FEDERAL UNIVERSITY OF CEARÁ

CONTEXTUS
REVISTA CONTEMPORÂNEA DE ECONOMIA E GESTÃO
Contextus – Contemporary Journal of Economics and Management

ISSN 1678-2089
ISSNe 2178-9258

www.periodicos.ufc.br/contextus

The use of a QFD-Fuzzy approach to support investors' decisions: A study on fast growing digital businesses in London

Utilização da abordagem QFD-Fuzzy para apoiar decisões de investidores: Um estudo sobre negócios digitais de rápido crescimento em Londres

Utilizando el enfoque QFD-Fuzzy para respaldar las decisiones de los inversores: Un estudio de negocios digitales de rápido crecimiento en Londres

https://doi.org/10.19094/contextus.2023.82986

João Florêncio da Costa Júnior
https://orcid.org/0000-0002-3962-1010
PhD student in Management at the Federal University of Rio Grande do Norte (UFRN) / Professor at Potiguar University (UnP Anima)
Master's degree in Production Engineering from the Federal University of Rio Grande do Norte (UFRN)
jfcj1977@gmail.com

Eric Lucas dos Santos Cabral
https://orcid.org/0000-0003-2855-7049
PhD student in Petroleum Science and Engineering at the Federal University of Rio Grande do Norte (UFRN)
Master's degree in Production Engineering from the Federal University of Rio Grande do Norte (UFRN)
ericlucascabral94@gmail.com

Jurandir Galdino Barreto Júnior
https://orcid.org/0000-0002-6407-9497
Master's degree in Production Engineering from the Federal University of Rio Grande do Norte (UFRN)
jurandir_barreto@yahoo.com.br

Ricardo Augusto Niederauer Severo
https://orcid.org/0009-0000-3973-2047
Master's degree student in Management at the Federal University of Rio Grande do Norte (UFRN)
ricardo@niedpro.com

Afrânio Galdino de Araújo
https://orcid.org/0000-0002-7294-2609
Professor at the Federal University of Rio Grande do Norte (UFRN)
PhD In Production Engineering from the Federal University of Pernambuco (UFPE)
afranioga@gmail.com

Article Information
Uploaded on 07/12/2022
Final version on 02/03/2023
Accepted on day 02/03/2023
Published online on 23/05/2023

Interinstitutional Scientific Committee
Editor-in-chief: Diego de Queiroz Machado
Evaluation by the double blind review system (SEER / OJS - version 3)

ABSTRACT
The work analyses the growth strategy of fast-growing digital business in order to develop a QFD-Fuzzy based methodology to support investors' decisions. Methodologically, a qualitative transversal research with the CEOs and Founders of 119 start-ups was carried out followed by the development of a QFD-Fuzzy matrix, to assess the impact of key companies' characteristics onto strategic growth options. The authors found that number of employees and intention to raise money on a short-term basis were the least determining elements for those companies' growth strategies, whereas having already raised funds and their growth rate were the most determining aspects that influenced their growth strategy. Also, it was shown that the QFD-Fuzzy Matrix may be adapted to support investors' decisions.
Keywords: growth strategy; digital business; investment decisions; QFD-Fuzzy matrix, Fuzzy numbers.

RESUMO
O trabalho analisa estratégias de expansão de negócios digitais de rápido crescimento, a fim de desenvolver uma metodologia para apoiar decisões de investidores. Foi realizada uma pesquisa qualitativa com os CEOs e fundadores de 119 startups, seguida do desenvolvimento de uma matriz QFD-Fuzzy, para avaliar o impacto das características chave das empresas nas opções estratégicas de crescimento. Constatou-se que o número de funcionários e a intenção de captar recursos no curto prazo foram os elementos menos determinantes para as estratégias de crescimento dessas empresas, enquanto a captação de recursos e as taxas de crescimento foram os aspectos mais determinantes que influenciaram as decisões dos empreendedores. Também foi demonstrado que a Matriz QFD-Fuzzy pode ser adaptada para apoiar decisões de investidores.
Palavras-chave: estratégia de crescimento; negócios digitais; decisões de investimento; matriz QFD-Fuzzy, números Fuzzy.

RESUMEN
El trabajo analiza las estrategias de expansión de negocios digitales de rápido crecimiento para desarrollar una metodología para respaldar las decisiones de los inversores. Se realizó una encuesta cualitativa con CEOs y fundadores de 119 startups, seguida del desarrollo de una matriz QFD-Fuzzy, para evaluar el impacto de las características clave de la empresa en las opciones de crecimiento estratégico. Se encontró que el número de empleados y la intención de recaudar fondos en el corto plazo fueron los elementos menos determinantes para las estrategias de crecimiento, mientras que la captación de fondos y las tasas de crecimiento fueron los aspectos más determinantes. También se demostró que la Matriz QFD-Fuzzy se puede adaptar para apoyar las decisiones de los inversores.
Palabras clave: estrategia de crecimiento; negocios digitales; decisiones de inversión; matriz QFD-Fuzzy, números Fuzzy.

How to cite this article:
Costa, J. F., Jr., Cabral, E. L. S., Barreto, J. G., Jr., Severo, R. A. N., & Araújo, A. G. (2023). The use of a QFD-Fuzzy approach to support investors' decisions: A study on fast growing digital businesses in London. *Contextus – Contemporary Journal of Economics and Management*, 21, e82986. https://doi.org/10.19094/contextus.2023.82986

1 INTRODUCTION

Over the past few years, the attention towards digital ventures growth, both from scholars as well as leading financial and political institutions has increased exponentially, opening a new, distinct and emergent demand for further studies focused on the digital entrepreneurial processes (Cavallo, Ghezzi, Dell'Era & Pellizzoni, 2019; Steininger, 2019, Nambisan, 2017).

Digital businesses are multifaceted and have profound impact on almost every aspect of the day-to-day life. They are based on technologies such as artificial intelligence, crowdfunding platforms, digital 3D printing, social media platforms, big data, cloud and mobile to name but a few (von Briel, Davidsson & Recker, 2018), these technologies have a preponderant role by creating conditions for business to scale at an unprecedented level (Autio, Nambisan, Thomas & Wright, 2018).

The key element of the entrepreneurial venture is the choice of an adequate growth strategy, which is influenced by circumstances within and without the organizations such as capability, education, business skills, entrepreneurial goals and growth aspirations, management competence, personality and mind-set of the entrepreneur, political and economic factors, the impact of new technologies on consumer behaviour and business models amongst many others (Weinzimmer, 2000; Shah, Nazir & Zaman, 2013).

Despite their profound and, at times, unpredictable and non-linear nature and their undeniable impact in the economy, there are no systematic studies analysing the digital new ventures growth process or the key strategic choices entrepreneurs face (Cavallo et al., 2019; Nambisan, 2017), leading a wide variety of stakeholders from the entrepreneurial ecosystem to search for reliable analyses on digital entrepreneurship, digitization, digitalization, and digital transformation (Cavallo et al., 2019; Venkatraman, 2017).

Digital business have also profoundly impacted traditional businesses through the recent trend of digitalization of products and services (Gupta & Bose 2019), challenging current value chains with innovative and frequently disruptive business models (König, Ungerer, Baltes & Terzidis, 2019) which are a prime target of angel investors, venture capitalists, investment banks and private equity firms (Woo, 2020; König et al., 2019; Meglio, Destri & Capasso; 2017; Li, Su, Zhang & Mao, 2018).

Venture financing is seen as a factor that explains business growth (Cavallo et al., 2019; Meglio et al., 2017), even though there is a considerable increase of foreign investment in digital across the world via angel investors, venture capitalists and private equities, its impact is not yet thoroughly analysed in the growth strategy literature (Woo, 2020). It is well known that companies will face severe difficulties in obtaining financing, especially new digital business-based models in high-tech industries due to the prohibitive costs of research and development and their lack of collateral and reliance on personal capital (Kirwan, Ratinho, van der Sijde & Groen, 2019).

Decisions on business growth strategies tend to be complex and multifaceted, with little precision and considerable vagueness, which encumbers traditional logic (Karasan, Ilbahar, Cebi & Kahraman, 2022; Costa, Araújo, Cabral, Severo, Barreto & Freitas, 2021; Cavallo et al., 2019; Zadeh, 1965, 1975). Thus, it is found in the specialised literature that decision-making techniques tend to be more effective when combined to overcome complex conditions (Rehman, Ali & Sabir, 2022; Karasan et al., 2022; Torkayesh, Yazdani & Ribeiro-Soriano, 2022). QFD has been combined with a series of different multi-criteria decision-making weighting methods such as Analytical Network Process (ANP), Analytical Hierarchy Process (AHP), Best Worst Method (BMW), and Decision-making trial and evaluation laboratory (DEMATEL) (Torkayesh et al., 2022), to increase the precision and robustness of subjective judgements. Also, QFD has extensively utilized the fuzzy set theory, as it relies on qualitative judgments of decision-makers. Given that the expectations consist of mostly subjective judgments, this evaluation process contains vagueness and impreciseness, which is reduced by the incorporation of the fuzzy set theory, grounded on the relative weights of the attributes as opposed to the absolute weights (Rehman et al., 2022; Karasan et al., 2022; Zadeh, 1965, 1975).

Based on the literature review on digital business growth and how they can affect investment, the authors focused their study on eight major strategic growth decisions that fast-growing digital business may have to face: i) how to maximise personal return in an exit (Mehta, Sharma, Vyas & Kuckreja, 2022; Yang, 2022; Pisoni & Onetti, 2018; Wennberg & DeTienne, 2014; Ma, Lu & Xie, 2014); ii) international expansion (Tippmann, Ambos, Del Giudice, Monaghan & Ringov, 2023; Burger, Hogan, Kotnik, Rao & Sakinç, 2023; Mihailova, 2022); iii) pre-IPO planning (Bradshaw, Drake, Pacelli & Twedt, 2022; Wisniewski, 2017; Crosier, 2004); iv) exits and acquisitions (Pisoni & Onetti, 2018; Wennberg & DeTienne, 2014; Li et al., 2018); v) other options to venture capital: debt, venture debt & private equity (Cumming, Kumar, Lim & Pandey, 2022; Jeon & Maula, 2022; Davidsson, Delmar & Wiklund, 2019); vi) building and managing an effective board (Monteiro, 2019; Satisteban & Mauricio, 2017); vii) growth through acquisitions (Moss, 2022; Pisoni & Onetti, 2018); and viii) balancing growth vs profit (Joseph, Aboobaker & ka, 2023; Assefa, Colovic & Misganaw, 2022; Paik & Woo, 2017).

Thereafter, a QFD-Fuzzy based methodology was developed to assess its feasibility as an investment decision support tool. Thus, the article presents two main objectives: a) analysing the growth strategy decisions of fast-growing digital business in London, focusing on their main demands that can be addressed by venture capital firms, private equity firms and investment banks; and b) testing the use of a QFD-Fuzzy matrix to assess the feasibility of its

application to support financial organizations and investors into choosing the most adequate business in which to invest.

2 THEORETICAL FRAMEWORK

Growth strategy is intimately related to strategic business model transformation, especially on digital business, in which growth strategy is a precondition to entrepreneurial survival, given the extremely volatile global business scenario with new technologies, born global firms, fluid business models, shorter product life cycles and transnational competition (Gupta & Bose, 2019; Costa et al.,2018).

Such scenario of digitalization of business models and competition has led to considerable transformation on businesses, changing both consumers' and investors' expectations and behaviours, which now have access to unparalleled amounts of information, vast communication channels and a natural predisposition to value digital business models, which has affected many traditional firms (Verhoef et al., 2021; Verhoef & Lemon, 2015).

On referring to fast growing firms or high growth firms the authors adopt the definitions established by the OECD-Eurostat Manual on Business Demography Statistics – companies that have gone through an accelerated cycle of growth and wealth creation with a minimal growth margin of 20% in the past three years on headcount or revenue, still undergoing this process and keen to maintain it into the foreseeable future through a scalable and repeatable business model, which can be seen as a very challenging task (Thomas, Passaro & Quinto, 2020; Monteiro, 2019; Cremades, 2016; Daunfeldt & Halvarsson, 2015).

Fast growing businesses are, quite so often, a great measure of a thriving and prosperous economy, creating jobs and new business opportunities, increasing innovation and efficient allocation of resources as well as international integration (Thomas et al., 2020; Steininger, 2019). However, growth strategy is fraught with risk. Failure may be the ultimate result due to several different problems, such as difficulty to pivot the product or business model to attend market demands, premature scaling (growing too fast, too soon), higher working capital requirements or, quite simply, absence of investors to support the business in its early stages (Hellmann & Thiele, 2022; Cantamessa, Gatteschi, Perboli & Rosano, 2018, Cremades, 2016), hence the importance of choosing the right growth path.

The specialized literature focus on digital business, strategy and growth is far from being exhaustive, having only scantly covered the subject (Verhoef et al., 2021; Bustamante, 2019;). Verhoef et al. (2021), on a thorough approach on the subject explains digital transformation on a three staged model:

a) external drivers of digital transformation (technology, competition and customer behaviour);
b) phases of digital transformation; and
c) strategic imperatives of digital transformation (resources, organizational structure, growth strategy and metric and goals).

Other key study presents a diverse scope, such as seen on Table 1:

Table 1
Studies on Digital Growth Strategy

Area	Study Focus	Authors
Marketing	Digital advertising, social media and attribution model developments	Lamberton & Stephen (2016); Kannan & Li, (2017)
Strategy	Conceptualization, operation and renewal of digital business models	Osterwalder & Pigneur, (2010); Foss & Saebi (2017)
Information Systems	Technical developments on digital technologies and impact on business value.	Nambisan (2017)
International Expansion	Foreign venture capital firms and internationalization of ventures	Woo (2020)
Funding	Efficiency of venture capital on growth strategy	Rosenbusch, Brinckmann & Müller (2013)

Source: Elaborated by the authors.

Whilst all the above points are rather relevant, the current authors have not found significant literature on entrepreneurs' strategic growth choices, especially those supported by potential investors and how those choices may be influenced by some intrinsic companies' traits; although, at some level, all companies should be aiming for high growth in order to attract private investments (Wallin, Still & Henttonen, 2016). Conversely, in general terms, organizational growth is a widely studied phenomenon, being subject of intense debate in the relevant literature (Cavallo et al, 2019), specifically international growth of SMEs, which can be seen as an opportunity for organization and business performance improvement (Ciasullo, Montera, Mercuri & Mugova, 2022). Thus, despite the extant studies, there still is a literature gap that may be addressed by the current research.

The current work is focused on both start-ups and scale-ups, however only those already prepared for or close to the entrepreneurial exit (Hellmann & Thiele, 2022), when the company has reached enough maturity to allow their founders to leave with a considerable profit, that is, only digital companies already on series B and C funding and beyond (Cremades, 2016) were analysed. Table 2 brings details on different funding stages:

Table 2
Investment series and firm growth stage

Type of Funding	Growth Stage	Type of Investor
Pre-seed	Defining business model and operations – no business form or monetization plan.	Founders.
Seed	The first official equity funding stage. It aims at scalability and repeatability.	Founders, immediate founders' acquaintances, business incubators and accelerators. Less usually angel investors and rarely venture capital companies.
Series A	The business aims to expand its established user base and optimize product offerings. The entrepreneur engages in cross border growth and resource-structuring objectives.	Accelerators, larger angel investors and more traditional venture capital firms as well as equity crowdfunding.
Series B	Companies are ready to expand market reach on a larger scale. That is the stage of rapid headcount growth, with the integration of a professional team.	Venture capital firms specialized in later-stage investments, private equity funds, investment banks.
Series C and beyond	Successful fast-growing companies. Their challenge is to maintain growth, rather than achieve it. They are into marketing expansion and product development, but also consider acquiring new companies or undergo an IPO to expand rapidly and secure their leading position.	Hedge funds, investment banks, private equity firms, venture capital firms (to a lesser extent).

Source: Adapted from Costa et al., 2021 and Cremades (2016).

It is relevant to notice that the growth stage in which the company is presented will define the type of funding and investors they are most likely to attract, as well as their key strategic growth decisions, as it is closely interlinked with the risks they have to face as well as their level of expertise and market expansion (Kirwan et al., 2019; Cremades, 2016; Rosenbusch et al., 2013).

Based on the literature review on key international growth decisions and how they can affect investment, the authors focused their study on seven major strategic growth decisions that fast-growing digital business may have to face: i) how to maximise personal return in an exit (Mehta et al., 2022; Yang, 2022; Pisoni & Onetti, 2018; Wennberg & DeTienne, 2014; Ma et al., 2014); ii) international expansion (Tippmann et al., 2023; Burger et al., 2023; Mihailova, 2022); iii) pre IPO planning (Bradshaw et al., 2022; Wisniewski, 2017; Crosier, 2004); v) exits and acquisitions (Pisoni & Onetti, 2018; Wennberg & DeTienne, 2014; Li et al, 2018); v) other options to venture capital: debt, venture debt & private equity (Cumming et al., 2022; Jeon & Maula, 2022; Davidsson, Delmar & Wiklund, 2019); vi) building and managing an effective board (Monteiro, 2019; Satisteban & Mauricio, 2017); vii) growth through acquisitions (Moss, 2022; Pisoni & Onetti, 2018); and viii) balancing growth vs profit (Joseph et al., 2023; Assefa et al., 2022; Paik & Woo, 2017).

2.1 Measuring performance and growth of fast-growing businesses

It is common amongst scholars to use data on employees or sales to measure growth, despite the fact that there is a growing debate on the current literature on how digital businesses are increasingly unpredictable and non-linear in their growth patterns (Huang, Henfridsson, Liu & Newell, 2017; Nambisan, 2017). Lately, access to financing is becoming more utilized as a measure of growth given the increased influence of angel investors and venture capitalists on business growth and scalability (Davidsson, Delmar & Wiklund, 2019).

At the initial growth stages, many companies will go through the process of building and manage an effective board. The lack of experience in management is quite often the key reason for failures in new ventures, and entrepreneurs must overcome that pitfall by attracting the best talent, thus increasing the company value (García-García, García-Canal & Guillén, 2022; Potočnik, Anderson, Born, Kleinmann & Nikolau, 2021; Satisteban & Mauricio, 2017). This may be particularly challenging if the CEO perceives the managerial professionalization of the firm as a threat to the status quo (García-García et al., 2022). A well-developed board of directors may increase the learning curve of firms that are passing through their initial stage development, enriching human capital with information, expertise, experience and networking (Monteiro, 2019).

The networking, information and managerial knowledge provided by venture capitalists and private equity firms in the board development process are essential (Cavallo et al.,2019) as it is quite well known that rapid growth is usually not matched by good and profitable management, given that the recruitment and selection processes face considerable challenges to successfully scale (Potočnik et al., 2021). It is important to notice that there is an important positive correlation between headcount and value creation, as number of employees is not only a rather obvious indicative of growth, but also, in most cases, an indicative of maturity for start-ups as it can be argued that human capital is as important as or even more important than R&D to propel fast growth (Davidsson, Delmar & Wiklund, 2019; Monteiro, 2019; Davila, Foster & Gupta, 2003). However, the emergence of new breeds of start-ups, that can grow into unicorns with very few employees may be challenging this notion as well as the very foundation of the economic thought behind policy making geared towards employment in general (Wallin et al., 2016).

It is important to notice that, in the context of start-ups and scale-ups, exits carry no connotation of failure, quite the opposite (Wennberg & DeTienne, 2014; Li et al., 2018); exits are the ultimate step of the entrepreneurial and start-up process, being characterized by a change of control as well as a liquidity boost for founders and early investors, which represents the possibility of massive earnings, fast

growth, successful IPOs and fruitful mergers and acquisitions (Pisoni & Onetti, 2018).

Exits, when studied in the fast growth digital business context, are focused mainly on two financial harvest strategies: the IPO and mergers and acquisitions (Pisoni & Onetti, 2018; Wennberg & DeTienne, 2014). It is also fundamental to realise that exit intentions – the initial strategic predispositions from founders – can influence future decisions and behaviours. Companies that were thought out for quick exits backed by a dynamic growth orientation may not be able to scale beyond a certain point that will most likely demand an IPO or merger & acquisitions (Wennberg & DeTienne, 2014); thus, it is vital for investors to distinguish between venture capital backed start-ups, which are companies derived for a successful exit since inception, from lifestyle companies, which have a business model oriented for continuity (Pisoni & Onetti, 2018; Ries, 2011). However, there are significant studies that point out to the fact that exits should be planned since inception even if only as an alternative strategy (Ma et al., 2014).

The IPO is the process of transformation of privately held business into a publicly owned company (Bradshaw et al., 2022; Wisniewski, 2017). It usually indicates a stage of high maturity, however some digital companies may aim at an early IPO, as the company owner may exchange stock for cash, maintaining control over the business, and the investor, on the other hand, may have the option to leave or diversify the equity holdings (Wennberg & DeTienne, 2014).

Merger and acquisitions are also seen as an important exit route for digital businesses owners and investors, being also an important tool for new technology acquisition and/or diversification and also international expansion, especially when there are joint investments by foreign and venture capitalists (Moss, 2022; Pisoni & Onetti, 2018; Dai, Jo & Kassicieh, 2012). Furthermore, they are also a springboard for established firms to plan their growth, as they can rapidly expand product offering, client base and other resources. In spite of that, there is a considerable gap in the literature, especially regarding high tech and digital firms (Pisoni & Onetti, 2018; Wennberg & DeTienne, 2014).

Another key point taken consideration in the present research is the balance between growth and profit, which is a key interest to business ventures, especially those that undergo a fast growth process through investments and are now located on Funding Series B, C and beyond (See Table 2), as not always such growth results in sustainable performance, especially on very young firms even on IPO events (Rosenbusch et al., 2013).

International expansion is seen as a key element on growth vs. profit balance (Paik & Woo, 2017) as it is a large determinant of business growth (Tekin, Ramadani & Dana, 2021). Such expansion demands a higher networking level, establishing partnerships with key foreign stakeholders to enter global markets, without ignoring the need to work with local partners, in order to further raise venture capital from within and without the local market (Henn, Terzidis, Kuschel, Leiva & Alsua, 2022; Asemokha, Musona, Torkkeli & Saarenketo, 2019).

2.2 The nature of investors and funds

One of the key elements on the growth strategy discussion is to assess if funds, especially originated by IPOs, can be used for sustainable growth instead of only enhancing short-term financial performance, given that such funds are usually scaled back on situations of budgetary or competitive constraints (Wallin et al., 2016; Lévesque, Joglekar & Davies, 2012).

Access and optimum utilization of capital is an essential element of strategy and it is inseparable from growth strategy (Drover, Busenitz, Matusik, Townsend, Angli & Dushnitsky, 2017). Perhaps, no other factor has the same impact on business success as financial capital acquisition, especially on long product development cycles (Kirwan et al., 2019). The acquisition of financial resources and investments is likely the main challenges entrepreneurs have to address when planning their growth strategy (Rosenbusch et al., 2013).

When analysing funding and capital access, it is fundamental to factor not only financial capital, which is usually seen as the most urgent resource, but also other forms of resources that companies may assess through their investors (Park & LiPuma, 2020; Woo, 2020), as presented on Table 3.

Table 3
Types of capital

Type of Capital	Definition	Impact on Digital Business Growth
Social Capital	The entrepreneur's network connections to key stakeholders. Its nature, scope and effectiveness, including the extent through which the entrepreneur can count on capital that is controlled or owned by such stakeholders.	Access to key investors at every funding stage. Substantial reduction of the investee's internationalization costs.
Managerial Capital	It is an initial reflection of the founding entrepreneur/founding team; however, it encompasses managerial and entrepreneurial managerial practices.	Creation and mobility of knowledge and skills through human capital. Development towards a fast growth orientation. Attraction and retention of talent.
Strategical Capital	It is related to the achievement of competitive advantage through introduction of new products in the market, generation of new ideas, and acceleration of time-to-market of products.	Utilization of funding capital for long term growth and value generation. Sustainable expansion through joint ventures, mergers and acquisitions.
Financial Capital	Access to different means of funds to support business growth at every stage.	Maintenance of liquidity whilst focusing on R&D and market expansion. International scalability.

Source: Based on Park and LiPuma (2020); Woo (2020); Rosenbusch et al. (2013); Rasmussen, Mosey and Wright (2011).

Venture capitalists are financial organizations focused on investments in privately held companies that are still on the early stages of development, lacking intellectual capital and focused on reaching scalability and international expansion in environments of high uncertainty (Park & LiPuma, 2020; Woo, 2020). Venture capital tends to also provide knowledge, guidance and expanded networking opportunities for such companies, being thus a leveraging business growth and an integrative force amongst the different types of capital (Rosenbusch et al., 2013).

The vast complexity of the industry and the need for a flexible approach to high risk investments has led to the appearance of the angel investor, individuals who invest their personal funds in firms without any primary connection with the entrepreneur whilst operating outside formal financial institutions, which leads to the creation of a rather informal venture capital market (Hellmann & Thiele, 2015, 2022; Dutta & Folta, 2016); such phenomenon is further facilitated by the use of IT as an enabler of financial resource acquisition and funding – for instance, initial offerings via blockchain and crowdfunding (Lévesque et al., 2012).

Lately, foreign venture capital investments have come to represent a significant proportion of the venture financing market and have also become increasingly a cross border phenomenon, with a larger number of deals and capital involved (Woo, 2020). Despite the many opportunities for investors and companies alike, there are also several risks caused by a lack of knowledge or expertise in the local business environment and the problem with geographic distances (Dai et al., 2012). Notwithstanding the universally accepted notion that venture capital increases the success of funded firms in competitive environments, creating a certification effect and lowering the costs of IPO amongst other benefits (Hellmann & Puri, 2002), the empirical evidence on this correlation, for some authors, is somewhat non-conclusive, as there are many examples of well-funded businesses that, nonetheless, failed (Rosenbusch et al., 2013).

It is not uncommon for the same company to receive capital from angel investors at early stages and afterwards from venture capital firms and private equities (Atherton, 2012). However, angel investors may also invest in late stages of funding, usually much higher amounts, which blurs the line that would distinguish them from venture capitalists (Hellmann & Thiele, 2015). Likewise, in many circumstances, venture capital funds have been demonstrating a growing interest in earlier stages ventures (Dutta & Folta, 2016).

Private equity is another source of funding that is highly valuable for fast growing digital businesses seeking financing for survival and growth (Li et al., 2018). They usually are limited partnerships, in which the private equity firm may take up several roles as partner, investment advisor, fund manager and key network players raising capital from several different institutional investors. Private equity firms tend to plan for rapid and successful exits either via trade sales, IPO or secondary buy-out (Rigamonti, Cefis, Meoli & Vismara, 2016; Li et al., 2018).

Private equity firms act mainly as guarantors, providing dispersed investors without too much knowledge about specific businesses, certification about the quality of the firm being sold, decreasing the information asymmetry (Rigamonti et al., 2016; Davila et al., 2003) and allowing for successful exit strategies for external private equity holders, including both venture capitalists and business angels alike (Li et al., 2018).

Private equity and venture capital have moved closer over the years, and the initial distinctions have certainly been blurred; however, it is important to establish some basic differences as presented in Table 4, even though the current work aims to address potential targets for both venture capitalists and private equity firms.

Table 4
Venture Capital and Private Equities – Key distinctions

Characteristics	Venture Capital	Private Equity
Raise capital from external investors or Limited Partners (LPs).	Yes	Yes
Invest the raised capital in private companies for future gains.	Yes	Yes
Their Limited Partners pay a management fee.	Yes	Yes
A more exclusive focus on high end technology and digital.	Yes	No
Take higher risks and expect a considerable number of failures in the portfolio.	Yes	No
Invest in companies across all industries.	No	Yes
Tend to acquire majority stakes of companies.	No	Yes
Focus on bigger or more mature companies.	No	Yes
Use a combination of equity and debit to invest.	No	Yes
Tend to get involved with companies operations due to the large stakes.	Sometimes	Yes

Source: Based on Drover et al. (2017); Rigamonti et al. (2016); Hellmann and Thiele (2015).

There are also other types of investors giving new forms to risk capital, such as equity crowdfunding platforms and business accelerators (Lévesque et al., 2012; Bruton Filatotchev, Chahine & Wright, 2010). However, they do not seem to present substantial difference from the other types of investors already analysed and will be, thereby, referred as venture capital.

Venture capital plays a pivotal role with the growth and internationalization of companies, taking part in their strategic decisions and also bringing awareness about potential growth opportunities in international markets (Woo, 2020). Thus, companies with foreign corporate venture capital have a higher level of international intensity and increased profitability at least at the early stage around the IPO (Woo, 2020; Park & LiPuma, 2020) and have also a

higher likelihood of successful exits via IPOs and acquisitions (Dai et al., 2012). Hence, it is essential for the academia to carrying on studies that may facilitate investment decisions in order to ensure higher competitiveness for companies and optimum ROI for investors.

2.3 The application of the QFD Matrix in the study

Given the current work objective of analysing the growth strategy of fast growing digital start-ups in London focusing on the demands that could be addressed by financial institutions and investors such as venture capital firms, private equity firms, investment banks and so forth, it is fundamental do determine reliable parameters for those financial institutions in order to determine the right investment choices, as it may have direct impact on company performance (Woo, 2020; Kirwan et al., 2019; König et al., 2019, Rosenbusch et al., 2013; Li et al., 2018).

Quality function deployment (QFD), developed and implemented in the 60s in Japan, is a tool to identify design characteristics to meet product design and engineering requirements in a customer-oriented manner (Karasan et al., 2022; Kinker, Swarnakar, Singh & Jain, 2021; Haiyun, Zhixiong, Yüksel & Dinçer, 2021). Throughout the next decades, it has been employed for dealing with uncertain, subjective, and imprecise circumstances (Rehman et al., 2022). The strength of QFD to support decision making lies in the fact that it includes expectations and requirements of customers in problem solving, specifically to define customers' requirements and translate them into solutions to maximize customer satisfaction within a budget constraint (Torkayesh et al., 2022; Shen, Zhou, Pantelous, Liu & Zhang, 2022).

If strategy is to be effective, it must be supported with a decision-making process and QFD may be utilized in different circumstances on its own or as part of a contingency-oriented approach, to assist the deployment of company strategic objectives (Araújo & Trabasso, 2013), the current work proposes to analyse investment alternatives selection in terms of quality characteristics, by applying the Quality Function Deployment (QFD) technique, a perspective that despite being new in the literature, has already been to a certain extend tried in other relevant works (Frank, Souza, Ribeiro & Echeveste, 2013)

The QFD Matrix is based on the idea of quality function deployment, transforming clients' requirements into technical specifications for products, services and processes, defining the production process variables and its complex interactions, synergy and trade-offs (Frank et al., 2013; Akao & Mazur, 2003). It has evolved in conceptual and practical terms over the years, addressing several different organizational demands by providing a tangible method to manage new product/service development and its relationship with marketing, and for quality assurance of systems in the information age, dealing with issues on e-business, environmental balance and life cycle efficiency and also being utilized as support for strategic decision-making (Araújo & Trabasso, 2013; Frank et al., 2013; Akao & Mazur, 2003).

Fuzzy set theory presents a formal and objective treatment of the decision-making process in nebulous environments, that is, with imprecise and diffuse information, based on decision-makers' judgement; it may offer further support to QFD matrix utilization as it addresses the linguistic vagueness and impreciseness present in decision-making scenarios, utilizing relative weights of attributes instead of absolute weights. It makes QFD more reliable and robust whilst providing further options to support decisions, given that as the complexity of a system increases, the human capacity to describe it accurately and clearly decreases. (Rehman et al., 2022; Karasan et al., 2022; Zadeh, 1965, 1975).

Evolving beyond product design and engineering, QFD integrated to different weighting methods has been used for a variety of applications, such as decision support models for urban planning (Torkayesh et al., 2022); innovation strategies for supply chain management (Haiyun et al., 2021); product improvement via online reviews (Shen et al., 2022); supply chain sustainability (Chowdhury, Agarwal & Quaddus, 2019); risk mitigation measures (Rehman et al., 2022); and framework for synthetizing strategies in public sector supply chains (Ocampo, Aro, Evangelista, Maturan, Atibing, Ya 2022). Overall, it has found applications in research studies, targeting recommendations of strategies in light of predetermined factors (Rehman et al., 2022). However, no works were found in which QFD matrix and fuzzy set theories were utilised to support business growth and investment decisions, which is the focus of the current work.

The consideration on the QFD utilization limitations could not be forsaken, it is necessary to bear in mind that negative relations, between customer requirements and design parameters in the QFD relation matrix are not taken into account in the analysis, being most likely hidden in the black cell of "No-Relation" (Cheng & Chiu, 2007). Thus, the current article does not propose to replace other types of investment analysis, but only to add to the different options available.

3 METHODOLOGY

The research was divided into two stages. Firstly, a quanti-quali transversal research (Saunders, Lewis & Thornhill, 2016), with the CEOs and Founders of 119 start-ups in London was carried out in March 2019 at an invitation only business event focused on identifying, through the application of a questionnaire, key business characteristics that influence growth in those companies as well as their strategic preferences/priorities to maintain their fast growth ratio. The type of information collected can be seen on Table 5:

Table 5
Key data analysed

Key Business Characteristics	Strategic Growth Options
• Number of employers • Annual revenue growth rate • Access to funding • Interest on raising money on a short-term basis • Annual revenue	• How to maximise personal return in an exit • International Expansion • Pre IPO planning • Exits and Acquisitions • Other options to venture capital: debt, venture debt & private equity • Building and managing an effective board • Growth through acquisitions • Balancing growth vs profit.

Source: Developed by the authors.

The companies analysed had to fulfil a series of specific criteria to be present at the event and to have their data collected. See Table 6 for the eligibility criteria.

Table 6
Research eligibility criteria

Features	Research Demand
• Funding Series	• Series B, C and beyond
• Type of business	• No specific area, as long as it is a digitally enabled business.
• Growth rate	• At least 20% per three consecutive years.
• Interviewees	• CEOs and Founders only – individuals with primary equity share or high stake at the business.

Source: Developed by the authors.

Moreover, the research was restricted to companies located in London or aiming to meet London based investors, given that London has constantly been the most important city in Europe concerning tech investment, with more than £20 Billion in investment between 2014 and 2019 (Tech Nation Report, 2020).

Despite the fact that UK business numbers are measured in detail by several trustworthy sources (Rhodes & Ward, 2020), determining the size of the current research universe seems to be a rather difficult and, to a certain extent, pointless task, due to the dynamic nature of the market with several new companies appearing and disappearing on a daily basis (Tech Nation Report, 2020; Thomas et al., 2020; König et al., 2019; Cremades, 2016).

As all companies studied met the criteria set out on Table 6, the authors are led to believe that they represent non-biased sample that can describe with a valuable degree of accuracy significant traits of the universe.

Once the research was carried out and the data from the questionnaires analysed, the second stage of the research took place, in which the authors filled a QFD-fuzzy matrix, based on two main factors: i) the key points raised in the relevant business strategy literature; and ii) the data obtained with the questionnaires. Sessions 3.1, 3.2 and 3.3 explain in more details the process of filling the QFD-fuzzy matrix.

3.1 Completing the relationship matrix

In the procedure performed to establish each existing relationship in the relationship matrix, that is, each element $\tilde{R}_{ij}$, it was necessary to analyse the present connection between clients' needs – their growth strategy choice $\widetilde{W}_i$ and the investors requirements – the data raised by the researchers ($\widetilde{H}_j$). The analysis was carried out based on the relevant literature information as well as on the data acquired by the researchers.

Once the relevant data was analysed, the authors utilized a five-point Likert scale to assign a relationship level to each element $\tilde{R}_{ij}$, their evaluation was thus converted into a triangular fuzzy number as shown in Table 7.

Table 7
Relationship levels, their respective fuzzy numbers

Relationship Level	Fuzzy Numbers		
	a	m	b
Very low	0.0	0.0	0.25
Low	0.0	0.25	0.5
Medium	0.25	0.5	0.75
Strong	0.5	0.75	1.0
Very Strong	0.75	1.0	1.0
Inexistent	-	-	-

Source: Adapted from Kargari (2018).

3.2 Determining the level of importance

Alike the relationship matrix, the values referring to $\widetilde{W}_i$ followed the same methodological path adopted in the weight evaluation of each element $\tilde{R}_{ij}$. However, for the $\widetilde{W}_i$ elements, the authors utilized Table 8 besides the original research data to support their evaluation.

Table 8
Levels of importance and their respective fuzzy numbers

Linguistic variable	Fuzzy Numbers		
	a	m	b
Very low	0.0	0.0	0.25
Low	0.0	0.25	0.5
Medium	0.25	0.5	0.75
Strong	0.5	0.75	1
Very Strong	0,75	1	1

Source: Adapted from Lima, Osiro and Carpinetti (2014).

3.3 Calculating the importance of each project requirement (investors' requirements)

This stage consists of exposing the process of calculating the relative importance of each project requirement ($\tilde{H}_j$) present in the requirement matrix; thus, utilizing the existing relation between each $\widetilde{W}_i$ and $\tilde{R}_{ij}$.

According to Bottani (2009), the relation between $\widetilde{W}_i$ and $\tilde{H}_j$ can be represented by the $\tilde{R}_{ij}$ weight established by the specialist based on Table 8. Finally, equation 1 is utilized perform the calculation of the relative importance of each $\tilde{H}_j$, being thus represented by $\widetilde{WR}_j$.

$$\widetilde{WR}_j = \sum_{i=1}^{n} (\widetilde{W}_i).\left(\tilde{R}_{ij}\right) \quad (1)$$

Wherein $i = 1, 2, 3 \ldots n$ e $j = 1, 2, 3 \ldots m$, that is, the n and m elements represent, respectively, the total of $\widetilde{W}_i$ and $\tilde{H}_j$ present in the research.

4 RESULTS ANALYSIS AND DISCUSSIONS

The research results will be displayed in two parts, firstly the questionnaire data analysis will be displayed, focusing on the descriptive statistics; after that, the QFD-fuzzy matrix will be presented.

The first interesting point of the research is the difference between male and female entrepreneurs in the analysed companies, 80% male and 20% female. Such difference is not something particularly new in the literature, as many other authors and reports have analysed the start-up gender gap subject or the disparities in the total early stage entrepreneurial activity in the UK (TEA Rate) between genders (Rhodes & Ward, 2020; Kuschel & Lepeley, 2016). However, it is necessary to further analyse those figures as to ascertain if the gender of the CEO/Founder of a start-up may have impact on how investors see the business, how capital is raised and how the overall business growth strategy performs.

In terms of job titles, as previously discussed, the numbers were 100% related to key decision makers: 86% CEOs/Founders/Co-Founders; 8% Founders/Co-Founders exerting activities other than CEO (COO, CIO board member, MD, etc.); 6% were neither founder/co-founders nor CEOS, but held high executive position (C-level). They were all the most fundamental players responsible for growth strategy within their organizations.

The classification of the industry sectors amongst the companies that answered the survey proved to be encumbered by several obstacles. Given the nature of the companies analysed – digital based fast-growing business – many were in very specific industry sectors whilst others could be perceived to belong to many different sectors due to their use of disruptive technologies to recreate traditional business models (Steininger 2019; Gupta & Bose, 2019).

Thus, the authors chose not to restrict the answers by leaving the question open, and as a result of that, more than 60 different industry sectors were presented. The answers were then clustered into similar categories, however, the data cannot give much information besides the fact that digital based business, quite so often, are rather difficult to categorise, which could explain why a large part of the respondents (21,85%) left that question unanswered:

Table 9
Industry Sector Distribution

Industry Sector	%
No response	21.85%
EdTech/Education	10.92%
Financial Services and FinTech/ RegTech	8.40%
Software/Software Development/Software services	7.56%
Digital Advertising/ Services/ Tech and CS/Web analytics	6.72%
Marketing Services/PR/technology/creative production/Market Places/ Media	6.72%
Technology Development	6.72%
Retail/Retail integration/e-commerce Technology	4.20%
SaaS/SaaS & Social Care/SaaS CRM	3.36%
Travel & Hospitality	2.52%
Telecoms/Semiconductors/CX technologies	2.52%
Consumer/Consumer services	1.68%
Health Care/Health/Social Care	1.68%
Legal/Digital	1.68%
Real Estate/Property Management	1.68%
Aerospace	0.84%
AI-as-a-service	0.84%
Automation, travel, finance	0.84%
Automotive, MaaS, IoT	0.84%
B2B Software	0.84%
Biotechnology	0.84%
Business Intelligence	0.84%
Crafts and Tech	0.84%
Health and Safety, Food Safety, Fire Safety	0.84%
Off-grid solar	0.84%
Photonics & Quantum Technology	0.84%

Source: Developed by the authors.

4.1 Number of employees

The first item analysed by the research was number of employees, as it is a key item to analyse companies' maturity (Huang et al., 2017; Nambisan, 2017).

Around 45% of the companies have between 76 to 150 employees. It seems that around that size, the companies reach a turning point which forces them to take more relevant strategic decisions. The data can be further analysed on Figure 1.

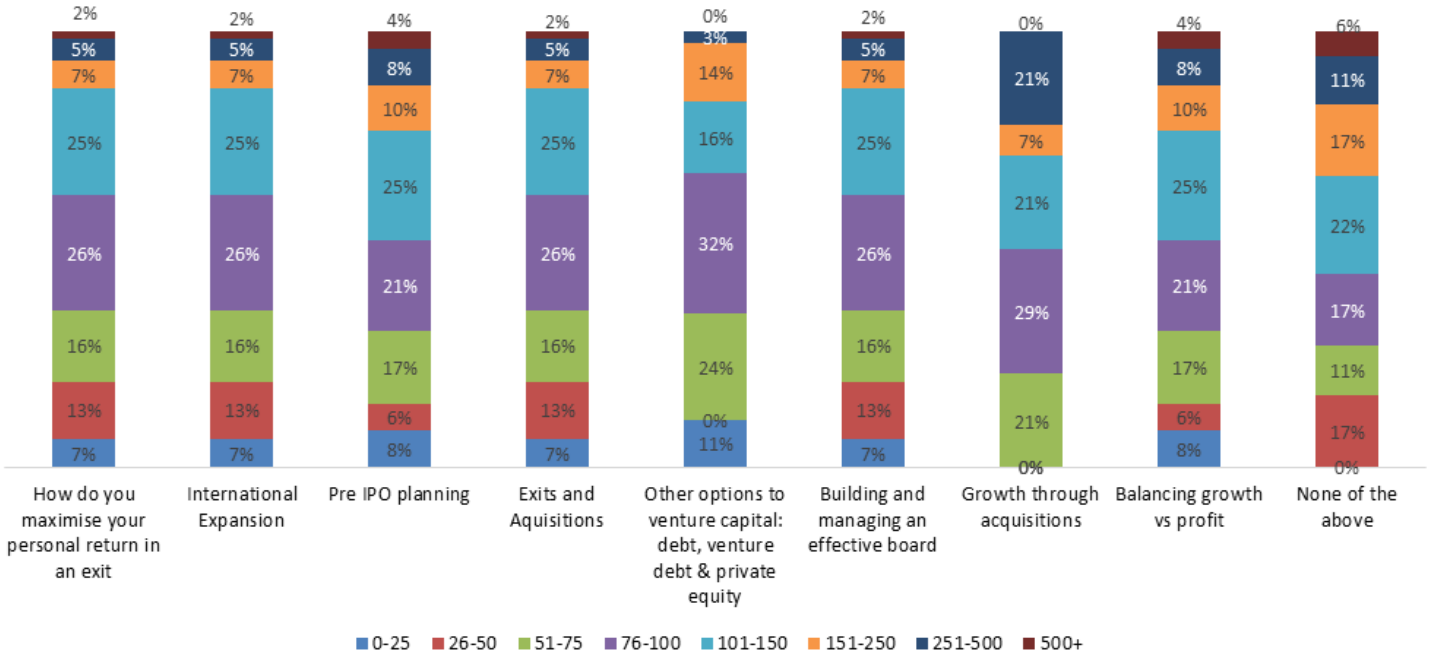

Figure 1. Number of Employees and Growth Strategy Choices.
Source: Developed by the authors.

The companies within 76 to 150 employees have made the most decisions on every strategic choice available. A considerable number – 48% – are still looking for other options to venture capital, which means they are still interested in growth through external investments, but 50% are also keen to hear about growth through acquisitions, which indicates a level of financial maturity and liquidity within those companies.

Balancing growth vs. profit is also a key strategic choice for 46% of the companies within that specific size bracket, which seems quite natural, given the growing complexity that comes with higher employees' numbers.

It seems that number of employees become a critical element once the company finds itself between 76 and 150 employees. This is a very important information, as it gives investors a parameter not specifically to support investment decisions, but to narrow the pipeline of possible investments.

The data confirm what has been discussed on the positive correlation between headcount and value creation, being indicative of a threshold maturity level for many start-ups and scale-ups (Davidsson, Delmar & Wiklund, 2019; Monteiro, 2019; Davila et al., 2003). However, it also supports the idea that headcount has lost its relevance as a fast-growth indicative, points to a scenario of no correlation between job creation and growth, as already addressed in the relevant literature (Wallin et al., 2016).

Future research could focus on the actual importance of headcount as a growth parameter, specifically for companies with potential to become unicorns. Such scenario also raises questions about the capacity of start-ups and scale-ups to be able to attend the market job demands.

4.2 Annual Revenue Growth Rate

Annual revenue growth is another important item analysed in the current research, as it a key indicative of the funding series level that a company is currently located (Rigamonti et al., 2016; Li et al., 2018), being another important maturity indicator (Lévesque et al., 2012).

Around a third of the respondent companies presented a growth rate between 20% to 50% per year, that figure can be rather higher, given the considerable number of respondents who preferred not to reveal their annual growth rate, 27.73% (Figure 2).

The number of companies with growth rates beneath 20% per year is irrisory and the number of companies above 100% per year is also not very considerable – around 18%. The companies between 20% to 50% annual growth rate present a steady figure of around 30% on all strategic choices, except for Growth Through Acquisitions, which none has chosen as a strategy option. It seems that even though that number indicates a financial maturity for the companies, it still no guarantee of liquidity or access to capital to grow through acquisitions.

In fact, that level of growth may represent many different things, from financial and market maturity to fast and unsustainable growth due to capital injection (Cavallo et al. 2019; Rosenbusch et al., 2013). Investors need to focus on distinguish between these two scenarios, as they pose different types of risk that may directly influence investment decisions and general conditions such as minimum ROI required, equity and exit conditions, including IPOs.

Companies with higher growth rates 50% to 100% yearly, also present a balance amongst its strategic choices of around 25%, except in growth through acquisitions, which is not chosen by any of them. This may imply that acquisitions are not perceived as necessary as a growth tool if the company is maintaining that level of growth, which may be indicative of organic growth, a trait that is vital for long-term profitable investments (Satisteban & Mauricio, 2017; Rosenbusch et al., 2013).

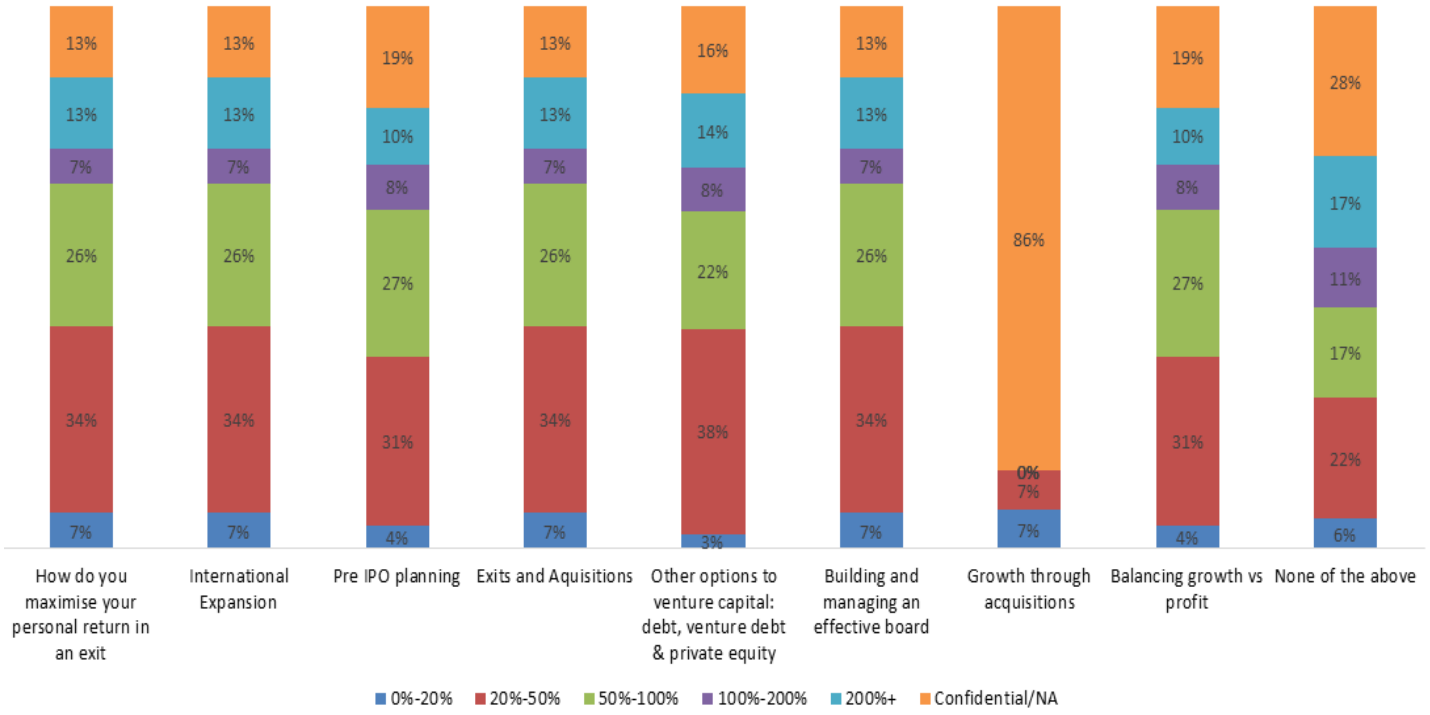

Figure 2. Annual Revenue Growth Rate and Growth Strategy Choices.
Source: Developed by the authors.

Most of the companies that have chosen not to reveal their annual growth rate marked the option of growth through acquisition, which one could speculate as being indicative of potential recent capital injections.

4.3 Funds Raised

This was a key element analysed in the research, as it represents a liquidity boost for the companies as well as capital for R&D, essential elements to value the company, maintain growth and experience successful IPOs and exits (Wallin et al., 2016; Lévesque et al., 2012).

The number of companies that chose not to disclose the amount of funds raised is an element for concern in the current research, as there is no secure way to make inferences about their overall growth strategy.

Another interesting point is that despite the fact that the companies all were on funding series B and beyond, that is, past the development stage and ready for market expansion on a larger scale (Cremades, 2016), close to 18% have mentioned not having received funds recently, which could be indicative of organic growth supported by a solid client base. Figure 3 brings data regarding the growth strategy of companies based on the funds they have raised.

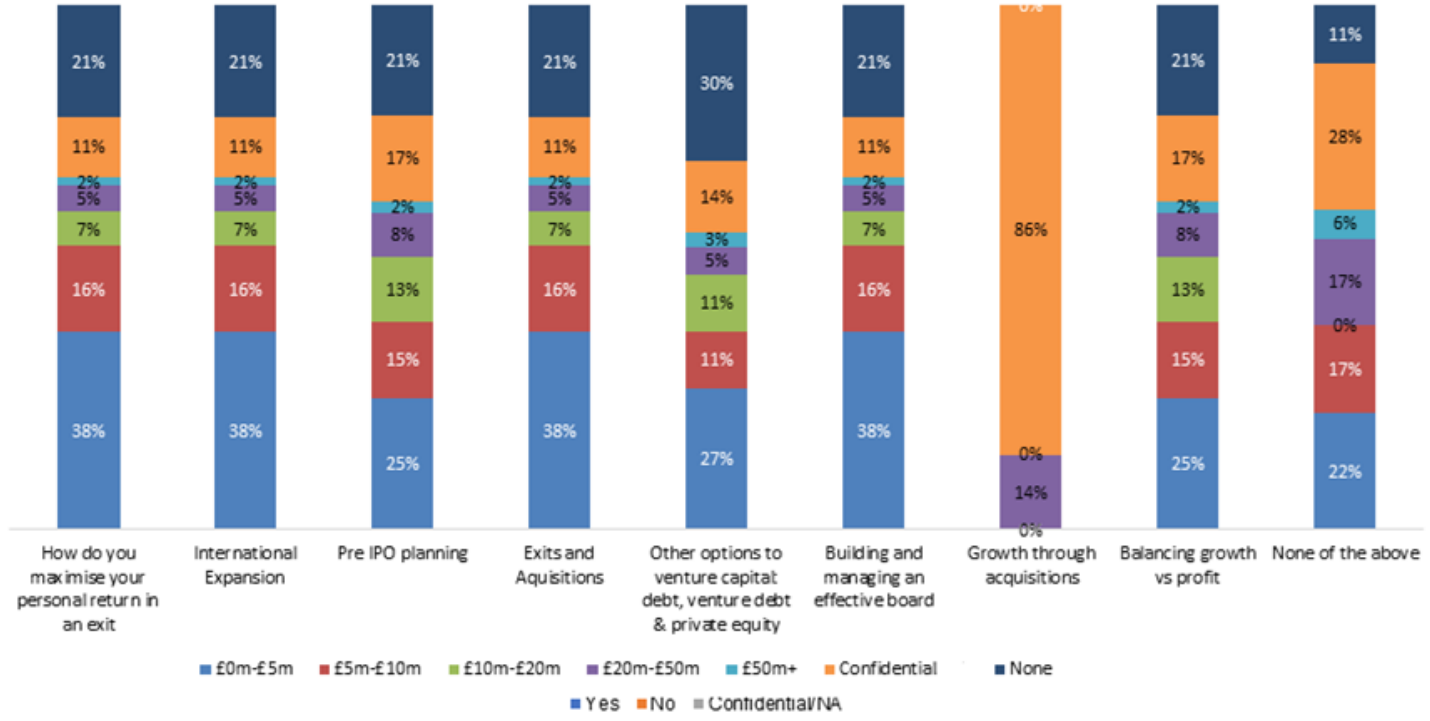

Figure 3. Growth Strategy Choices by Funds Raised.
Source: Developed by the authors.

Firstly, there is the fact that most companies that have undisclosed the amount of funds raised showed strong interest in the topic of growth through acquisition (86%), such companies may already be in advanced negotiations and the window of opportunity to close business with them for venture capitalists, investments banks and so forth may be quite small. Overall, the amount of funds raised recently, despite being fundamental for the company, does not seem to have impact on a specific growth strategy, and it needs to be analysed with other variables to offer valuable insights.

4.4 Intention to Raise Capital on Short Term

Another key point analysed in the research was entrepreneurs' intention to raise capital on short term. The intention in itself does not reveal much, as the capital could be used for expansion, R&D, acquisitions, and so forth (Wallin et al., 2016; Lévesque et al., 2012). But it is essential for financial institutions to target the companies most likely with which they could do business, focusing their business development resources. On Figure 4 their strategic choice is displayed:

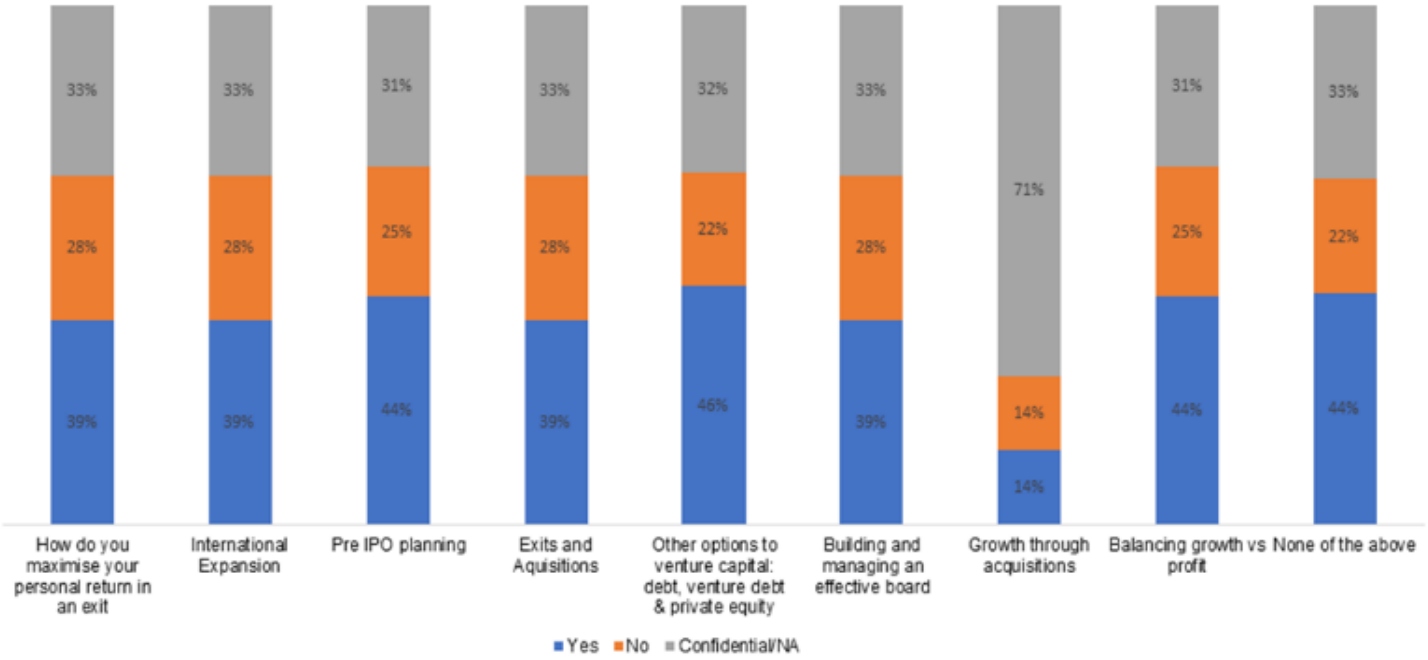

Figure 4. Intention to Raise Capital
Source: Developed by the authors.

38% of the entrepreneurs interviewed have confirmed interest to raise money on a short-term basis; against 27% who said having no interest. A considerable 35% of respondents preferred not to disclose their intention. Overall, it is safe to say that the majority of the companies could be open for investments in the next six months.

Growth through acquisition is the least chosen option for the companies interested in raising capital, as well as the companies with no short-term interest. However, it is, by far, the preferred choice of the companies who opted not to disclose their intention. It is feasible to assume that these companies are going through advanced negotiations that may require them to be secretive.

It is also possible to see a strong balance between two different strategic choices, 44% of the companies who revealed interest in raise short term money also showed interest about pre-IPO planning, which may be indicative of the development of an exit strategy, on the other side, 46% of the companies intending to raise capital were keen to hear more about other investment options, which may indicate that they are still on the growth and consolidation stage, without a short term exit strategy.

Balancing growth vs. profit was also a topic chosen by 44% of the companies that are planning to receive short-term investment; this is an essential condition for a successful exit or IPO (Joseph et al., 2023; Assefa et al., 2022; Paik & Woo, 2017).

4.5 The Use of the QFD-Fuzzy Matrix

According to Meglio et al. (2017), financial and economic interpretations are just a part of the investment decision-making process, which is also influenced by personal experience and judgment. The utilization of the QFD-Fuzzy matrix is an attempt to integrate the investors personal experiences to the investment process by letting them establishing the weighted attributes of their requirements *vis-à-vis* the companies' requirements. The data provided by que questionnaires applied in the research could offer further robustness to their decision-making process leading to the development of a new tool to support investment decisions.

The Matrix-Fuzzy was filled by the current authors, that is, the weighted attributes are given based on the authors' perspective built on the data collected and the relevant business literature analysed. As the attributes were not evaluated by professional investors, the authors will refrain from indicate groups of categories of companies that could be more interesting in terms of investment, but rather, only point out features that should catch the investors' attention.

The use of the QFD-Fuzzy Matrix revealed some interesting points that could be of relevance for investors on choosing start-ups with which to close business. For the complete analysis readers can refer to Table 10.

Table 10
QFD Matrix Fuzzy: Clients' Needs vs. Investors' Requirements

						Improvement Direction												
Line Number	Relative Importance (%) (CRISP)	Level of Importance (CRISP)	Level of Importance (FUZZY)			Investors' Requirements / Clients' Needs	Number of Employees			Annual revenue growth rate			Funding raised			Will you be looking to raise money in the next 6 months?		
1	15.65	0.96	0.75	1	1	How do you maximise your personal return in an exit	0.25	0.5	0.75	0.75	1	1	0.5	0.75	1	0.5	0.75	1
2	15.65	0.96	0.75	1	1	International Expansion	0.5	0.75	1	0.75	1	1	0.5	0.75	1	0.5	0.75	1
3	12.24	0.75	0.5	0.75	1	Pre-IPO planning	0.5	0.75	1	0.75	1	1	0.25	0.5	0.75	0.75	1	1
4	15.65	0.96	0.75	1	1	Exits and Acquisitions	0.5	0.75	1	0.75	1	1	0.5	0.75	1	0.25	0.5	0.75
5	8.16	0.50	0.25	0.5	0.75	Other options to venture capital: debt. venture debt & private equity	0.5	0.75	1	0.25	0.5	0.75	0.25	0.5	0.75	0.5	0.75	1
6	15.65	0.96	0.75	1	1	Building and managing an effective board	0.5	0.75	1	0.75	1	1	0.5	0.75	1	0.25	0.5	0.75
7	4.08	0.25	0	0.25	0.5	Growth through acquisitions	0.25	0.5	0.75	0.75	1	1	0.5	0.75	1	0.5	0.75	1
8	12.24	0.75	0.5	0.75	1	Balancing growth vs profit	0.25	0.5	0.75	0.5	0.75	1	0.75	1	1	0.5	0.75	1
9	0.68	0.04	0	0	0.25	None of the above	0	0	0.25	0	0	0.25	0	0	0.25	0	0	0.25
						Relative Importance (FUZZY)	**1.81**	**4.19**	**6.69**	**2.94**	**5.81**	**7.13**	**2.06**	**4.56**	**6.88**	**1.88**	**4.38**	**6.81**
						Relative Importance (CRISP)	**4.21**			**5.55**			**4.53**			**4.36**		
						Relative Importance (%)	**22.56**			**29.76**			**24.29**			**23.39**		
						Ranking	**4**			**1**			**2**			**3**		

Source: Developed by the authors.

Maximise personal return in an exit as well as interest in exits and acquisitions are a client need more common for companies with higher revenue growth rate, which is akin to the specialised literature as exits and acquisitions are a viable option for organizations seeking accelerated growth (Dai et al., 2012). However, it may be necessary to ask the following question: Are the companies analysed lifestyle companies or companies designed for a quick exit since inception? The answer may define the best companies to invest based on the investors' requirement (Pisoni & Onetti, 2018; Ries, 2011).

Clients keen on looking at international expansion are those that also present the higher annual revenue growth rate. It seems that those companies, despite being born global, may initiate their organic growth in local markets to expand internationally afterwards (Tekin et al., 2021). Those companies will need more than just capital injection, it is necessary to think in terms of networking and key partnerships; therefore, the investors have to ascertain their capability beyond their liquidity, that is, it is necessary to see if they will have conditions to add beyond the financial capital, focusing on social, managerial and strategical capital alike (Park & LiPuma 2020; Woo, 2020; Rosenbusch et al. (2013); Rasmussen et al., 2011). The companies, on the other hand, have to be prepared to increase their human capital levels, which may include building a board of

directors and/or changing leadership (García-García et al., 2022).

Companies looking for a pre-IPO planning displayed high scores on annual revenue growth rate as well as the intention to raise capital in short term. This may indicate that such companies are increasing their perceived market value through capital injections in order to maximize IPO results (Bradshaw et al., 2022; Pisoni & Onetti, 2018; Wisniewski, 2017; Crosier, 2004) For investors, that may mean lower equity and challenges to exert managerial and strategic influence, a situation that has to be factored in the investment decisions.

Other options to venture capital: debt, venture debt & private equity was a client need most common seen on companies with lower annual growth rate. That may be a signal alert, as those companies may have exhausted the initial investment rounds without consolidating the necessary conditions to carrying on growing in the market. For those companies, number of employees is also comparatively high as well as their intention to raise short-term funds (Rigamonti et al., 2016; Li et al., 2018; Cremades, 2016). It may be a trait that may raise caution for investors, even though such inferences cannot be made only analysing the matrix.

Companies that have raised funds in short term seem quite keen on balancing growth vs. profit. This may be an indicative of a business model that have not yet been consolidated (Woo, 2020; König et al., 2019; Meglio et al., 2017; Li et al., 2018), which may indicate opportunities for longer term investments.

In the scenario analysed by the authors, number of employees should be the least important element for investors to take into consideration when choosing new companies in which to invest. Despite the vast literature supporting the importance of this business aspect (Davidsson, Delmar & Wiklund, 2019; Monteiro, 2019; Davila et al., 2003), it is necessary to bear in mind that digital companies may grow and escalate on a very lean business model, demanding very little personal. Such tendency should be explored in future researches.

The willingness to raise capital on a short basis is the second least relevant element to be taken into account when analysing growth strategies. That may be due to the fact that capital raise may not imply sustainable growth on competitive advantage acquisition neither improvements in R&D (Wallin et al., 2016; Lévesque et al., 2012).

Having raised money previously seems to be a determinant element on companies' growth strategy, coming second in the ranking. It is necessary, however, to analyse if the previous investments generated the expected returns or if the companies have fallen short on their original objectives. It is safe to argue that they are still a key element, as it may indicate the most likely picks for secure short-term returns and exits, but it should not be overestimated.

Finally, the most important element to influence strategic growth decisions and, therefore, to be of relevance for investors to take into account when analysing investment options is Annual Revenue Growth Rate, which come as no surprise, given that growth rate is a fundamental tool for performance measurement.

It is important to notice that the distinct levels of the ranking are quite narrow, especially the fourth, third and second values. That ranking may vary in different geographic and cultural scenarios; or in alternative industry sectors.

5 CONCLUSIONS

The present work endeavoured to study the growth strategy of 119 fast growing digital start-ups based in London, by interviewing their CEOs/Founders, focusing on their main demands that could be addressed by venture capital firms, private equity firms and investment banks whilst utilizing a QFD-Fuzzy matrix based on data obtained from the original research as well as on the key points raised in the relevant business strategy literature in order to develop a tool that could be used to support investors in investment choices within fast-growing digital based businesses. Throughout the study the authors noticed several relevant insights:

Most of the CEOs/Founders were male (80%) which leads to the belief that a study on different growth strategy patterns based on gender could be relevant.

Despite all business beings considered digital based, the industry sector was quite varied, so amongst the 119 companies a single most predominant sector could not be determined. That may lead to the belief that it is necessary to concentrate future researches on single sectors in order to perceive if there are different patterns of strategy behaviour.

It seems that the number between 75 – 150 employees is a likely turning point in which the company is demanded to take more rational growth decisions, presenting a positive correlation between headcount and value creation.

Around a third of the respondent companies presented a growth rate between 20% and 50% a year, which is very attractive to venture capital.

Over 80% of the companies utilized external investment to support growth, having different levels of success. However, the amount of funds raised recently, despite being fundamental for the company, does not seem to have impact on a specific growth strategy.

38% of the companies have confirmed interest to raise money on a short-term basis; whilst 27% said having no interest. That is a fundamental point to be utilized by investors to choose which companies to approach first; however, they do not imply a potentially more lucrative investment.

Regarding the utilization of the QFD-Fuzzy matrix to support investors, it can be said that it may be proved useful, revealing key guiding points, mainly the fact that Annual Revenue Growth Rate was seen as the most important element to influence strategic growth decisions and,

therefore, to be of relevance for investors to take into account when analysing investment options. The QFD-Fuzzy ranking, nonetheless, was rather close, which indicates that it is necessary further studies with more variables both for clients' needs and investors' requirements in order to become a more useful decision tool. Also, the fact that the weights attributes were placed by the authors, not from investors, may be indicative of a biased analysis, establishing the need for further studies.

As suggestions for future researches, besides the questions already raised within the results analysis, the authors recommend not only an increase on the number of variables within the QFD-Fuzzy matrix, but also a comparative analysis between specific business sectors or businesses from different geographic areas, taking into account that investors have to manage an investment portfolio usually spread across several different countries/regions. Furthermore, it would be very relevant to evaluate how different investors would fill the QFD-Fuzzy Matrix. It is possible that different types of investors would attribute distinct weights to the attributes analysed. Such study would offer important insights on subjective factors that influence investment decisions, increasing the relevance of the QFD-Fuzzy matrix in this type of context.

The current work presents two types of limitations. Firstly, regarding its universe and sample – 119 companies – given that the immense variety, complexity and dynamism of the digitally based start-up ecosystem may pose new scenarios in which previously robust analysis may fall short to explain the phenomena studied, it may be necessary to either extend the number of companies analysed, which may prove to be a laborious task, or further narrow down the eligibility criteria, focusing on more specific business traits.

Secondly, and most importantly, the work displays an overly cautious approach to the use of the QFD-Matrix, not reaching any conclusions that would point out to its efficacy in the investment decision scenario. However, the data, by itself, do not present conclusive aspects, it only opens an avenue for further questions. The authors may indicate elements from the specialized literature *vis-à-vis* the data collected that may lead to inferences on investment decisions (e.g. which traits seems more important to factor when deciding companies on which to invest); however, as a matter of responsibility, the interpretation of the feasibility of investments should come from investors utilising the tools.

REFERENCES

Akao, Y., & Mazur, G. H. (2003). The leading edge in QFD: Past, present and future. *International Journal of Quality & Reliability Management*, 20(1), 20-35. https://doi.org/10.1108/02656710310453791

Araújo, M. F., & Trabasso, L. G. (2013). Applying QFD to business development environment. *Journal of the Brazilian Society of Mechanical Sciences and Engineering*, 35, 131-142. https://doi.org/10.1007/s40430-013-0010-5

Asemokha, A., Musona, J., Torkkeli, L., & Saarenketo, S. (2019). Business model innovation and entrepreneurial orientation relationships in SMEs: Implications for international performance. *Journal of International Entrepreneurship*, 17(3), 425-453. https://doi.org/10.1007/s10843-019-00254-3

Assefa, D. Z., Colovic, A., & Misganaw, B. A. (2022). Firm size, firm age and business model innovation in response to a crisis: Evidence from 12 countries. *International Journal of Innovation Management*, 2250054. https://doi.org/10.1142/S1363919622500542

Atherton, A. (2012). Cases of start-up financing. *International Journal of Entrepreneurial Behavior & Research*, 18(1), 28-47. https://doi.org/10.1108/13552551211201367

Autio, E., Nambisan, S., Thomas, L. D. W., & Wright, M. (2018). Digital affordances, spatial affordances, and the genesis of entrepreneurial ecosystems. *Strategic Entrepreneurship Journal*, 12(1). https://doi.org/10.1002/sej.1266

Bottani, E. (2009). A fuzzy QFD approach to achieve agility. *International Journal of Production Economics*, 119(2), 380-391. https://doi.org/10.1016/j.ijpe.2009.02.013

Bradshaw, M., Drake, M., Pacelli, J., & Twedt, B. (2022). Brokerage house initial public offerings and analyst forecast quality. *Management Science*, ahead of print. https://doi.org/10.1287/mnsc.2022.4610

Bruton, G. D., Filatotchev, I., Chahine, S., & Wright, M. (2010). Governance, ownership structure, and performance of IPO firms: The impact of different types of private equity investors and institutional environments. *Strategic Management Journal*, 31(5), 491-509 https://doi.org/10.1002/smj.822

Burger, A., Hogan, T., Kotnik, P., Rao, S., & Sakinç, M. E. (2023). Does acquisition lead to the growth of high-tech scale-ups? Evidence from Europe. *Research in International Business and Finance*, 64, 101820. https://doi.org/10.1016/j.ribaf.2022.101820

Bustamante, C. V., (2019). Strategic choices: Accelerated startups' outsourcing decisions. *Journal of Business Research*, 105 (C), 359-369. https://doi.org/10.1016/j.jbusres.2018.06.009

Cantamessa, M., Gatteschi, V., Perboli, G., & Rosano, M. (2018). Startups' roads to failure. *Sustainability (Switzerland)*, 10(7), 2346. https://doi.org/10.3390/su10072346

Cavallo, A., Ghezzi, A., Dell'Era, C., & Pellizzoni, E. (2019). Fostering digital entrepreneurship from startup to scaleup: The role of venture capital funds and angel groups. *Technological Forecasting and Social Change*, 145(C), 24-35. https://doi.org/10.1016/j.techfore.2019.04.022

Cheng, B. W., & Chiu, W. H. (2007). Two-dimensional quality function deployment: An application for deciding quality strategy using fuzzy logic. *Total Quality Management and Business Excellence*, 18(4), 451-470. https://doi.org/10.1080/14783360701231948

Chowdhury, M. M. H., Agarwal, R., & Quaddus, M. (2019). Dynamic capabilities for meeting stakeholders' sustainability requirements in supply chain. *Journal of Cleaner Production*, 215, 34-45. https://doi.org/10.1016/j.jclepro.2018.12.222

Ciasullo, M.V., Montera, R., Mercuri, F., & Mugova, S. (2022). When digitalization meets omnichannel in international markets: A case study from the agri-food industry. *Administrative Sciences*, 12(2), 68. https://doi.org/10.3390/admsci12020068

Costa, J. F., Araújo, A. G., Cabral, E. L. S., Severo, R. A. N. F., Barreto, J., & Freitas, R. (2021). The use of a QFD approach to support investors' decisions: A study on fast growing digital businesses in London. *45th ANPAD Annual Event*, Brazil, 45.

Costa, J. F., Jr., Rezende, J. F. D., Cabral, E. L. S., Florentino, D. R. M., & Soares, A. R. (2018). The impact of big data on SME´s strategic management: A study on a small British enterprise specialized in business intelligence. *Journal of Management and Strategy*, 9(4), 10-21. https://doi.org/10.5430/jms.v9n4p10

Cremades, A. (2016). *The Art of Startup Fundraising*. New York: Wiley.

Crosier, L. P. (2004). *Selling your business: The transition from entrepreneur to investor*. New York: John Wiley & Sons.

Cumming, D., Kumar, S., Lim, W. M., & Pandey, N. (2022). Mapping the venture capital and private equity research: A bibliometric review and future research agenda. *Small Business Economics*, 1-49. https://doi.org/10.1007/s11187-022-00684-9

Dai, N., Jo, H., & Kassicieh, S. (2012). Cross-border venture capital investments in Asia: Selection and exit performance. *Journal of Business Venturing*, 27(6), 666-684. https://doi.org/10.1016/j.jbusvent.2011.04.004

Daunfeldt, S. O., & Halvarsson, D. (2015). Are high-growth firms one-hit wonders? Evidence from Sweden. *Small Business Economics*, 44, 361-383. https://doi.org/10.1007/s11187-014-9599-8

Davidsson, P., Delmar, F., & Wiklund, J. (2019). Measuring growth: Methodological considerations and empirical results. In *Entrepreneurship and SME Research: On its Way to the Next Millennium* (pp. 199-216). Aldershot, England: Ashgate. https://doi.org/10.4337/9781781009949.00011

Davila, A., Foster, G., & Gupta, M. (2003). Venture capital financing and the growth of startup firms. *Journal of Business Venturing*, 18(6), 689-708. https://doi.org/10.1016/S0883-9026(02)00127-1

Drover, W., Busenitz, L., Matusik, S., Townsend, D., Anglin, A., & Dushnitsky, G. (2017). A review and road map of entrepreneurial equity financing research: Venture capital, corporate venture capital, angel investment, crowdfunding, and accelerators. *Journal of Management*, 43(6), 1820-1853. https://doi.org/10.1177/0149206317690584

Dutta, S., & Folta, T. B. (2016). A comparison of the effect of angels and venture capitalists on innovation and value creation. *Journal of Business Venturing*, 31(1), 39-54. https://doi.org/10.1016/j.jbusvent.2015.08.003

Frank, A. G., Souza, D. V. S., Ribeiro, J. L. D., & Echeveste, M. E. (2013). A framework for decision-making in investment alternatives selection. *International Journal of Production Research*, 51(19), 5866-5883. https://doi.org/10.1080/00207543.2013.802393

García-García, R., García-Canal, E., Guillén, M.F. (2022). Walking on thin ice: CEOS' internationalization decisions in underperforming firms. *Long Range Planning*, 55(5), 102243. https://doi.org/10.1016/j.lrp.2022.102243

Gupta, G., & Bose, I. (2019). Digital transformation in entrepreneurial firms through information exchange with operating environment. *Information and Management*, 59(3), 103243. https://doi.org/10.1016/j.im.2019.103243

Haiyun, C., Zhixiong, H., Yüksel, S., & Dinçer, H. (2021). Analysis of the innovation strategies for green supply chain management in the energy industry using the QFD-based hybrid interval valued intuitionistic fuzzy decision approach. *Renewable and Sustainable Energy Reviews*, 143, 110844. https://doi.org/10.1016/j.rser.2021.110844

Hellmann, T., & Puri, M. (2002). Venture capital and the professionalization of start-up firms: Empirical evidence. *The Journal of Finance*, 57(1), 169-197. http://www.jstor.org/stable/2697837

Hellmann, T., & Thiele, V. (2015). Friends or foes? The interrelationship between angel and venture capital markets. *Journal of Financial Economics*, 115(3), 639-653. https://doi.org/10.1016/j.jfineco.2014.10.009

Hellmann, T., & Thiele, V. (2022). Scaling versus selling startups: The role of foreign acquirers in entrepreneurial ecosystems. *SSRN*. https://doi.org/10.2139/ssrn.4033748

Henn, R., Terzidis, O., Kuschel, K., Leiva, J.C., & Alsua, C. (2022). One step back, two steps forward: Internationalization strategies and the resilient growth of entrepreneurial ecosystems. *Small Enterprise Research*, 29(3), 273-307. https://doi.org/10.1080/13215906.2022.2134191

Huang, J., Henfridsson, O., Liu, M. J., & Newell, S. (2017). Growing on steroids: Rapidly scaling the user base of digital ventures through digital innovaton. *MIS Quarterly: Management Information Systems*, 41(91), 301-314. https://doi.org/10.25300/MISQ/2017/41.1.16

Jeon, E., & Maula, M. (2022). Progress toward understanding tensions in corporate venture capital: A systematic review. *Journal of Business Venturing*, 37(4), 106226. https://doi.org/10.1016/j.jbusvent.2022.106226

Joseph, G., Aboobaker, N., & Ka, Z. (2023). Entrepreneurial cognition and premature scaling of startups: A qualitative analysis of determinants of start-up failures. *Journal of Entrepreneurship in Emerging Economies*, 15(1), 96-112. https://doi.org/10.1108/JEEE-11-2020-0412

Karasan, A., Ilbahar, E., Cebi, S., & Kahraman, C. (2022). Customer-oriented product design using an integrated neutrosophic AHP & DEMATEL & QFD methodology. *Applied Soft Computing*, 118, 108445. https://doi.org/10.1016/j.asoc.2022.108445

Kargari, M. (2018). Ranking of performance assessment measures at Tehran Hotel by combining DEMATEL, ANP, and SERVQUAL models under fuzzy condition. *Mathematical Problems in Engineering*, 2018, 1-11. https://doi.org/10.1155/2018/2F5701923

Kinker, P., Swarnakar, V., Singh, A. R., & Jain, R. (2021). Prioritizing NBA quality parameters for service quality enhancement of polytechnic education institutes – A fuzzy Kano-QFD approach. *Materials Today: Proceedings*, 47(17), 5788-5793. https://doi.org/10.1016/j.matpr.2021.04.122

Kirwan, P., Ratinho, T., Van Der Sijde, P., & Groen, A. J. (2019). The early development of International New Ventures: a multidimensional exploration. *International Journal of Entrepreneurial Behaviour and Research*, 25(6), 1340-1367. https://doi.org/10.1108/IJEBR-12-2017-0508

König, M., Ungerer, C., Baltes, G., & Terzidis, O. (2019). Different patterns in the evolution of digital and non-digital ventures' business models. *Technological Forecasting and Social Change*, 146(C), 844-852. https://doi.org/10.1016/j.techfore.2018.05.006

Kuschel, K., & Lepeley, M. T. (2016). Women start-ups in technology: Literature review and research agenda to improve participation. *International Journal of Entrepreneurship and Small Business*, 27(2-3), 333-346. https://doi.org/10.1504/IJESB.2016.073995

Lévesque, M., Joglekar, N., & Davies, J. (2012). A comparison of revenue growth at recent-IPO and established firms: The influence of SG&A, R&D and COGS. *Journal of Business Venturing*, 27(1), 47-61. https://doi.org/10.1016/j.jbusvent.2010.08.001

Li, L., Su, F., Zhang, W., & Mao, J. Y. (2018). Digital transformation by SME entrepreneurs: A capability perspective. *Information Systems Journal*, 28(6), 1129-1157. https://doi.org/10.1111/isj.12153

Lima, F. R., Jr., Osiro, L., & Carpinetti, L. C. R. (2014). A comparison between Fuzzy AHP and Fuzzy TOPSIS methods to supplier selection. *Applied Soft Computing*, 21, 194-209. https://doi.org/10.1016/j.asoc.2014.03.014

Ma, H., Lu, X., & Xie, X. (2014). Business exit as a deliberate strategy for incumbent firms. *Organizational Dynamics*, 43(4). https://doi.org/10.1016/j.orgdyn.2014.09.003

Meglio, O., Destri, A. M., & Capasso, A. (2017). Fostering dynamic growth in new ventures through venture capital: Conceptualizing venture capital capabilities. *Long Range Planning*, 50(4), 518-530. https://doi.org/10.1016/j.lrp.2016.09.003

Mehta, K., Sharma, R., Vyas, V., & Kuckreja, J. S. (2022). Exit strategy decision by venture capital firms in India using fuzzy AHP. *Journal of Entrepreneurship in Emerging Economies*, 14(4), 643-669. https://doi.org/10.1108/JEEE-05-2020-0146

Mihailova, I. (2022). Business model adaptation for realized international scaling of born-digitals. *Journal of World Business*, 101418. https://doi.org/10.1016/j.jwb.2022.101418

Monteiro, G. F. A. (2019). High-growth firms and scale-ups: a review and research agenda. *RAUSP Management Journal*, 54(1). https://doi.org/10.1108/RAUSP-03-2018-0004

Moss, D. L. (2022). Toward a coherent approach to market power in the digital sector: Complexity, growth through acquisition, and remedies. *The Antitrust Bulletin*, 67(4), 536-551. https://doi.org/10.1177/0003603X221126139

Nambisan, S. (2017). Digital entrepreneurship: Toward a digital technology perspective of entrepreneurship. *Entrepreneurship: Theory and Practice*, 41(6), 1029-1055. https://doi.org/10.1111/etap.12254

Ocampo, L. A., Aro, J. L., Evangelista, S. S., Maturan, F., Atibing, N. M., Yamagishi, K. D., & Selerio, E. F. (2022). Synthesis of strategies in post-COVID-19 public sector supply chains under an intuitionistic fuzzy environment. *Socio-Economic Planning Sciences*, 85, 101340. https://doi.org/10.1016/j.seps.2022.101340

Paik, Y., & Woo, H. (2017). The effects of corporate venture capital, founder incumbency, and their interaction on entrepreneurial firms' R & D investment strategies. *Organization Science*, 28(4), 597-780. https://doi.org/10.1287/orsc.2017.1133

Park, S., & LiPuma, J. A. (2020). New venture internationalization: The role of venture capital types and reputation. *Journal of World Business*, 55(1). https://doi.org/10.1016/j.jwb.2019.101025

Pisoni, A., & Onetti, A. (2018). When startups exit: Comparing strategies in Europe and the USA. *Journal of Business Strategy*, 39(3), 26-33. https://doi.org/10.1108/JBS-02-2017-0022

Potočnik, K., Anderson, N. R., Born, M., Kleinmann, M., & Nikolaou, I. (2021). Paving the way for research in recruitment and selection: Recent developments, challenges and future opportunities. *European Journal of Work and Organizational Psychology*, 30, 159-174. https://doi.org/10.1080/1359432X.2021.1904898

Rasmussen, E., Mosey, S., & Wright, M. (2011). The evolution of entrepreneurial competencies: A longitudinal study of university spin-off venture emergence. *Journal of Management Studies*, 48(6), 1314-1345. https://doi.org/10.1111/j.1467-6486.2010.00995.x

Rehman, O., Ali, Y., & Sabir, M. (2022). Risk assessment and mitigation for electric power sectors: A developing country's perspective. *International Journal of Critical Infrastructure Protection*, 36, 100507. https://doi.org/10.1016/j.ijcip.2021.100507

Rhodes, C., & Ward, M. (2020). *UK Business statistics*. House of Commons Library. Number 06152, 31st July. https://commonslibrary.parliament.uk/research-briefings/sn06152/v

Ries, E. (2011), *The lean startup: How today's entrepreneurs use continuous innovation to create radically successful businesses*. New York: Crown Books.

Rigamonti, D., Cefis, E., Meoli, M., & Vismara, S. (2016). The Effects of the specialization of private equity firms on their exit strategy. *Journal of Business Finance & Accounting*, 43(9-10), 1420-1443. https://doi.org/10.1111/jbfa.12221

Rosenbusch, N., Brinckmann, J., & Müller, V. (2013). Does acquiring venture capital pay off for the funded firms? A meta-analysis on the relationship between venture capital investment and funded firm financial performance. *Journal of Business Venturing*, 28(3), 335-353. https://doi.org/10.1016/j.jbusvent.2012.04.002

Satisteban, J., & Mauricio, D. (2017). Systematic literature review of critical success factors of Information Technology startups. *Academy of Entrepreneurship Journal*, 23(2), 1-23.

Saunders, M., Lewis, P., & Thornhill, A. (2016). *Research Methods for Business Students* (7. ed.). Pearson Education Limited: Essex.

Shah, S. F. H., Nazir, T., & Zaman, K. (2013). A literature review on growth models and strategies: The missing link in entrepreneurial growth. *Management Science Letters*, 3, 2189-2200. https://doi.org/10.5267/j.msl.2013.08.004

Shen, Y., Zhou, J., Pantelous, A. A., Liu, Y., & Zhang, Z. (2022). A voice of the customer real-time strategy: An integrated quality function deployment approach. *Computers & Industrial Engineering*, 169, 108233. https://doi.org/10.1016/j.cie.2022.108233

Steininger, D. M. (2019). Linking information systems and entrepreneurship: A review and agenda for IT-associated and digital entrepreneurship research. *Information Systems Journal*, 29(2), 363-407. https://doi.org/10.1111/isj.12206

Tech Nation (2020). *UK Tech for a Changing World*. London: Tech Nation Report. https://technation.io/report2020/

Tekin, E., Ramadani, V., & Dana, L.-P. (2021). Entrepreneurship in Turkey and other Balkan countries: Are there opportunities for mutual co-operation through internationalisation? *Review of International Business and Strategy*, 31(2), 297-314. https://doi.org/10.1108/RIBS-10-2020-0133

Thomas, A., Passaro, R., & Quinto, I. (2020). Developing entrepreneurship in digital economy: The ecosystem strategy for startups growth. In B. Orlando (Org.). *Strategy and Behaviors in the Digital Economy*. https://doi.org/10.5772/intechopen.85423

Tippmann, E., Ambos, T. C., Del Giudice, M., Monaghan, S., & Ringov, D. (2023). Scale-ups and scaling in an international business context. *Journal of World Business*, 58(1), 101397. https://doi.org/10.1016/j.jwb.2022.101397

Torkayesh, A. E., Yazdani, M., & Ribeiro-Soriano, D. (2022). Analysis of industry 4.0 implementation in mobility sector: An integrated approach based on QFD, BWM, and stratified combined compromise solution under fuzzy environment. *Journal of Industrial Information Integration*, 30, 100406. https://doi.org/10.1016/j.jii.2022.100406

Venkatraman, V. (2017). *The digital matrix: New rules for business transformation through technology*. Vancouver, Canada: Greystone Books.

Verhoef, P. C., & Lemon, K. N. (2015). Advances in Customer Value Management. In R. M. Morgan, J. T. Parish & G. Deitz (Eds). *Handbook of Research in Relationship Marketing* (pp. 75-103). Northampton, UK: Edward Elgar.

Verhoef, P. C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Dong, J. Q., Fabian, N., & Haenlein, M. (2021) Digital transformation: A multidisciplinary reflection and research agenda. *Journal of Business Research*, 122, 889-901. https://doi.org/10.1016/j.jbusres.2019.09.022

Von Briel, F., Davidsson, P., & Recker, J. (2018). Digital technologies as external enablers of new venture creation in the it hardware sector. *Entrepreneurship: Theory and Practice*, 42(1), 47-69. https://doi.org/10.1177/1042258717732779

Wallin, A., Still, K., & Henttonen, K. (2016). Entrepreneurial growth ambitions: The case of Finnish technology startups. *Technology Innovation Management Review*, 6(10), 5-16. https://doi.org/10.22215/timreview1023

Weinzimmer, L. G. (2000). A replication and extension of organizational growth determinants. *Journal of Business Research*, 48(1), 35-41. https://doi.org/10.1016/S0148-2963(98)00073-3

Wennberg, K., & DeTienne, D. R. (2014). What do we really mean when we talk about "exit"? A critical review of research on entrepreneurial exit. *International Small Business Journal*, 32(1). https://doi.org/10.1177/0266242613517126

Wisniewski, P. (2017). The management and performance of social media initial public offerings (IPOs): A case study analysis. In V. Benson, R. Tuninga & G. Saridakis (Eds.). *Analyzing the strategic role of social networking in firm growth and productivity* (pp. 1-21). IGI Global. https://doi.org/10.4018/978-1-5225-0559-4.ch001

Woo, H. (2020). Foreign venture capital firms and internationalization of ventures. *Multinational Business Review*, 28(3), 381-399. https://doi.org/10.1108/MBR-09-2019-0104

Yang, Z. (2022). The exit decision in the China venture capital market. *Journal of Guizhou University of Finance and Economics*, 40(06), 65-74.

Zadeh, L. A. (1965). Fuzzy sets. *Information and Control*, 8(3), 338-353. https://doi.org/10.1016/S0019-9958(65)90241-X

Zadeh, L. A. (1975). The concept of a linguistic variable and its application to approximate reasoning-III. *Information Sciences*, 9(1), 43-80. https://doi.org/10.1016/0020-0255(75)90017-1

CONTEXTUS
CONTEMPORARY JOURNAL OF ECONOMICS AND MANAGEMENT.
ISSN 1678-2089
ISSNe 2178-9258
1. Economics, Administration and Accounting - Journal
2. Federal University of Ceará. Faculty of Economics, Administration, Actuaries and Accounting

FACULTY OF ECONOMICS, ADMINISTRATION, ACTUARIES AND ACCOUNTING
University Av. – 2486, Benfica
60020-180, Fortaleza-CE
BOARD: Paulo Rogério Faustino Matos
Danielle Augusto Peres

Website: www.periodicos.ufc.br/contextus
E-mail: revistacontextus@ufc.br

Contextus is classified in the Qualis - Capes system as a B1 journal, in the area of Public and Business Administration, Accounting and Tourism (2013-2016).

Contextus agrees and signs the San Francisco Declaration on Research Assessment (DORA).

Contextus is associated with the Brazilian Association of Scientific Editors.