and problems, particularly for start-ups that are navigating new business models and emerging technologies [31], [44]. Furthermore, incumbent businesses are not passive observers of disruption. They often respond by developing their own digital capabilities, acquiring disruptive start-ups, or adjusting their strategies to counter the threat [46], [47], [48].

3.3. Critical success factors enabling the successful leveraging of technologies

The implementation of digital technologies has provided a stepping-stone from which enterprises can play catch-up in the digital age, blurring the lines between competing entities in industries [14]. However, the ability of start-ups and small businesses successfully to recognise, exploit, implement, and capitalise on these technologies may be the difference between their succeeding or not. Start-ups, especially, must be highly aware of emerging digital technologies, market trends, and evolving customer needs [14]. Digital technologies can be leveraged to create new value propositions or to disrupt traditional business models. Feng *et al.* [14] described how ByteDance used digital tools to identify the potential of short-form video content in order to disrupt the existing market. Having a deep understanding of the digital environment enables start-ups to adapt quickly to changing market dynamics [44]. This is in contrast to the pre-digital era, where start-ups often relied on traditional market research methods, which were slower, more expensive, and less dynamic than the real-time data analysis and customer feedback loops available through digital channels today [49], [50]. According to Ruggieri *et al.* [51], the ability of start-ups to leverage digital technologies to connect customers and partners is critical to driving innovation.

However, innovation cannot be driven blindly. Wessel and Christensen [12] observed that implementing the disruptive innovation in question should be seen as an evolutionary process that could aid future strategic planning [14]. In addition, Roblek *et al.* [21] highlighted the importance of start-ups planning for innovation by setting innovation goals and developing their infrastructure. For start-ups - or any organisation - to succeed in driving disruptive innovation, an aligned vision and strong planning skills are required while remaining vigilant for any potential internal and external opportunities that could help them to expand beyond their existing markets [52].

The potential for start-ups to harness and implement data-driven analytics and insights could enhance how they identify market trends, customer preferences, and new growth opportunities [53]. However, regardless of the degree to which the use of 'big data' and predictive analytics allows start-ups to elevate their level of decision-making and performance, it is imperative that start-ups not rely solely on these capabilities [54]. Although data-driven insights into performance and opportunities are essential, Usai *et al.* [55] explained that, given the coded, reusable, and imitable nature of data analysis, limitations may be imposed on the development scope of the start-up as it falls in line with data suggestions. However, the need to balance making constructive predictions and limiting start-up development through data-driven decision-making is abundantly clear, as it may provide significant results in driving innovation.

The role of financial backing in driving innovation must be acknowledged, as explored by Leavy and Sterling [56], who illustrated how disruptive innovation could be affected by how an organisation manages its financials. According to Alsaaty and Sawyer [34], an often-overlooked aspect of driving disruptive innovation is how the evident use and management of financials can lead venture capitalists to be more encouraged to invest in the business. Si and Chen [6] illustrated how adequate financial management directly contributes to the success of a start-up, as economic resources are more readily available to support the development and commercialisation of disruptive innovation. This results in the business spheres that are needed simultaneously to drive and promote innovation and to support. Fundamentally, the ability of an organisation to drive its disruptive innovation successfully is a trade-off between its risk appetite and its ability to manage its finances [57].

While financial considerations heavily influence decision-making and potential future success, so does the agile adaptability of the business, including its scalability and flexibility. O'Reilly and Binns [58] distinguished three phases of disruptive innovation, namely idea genesis, incubation, and scaling. They showed that the ability of a business to implement the scaling phase by redistributing resources and effectively using the organisation's skills to transform is crucial for success. This challenges larger incumbents, as they must bring teams together behind a single idea. It may be difficult, leading them in a repeated cycle of returning to the first phase, idea genesis. However, this problem is less common in smaller companies. The ability of disruptors to compete in low-end or new markets where flexibility,

autonomy, and experimentation are required, as against having to compete simultaneously in these mature markets, where efficiency, control, and incremental improvement are needed, puts them at a significant advantage in those often-overlooked markets [58]. In addition, the location of a start-up may prove to have a direct impact on its ability to leverage digital technologies successfully and to partner with larger, more established firms. Innovation clusters such as the renowned Silicon Valley provide a competitive advantage: the ecosystem encourages networking, which start-ups may need to access capital, technologies, talents, and entrepreneurial projects in its environment [59].

3.4. Other implications and future thinking

According to Ruan *et al.* [60], governmental regulations can exert a noteworthy influence on a start-up's ability to pioneer innovative technologies and to foster disruptive innovation, while Zhang *et al.* [61] detailed how businesses may find it difficult to experiment with new products, models, or technologies because of restrictive rules, which may impede their creative capacity. Conversely, advantageous policies could also reduce barriers to entry such as monetary and resource constraints [62]. Government funding and subsidies are two ways in which policies could encourage start-ups to investigate technology that decision-makers believe is beneficial [63]. Huergo and Moreno [64] supported the claim that government policies have a more significant effect on start-ups by pointing out that subsidies are more effective than loans at promoting innovation in some industries. It is a two-edged sword: companies operating in the targeted industries may receive different kinds of support, but those aggressively pursuing innovations in these sectors stand to gain from lawmakers' proposed benefits. In addition, policies concerning intellectual property protection could significantly impact start-ups that are trying to safeguard their concepts while launching their products [65].

Ecosystem and market dynamics present another difficulty for start-ups that hope to thrive and promote innovation, as illustrated by Pasayat *et al.* [43], who found that the number of self-started enterprises was on the rise, thus increasing the number of rivals in the system. They also found that there was a positive side to the increase in self-started businesses - specifically, that companies in knowledge-based forums, instructional technologies, and mobile firms provide access to crucial information, thus increasing a start-up's chance of success [43]. Aldoseri *et al.* [66] demonstrated how human attention can focus on finding and innovating solutions while AI handles routine tasks. This could help smaller companies to disrupt large incumbents, emphasising again how companies that refuse or are slow to react to adopting these technologies are more likely to fail [6], [9]. Start-ups may frequently consider upending established markets; however, as Roblek *et al.* [21] indicated, it may be hard for disruptive innovations to penetrate and overthrow incumbents that are rooted in current business practices and use the latest technological advancements.

Another question that start-ups should ask themselves and consider is: What are the possible moral dilemmas and societal impacts of implementing the idea or business prospect? According to Hardman *et al.* [67], disruptive innovations often result in significant changes, and the outcomes of an evaluation of the possible effects of these changes are important points that need to be factored into the decision-making process of the business. As a result, start-ups should position themselves well to fill underserved demand rather than merely to replace disruptive alternatives [46]. For example, the discussion presented by Usai *et al.* [55] on the impact that AI and other digital disruptive tools have on people highlights how advancing technologies could replace human abilities, thus emphasising the need to use them in an enhancing way rather than replacing them. As a result, the ability of a disruptive innovation to be socially acceptable should be explored in great depth to determine its overall feasibility and potential future success. In addition, a fundamental understanding must be gained that disruptive technologies allow untapped markets to be accessed, and that those who cannot afford them risk further deteriorating their social and economic standing. Hermann *et al.* [46] provided evidence for this claim by using the healthcare industry as an example. Innovations in the healthcare industry can have a significant impact on both new and old technologies' costs and accessibility. New developments might become standard, rendering more reasonably priced medical care outdated. Furthermore, emerging disruptive technologies could create new avenues for data collection and monitoring, which would raise ethical issues related to security, privacy, prejudice, and unfair effects [61]. These are some of the other implications and future considerations that start-ups need to keep in mind when they drive disruptive innovation.

4. CONCLUSION

Disruptive theory has been the subject of a vast amount of research since its increased popularity in the mid-1990s. It has undergone numerous refinements, faced critique, and received additional insights and perspectives through various avenues of research. It has evolved from its initial focus on technological advancements to encompass a broader horizon of possibilities, such as products and business models. However, its continued popularity among scholars and businesses has led to the widespread misuse and misinterpretation of the theory, leading many to believe that it needs to be clearer and more concise. While start-ups face unique challenges in embracing disruptive innovation, we propose that the theory remains stable in its core characteristics and has evolved through time. We have also identified an essential set of key characteristics that disruptive innovations must meet to be truly disruptive. These emphasised factors include its process-orientated nature, an initial focus on low-end or new markets, a non-linear growth trajectory, and an ability to improve until the mainstream market requirements have been met.

The digital era has provided start-ups and small businesses with an unprecedented opportunity to leverage disruptive innovation and to transform their operations. At the same time, they face unique difficulties in embracing disruptive innovations, including uncertainty, the ability to differentiate from larger, more established competitors, and numerous barriers to market entry. The successful way in which start-ups could embody disruptive innovations requires them to show their ability to identify an underserved, untapped, or ignored market; to have agile development processes; to use existing and emerging technologies effectively; to foster an environment for collaboration and partnerships; to maintain a customer-centric outlook; and to be willing to experiment and take calculated risks. The capacity to recognise potential opportunities and to apply necessary procedures to implement them is crucial to a start-up that hopes to create true disruption.

It may take years before the disruption is recognised in the industry; however, by using critical success factors, their time to market could be shortened. These factors include strategic planning and having a shared goal, with a focus on recognising market changes and unfilled consumer needs; using data-driven analytics to aid decision-making processes; gaining financial support and forming strategic partnerships with established incumbents to help reduce financial strain and provide opportunities for knowledge transfer; agile adaptability; and a willingness to take risks and to experiment. Government policies, ecosystem dynamics, and societal impacts also influence a start-up's ability to drive disruption innovation.

In conclusion, start-ups must leverage existing and emerging technologies strategically while embracing disruptive innovation. By using their flexibility, start-ups have the potential to enter industries at stunning speed, depending on their ability to position themselves at a point from which they can successfully implement and exploit their innovation in the market. Clear definitions, careful planning, and agile adaptability are essential for successful disruption, coupled with a deep understanding of the market dynamics that apply to them. Consequently, start-ups that combine an agile approach with lean management techniques, that embrace digital technologies and innovations, and that focus on customer needs and continuous improvement boost their chances for sustained growth and successful market disruption in the long run.

While this literature review provides a comprehensive synthesis of the existing research, it has several limitations. The results of this study are inherently limited by the scope and extent of the studies included in the review, and may not be generalisable. In addition, there is the potential for selection bias, as the inclusion or exclusion of certain studies may have influenced the overall conclusions. Furthermore, the scope of the review is a broad overview rather than an in-depth analysis of a specific area. We therefore recommend further empirical studies to investigate the effect of the critical success factors identified in this study. Furthermore, while digital innovation has overwhelmingly been a driver of disruptive innovation, future studies may seek to identify other potential enablers.

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