Team Experience and ICO Success: An Empirical Study of Entrepreneurs in Blockchain Projects

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***Abstract*—Initial coin offering (ICO), based on the blockchain technology, has emerged as a new fundraising mechanism in entrepreneurial finance for ventures to raise capital via crowdfunding. Building upon the limited yet growing body of literature on the interaction of entrepreneurship, crowdfunding and organisational learning, this paper aims to investigate the relationship between entrepreneur teams' functional-based experience and crowdfunding success with a focus on the ICOs of blockchain projects. We also examine the moderating roles of the characteristics of blockchain projects on the relationship. The study collects empirical data on 428 blockchain projects which had completed their ICOs. Logistic regression models are developed to test hypotheses. The results show that entrepreneurial teams' technically-related ICO experience has a positive impact on their ICO success while commercially-related ICO experience has a negative impact. Further examination shows that the Sector factor significantly moderates both impacts. The moderating effect of soft caps is found insignificant. These findings add to the existing literature by highlighting the impact of entrepreneurs' experience on the success of their ICO projects and have implications for practice on managing entrepreneurial team to improve crowdfunding performance**

***Index Terms*—Blockchain projects, crowdfunding performance, entrepreneurial team experience, initial coin offering, organisational learning**

I. INTRODUCTION

THE financial sector is the backbone of a functioning economy promoting entrepreneurship, innovation, sustainability and growth, which in turn enhance citizens' economic well-being and development at the local, regional, and national levels (e.g., [1-3]). Over the last decades, the financial sector has experienced several reforms spanning, for example, financial deregulation and liberalisation, improvements in financial services and products, strengthening of financial infrastructure and institutions and the growing adoption of digitalisation. In particular, the rapid digital transformation undergone in the financial sector has challenged traditional business models and mechanisms for entrepreneurial finance affecting the start-up finance system (see [4, 5]).

In recent years, the Initial Coin Offering (ICO), also known as token sales, based on blockchain technology is the most current mechanism in entrepreneurial finance and has become a very popular fundraising mechanism for ventures to raise capital. Specifically, ICO is designed to "raise external finance without the need for an intermediary by issuing tokens or coins that can be publicly traded" [6]. Tokens and coins in the ICO context are developed based on the application of distributed ledger technology (DLT), which is defined as "an asset database that can be shared across a network of multiple sites, geographies or institutions" [7]. Although ICO shares some key similarities to other financing mechanism such as crowdfunding (e.g., using digital platform use and making transactions without intermediaries), it differs from them by issuing cryptographic tokens, which are sold to investors in exchange for funding a project [8].

There are some key advantages of using ICOs. For example, employing tokens and coins as the financing medium enables ventures to raise funds at close-to-zero transaction costs through cutting out the intermediary (e.g., [6, 9]). Moreover, for the tokens and coins that can be publicly traded in post-ICOs, entrepreneurs and investors are provided with anytime-exit opportunities which are normally unavailable in other entrepreneurial finance mechanisms (e.g., [6, 10]). These advantages have motivated a surge in the use of ICOs since 2017 [9, 11]. Specifically, empirical results show [12] that there are 1012 projects which successfully raised funds through ICOs in 2018 with a total amounting to $11.59 billion. Moreover, the largest ICO occurred in year 2018 which surpassed the value of all but two IPOs sold worldwide in 2018 [13]. This rapid development of ICOs has stimulated academic research contributing to the limited but growing literature on ICOs of blockchain projects. Existing studies, for example, examine how ventures' technological capabilities [14], token presale [15], human capital [16] and other ICO characteristics such as serial and repeated investors [9] affect ICO performance.

Although this important literature has extended our knowledge and understanding in this area, the knowledge about the determinants of ICO success from an entrepreneurial finance perspective requires more attention (see also [14]). The entrepreneurship literature proposes that the characteristics of

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entrepreneurial teams have an important impact on firm performance [3, 17-20]. This may be especially true in the context of ICO projects where the entrepreneurial team is often the first top management team of an organization, the characteristics of entrepreneurial teams can also influence the performance of new ventures. The recent work by An et al. [16] aims to shed more light on this line of research by systematically examining the effects of the entrepreneurial team's characteristics on ICO performance. The analysis focuses on founder size, management team size and advisor size without considering key characteristics of entrepreneurial teams such as prior experience. In fact, studies from cognitive resource perspective [22] consider experience as one of the main characteristics of entrepreneurial teams reflecting and contributing to human capital stock [21-23]. They posit that individual entrepreneurial members possesses limited cognitive resources, and their experiences contribute resources to the team [22]. It is proposed that entrepreneurs and entrepreneurial teams learn from their prior experience, share these experiences between them, and in turn utilize what they learned to guide present and future behaviours and investment decisions [24]. In the ICO context, because both ICOs and DLT have only appeared in recent years, entrepreneurs and entrepreneurial teams are more likely to learn by 'doing' (experiential learning). In other words, they take 'doing' as their prime source of learning.

The examination of experiential learning theory on entrepreneurial teams suggests that the knowledge of entrepreneurial teams can be acquired effectively through continuous cycles of experience in past venture experience, active experimentation on ideas and reflective observation on their actions and outcomes [22, 23]. It can be argued therefore that entrepreneurial teams with divergent funding experience are expected to obtain a good level of knowledge and skills from their prior experience [25, 26], which in turn can lead to a positive impact on the performance of their subsequent ICOs. This is in line with the engineering management literature [54, 86] where it is shown that the integration of diverse experience—spanning technical and project management roles—can reduce the complexity of a project.

For ICO projects, the project success does not only reply on the implementation of the underlying technology but also on the entrepreneurial teams' strategic decision-making to drive the project moving forward. Investigating the different roles that entrepreneurial teams held in prior experience such as platform and software development, venture creation, marketing, etc. can help researchers and practitioners gain insights on the challenges and intricacies of ICO projects as well as the identification of effective team composition for new blockchain ventures. Therefore, with the aim of enriching our understanding on entrepreneurial finance and entrepreneurial learning effects, this research empirically examines the effect of entrepreneurial experience on fundraising performance based on entrepreneurial teams' prior experience, making two important contributions: firstly, it investigates the relationship between entrepreneurial teams' functional-based ICO experience and ICO success.

To do this, we separate entrepreneurial teams' ICO experiences based on the diverse functional areas in which team members are involved. Our results suggest a negative relationship between entrepreneurial teams' commercially-related ICO experience and ICO success, while entrepreneurial teams' technically-related ICO experience has a positive effect. These findings subvert the widely accepted cognition about how entrepreneurs or entrepreneurial teams' prior experience affect entrepreneurial finance performance.

Secondly, considering that the effects of entrepreneurial teams' functional experiences may vary in ICO projects with different characteristics, we examine the moderating role of ICO projects' characteristics. Our results show that the ICO projects' sector category has moderating roles on the relationship between entrepreneurial teams' ICO experience and ICO success. The positive relationship between entrepreneurial teams' technically-related ICO experience and ICO success is stronger and the negative relationship between entrepreneurial teams' commercially-related ICO experience and ICO success becomes weaker when an ICO project is from the sectors that have high technological requirements.

The rest of the paper is structures as follows. Section II presents the theoretical background and hypotheses derivation. Section III discusses the data and the variables used in the analysis. Section IV presents the main results followed by a series of robustness checks. Section V provides summary discussions and implications. The last section discusses some limitations and directions for future research in this area.

II. Background

A. Theoretical Background

Upper echelon theory proposes that the characteristics of top management teams (TMT) which is the group of top executives with overall responsibility for the organisation [27, 28], can affect firm strategic decisions and influence organisational financial performance and innovation [29-34]. Because entrepreneurial team is often the first TMT of an organisation, the characteristics of entrepreneurial teams often influence the performance of new ventures [18]. Among the characteristics of entrepreneurial teams, educational qualifications and experience have been frequently examined by researchers as the key characteristics of entrepreneurial teams that are linked to firm performance [21-23]. It is found that entrepreneurs and entrepreneurial teams are learners and thus can receive a stock of knowledge, capabilities and expertise from their prior experience [17, 25, 35-37], which enables them to identify novel and relevant information while overcoming obstacles and alleviating ambiguities associated with venture development [38]. However, we recognise that entrepreneurs and entrepreneurial teams may be also viewed as recidivists and thus fail to identify prior experience and recognise differential expertise that can positively affect firm performance [39].

According to the cognitive resource perspective, we argue that diverse skills and a mix of cognitive styles can have a positive effect on organisation performance [22, 40]. This is because individual entrepreneurial members possess limited cognitive resources, and their experiences contribute resources to the team [22]. The effects of different experiences on the diverse dimensions of venture performance are considered to be different [41]. In particular, it is found that the impact of the work experience that entrepreneurs gained in running one or more new ventures (i.e., entrepreneurial experience) is different from the impact of the experience of being employed in industry (i.e., industry experience) [42].

Moreover, entrepreneurial experience is considered as a prime source of learning (i.e., learning by doing) for entrepreneurs [25]. It enables entrepreneurs to accumulate experience-based knowledge that serves as the basis for subsequent performance improvements [3, 43-47]. This process naturally fits the basic theoretical mechanisms of organisational learning, where the basic argument is that organisations and individuals within organizations are seen as extracting inferences from prior experience and in turn utilize these inferences to guide decision-making [24, 42, 49]. Hence, both the upper echelon and cognitive resource perspectives can help us to explain how the diversification of experience may affect performance in the context of ICO.

In the context of engineering management, technical expertise and project management skills are fundamental for entrepreneurial teams. The literature suggests that teams with strong technical backgrounds are more likely to tackle complex, technology-intensive projects by applying technical knowledge and engineering methodologies [51, 52]. This is particularly likely for ICO projects where technical complexity is high. Technical experience such as software development and project implementation allow entrepreneurial teams to better manage risks and improve project outcomes [53].

Additionally, engineering management literature highlights the importance of cross-functional collaboration within entrepreneurial teams. The integration of diverse skills reduces project complexity and coordination cost [54]. Effective formation of team members with different functional backgrounds have been found to mitigate common challenges in technical projects, such as delays, resource misallocation, and quality issues [55], which can be particularly relevant for ICO projects where timelines are often tight, and both business and regulatory environments are complex. The alignment of these practices with the upper echelon and cognitive resource perspectives could strengthen the understanding of cross-functional collaboration in engineering management.

In this paper we argue that the ICO success of blockchain projects may be influenced by their entrepreneurial team's experience from the angles of commercial- and technical-related past experience. Furthermore, the effects may be moderated by the ICO goals and sector characteristics. We discuss developed hypotheses below and summarise the literature review in Table A1 in the Appendix.

B. Entrepreneurial teams' ICO experience

Looking at the team composition of a typical ICO entrepreneurial team, there are mainly two roles: technical and commercial roles. Technical roles include chief technology officer, developer, engineer, programmer, etc. and commercial roles cover chief executive officer, marketing officer, business development manager, customer manager and investor relation manger. The entrepreneurs of an ICO project may participate in other projects in the past with different types of roles. Taken from the upper echelon theory [27] that diverse work experience and expertise of top management teams can bring different perspectives to organizations, understanding the impact of entrepreneurial teams' prior experience on ICO performance can contribute the literature field and help ICO practitioners build and train an effective entrepreneurial team.

It is considered that the commercially-related experience could enable entrepreneurs to accumulate experience-based commercial knowledge which can be applied to promote their start-ups' performance [44, 45]. Previous studies found that commercially-related experiences such as management and marketing experience [57, 58, 60], sector specific managerial experience [58, 61], and leadership experience [22, 62] are relevant to entrepreneurial finance performance. Overall, these literatures suggest that commercial-related experience significantly increases the chances of a start-up receiving venture capital funding, and if the founding team's functional structure is not broad (or diversified), then functional experience has small positive impact on the firm success [57].

In the ICO context, commercially-related experience may include work experiences related to business planning and development on ICO projects. Entrepreneurs are expected to obtain commercial knowledge and expertise from their commercially-related ICO experience. For example, people with commercially-related ICO experience are more likely to have a good understanding on how to conduct ICO marketing effectively. Those commercial experience could facilitate effective market positioning and customer acquisition strategies. With previous ICO commercial experience, entrepreneurial teams tend to understand better market trends and customer preferences, enabling them to tailor their new ICO projects to meet better market demands. Furthermore, previous ICO experience could benefit new ICOs with established partnerships and business development opportunities which are also important factors for ICO success [14].

Moreover, different from traditional financial settings, investors in digital financial settings such as ICOs are widely dispersed geographically and have little or no face-to-face interactions with entrepreneurial teams of new ventures [63]. In the ICO context, the vast majority of investors can only investigate and evaluate ICO projects via information published online. The main information about an ICO project that investors can access is from the white paper published online by the project team [15]. The entrepreneurial teams with commercially-related ICO experience might apply their prior experience to create high-quality white-papers to attract potential investors (see also [14, 64]). According to ICO studies based on signalling theory [14, 59], investors see the high-quality white papers as a signal that this ICO project is more likely to success. Therefore, the knowledge and expertise that entrepreneurial teams received from their commercially-related ICO experience may increase the likelihood of ICO success in their subsequent projects. Hence, we hypothesise that:

Hypothesis 1: An entrepreneurial team's commercially-related ICO experience is positively associated with the likelihood of success of its ICO project.

Prior studies obtained conflicted results on the effects of entrepreneurial teams' technically related experience on firm performance. On the one hand, it is found that new technology-based firms created by individuals with technical experience enjoy rapid growth [65, 66]. The amount of team's technical experience is positively associated with the performance of new ventures [37]. More recently, Zhao et al. [67] link technical experience with highly technically efficient firms. However, on the other hand, based on personal interviews with the chief executives of new technical ventures, Stuart and Abetti [62] find that technical experience is not significantly related to performance. Moreover, Shrader and Siegel [68] find that technical experience appears to have a negative effect on firm performance, which could indicate that more technically inclined entrepreneurs have an overly optimistic view of the market potential of their technologies.

These conflicted results show the complexity of the relationship between entrepreneurial teams' technically related experience and firm performance and prompt the need of further investigation into the relationship. Furthermore, these studies were not conducted in the context of ICOs where technological capabilities are critical for delivering a project. The ability of entrepreneurial teams to leverage relevant technical experience may affect the success of a project. Therefore, understanding the impact of technically related experience on ICO performance can help practitioners build effective entrepreneurial teams and contribute to the theoretical field by refining the understanding of the drivers of firm success in the ICO context.

Most of the start-ups in the ICO context develop their products or services based on the application of DLT. Because DLT has only been created and developed in recent years [14], individuals are more likely to obtain DLT-related knowledge via 'learning by doing'. On the one hand, entrepreneurs with technical experience possess the knowledge and skills to develop and implement the different technical elements of ICO projects, such as smart contracts, security and scalability of the blockchain network. On the other hand, the technical experience might signal a high level of credibility of ICO projects and then instils the confidence of investors [14].

Therefore, the entrepreneurial teams with technically-related ICO experiences are more likely to create their advantage on technology-related expertise and skills, which may create a positive impact on venture performance. Further to entrepreneurial financing performance, an entrepreneurial team with technically-related ICO experience is also more likely to have the requisite technical expertise and skills to develop a high-quality white paper with detailed technological information (see [9, 14]), which can be used to attract potential investors. Therefore, the entrepreneurial teams with technically-related ICO experience are more likely to achieve good performance on their ICOs, thus receiving ICO success.

Hypothesis 2: An entrepreneurial team's technically-related ICO experience is positively associated with the likelihood of success of its ICO project.

C. The moderating role of ICO projects' characteristics

The influence of the entrepreneurial teams' functional ICO experience may vary depending on the characteristics of ICO projects. In the following sub-sections, we discuss how ICO projects' soft cap and sector category moderate the relationship between entrepreneurial teams' ICO experience and ICO success.

1) **The moderating role of soft cap**

Soft cap is the minimum defined target for the raising of funds specified by ICO teams. Indeed, ICO projects offer investors protection in the form of a soft cap mechanism, which is similar to the all-or-nothing mechanism in crowdfunding [19]. The raised fund will be returned to investors if an ICO does not reach its soft cap. Therefore, soft cap is considered to reduce the uncertainty of ICO projects and decrease the investment risk and is viewed as an important ICO characteristic [69]. Nevertheless, setting a reasonable target can lead to an achievable fundraising result [70]. Meer [71] finds that investors easily respond to requests for small funds amount and the chances of meeting targets can be reduced if the target amount increases. Therefore, soft cap can be one of the important factors for investors to consider during ICOs. When the other characteristics of ICO projects are equal, soft cap could influence the relationship between entrepreneurial teams' experience and the success of an ICO project, because soft cap influences investors' perceptions.

Furthermore, soft cap can capture the size of ICO projects and the reliability of entrepreneurial teams. Setting up a soft cap is a decision affected by various factors, while the decision on the amount of a soft cap might be mainly decided by the financial demand of an ICO project. For the ICO project with a high soft cap, it might indicate that a significant amount of financial investment is needed due to the size and complexity of the project. A huge and complex project often means that more human resources are needed for the development of the project. An experienced entrepreneurial team might be more capable of handling the completion of complex projects, thus significantly affecting project performance [72]. Studies building on upper echelon theory have also found that business size is a significant factor to include when investigating the relationship between top management team and firm performance [30].

In the ICO context, the entrepreneurial teams with technically-related ICO experience are expected to be better able to solve the challenges coming from the complicated R&D process, thus successfully completing the development of their products or services. For the entrepreneurial teams with commercially-related ICO experience, the knowledge and skills they received from prior experience might help them to create and develop feasible business plans for their ICO projects. To this end, we assume that the positive effect of the entrepreneurial teams' technically and commercially-related

ICO experience on their ICO success is stronger when they have a high soft cap for their ICOs. Hence:

Hypothesis 3a: Soft caps moderate the relationship between entrepreneurial teams' commercially-related ICO experience and ICO success. The positive relationship is stronger for the ICOs with high soft caps.

Hypothesis 3b: Soft caps moderate the relationship between entrepreneurial teams' technically-related ICO experience and ICO success. The positive relationship is stronger for the ICOs with high soft caps.

2) **The moderating role of sector characteristics**

Crowdfunding platforms usually provide "project sector" to classify and label projects by topics. These sector categories can be used by investors as a functional index to navigate certain type of projects quickly. As observed by a number of studies, the performance of crowdfunding projects can be influenced by project sectors, (e.g., [73, 74]). Besides crowdfunding literature, the upper echelon theory suggests that sectors could impact the findings of the theory and should be used as the control for contextual conditions [28]. Moreover, studies from the cognitive resource perspective also point out that there may be dynamics in different industries regarding learning from the prior experience of entrepreneurs [22].

Similar to crowdfunding platforms, ICO tracking platforms also have project sector information available to investors. It is found that ICO projects span a wide array of sectors, from finance, transportation, health to sports, games, and education, etc. (see Table A2 in the Appendix). Indeed, ICO projects are set up by applying the DLT and blockchain technology in a specific sector and are considered high-tech companies. However, the levels of technical capabilities required for ICO projects in different sectors are not the same. ICO projects from some sectors may face a higher level of technical requirements due to the high complexity of their products or services. Several studies conducted systematic reviews of blockchain-based applications and discuss the technical requirements for different types of applications (e.g., [75-77]). Besides the fundamental technical elements such as consensus mechanisms and immutable ledger which each DLT application needs to work on, additional aspects including scalability, privacy, interoperability, audit, latency and visibility are found to be the technical requirements that a blockchain-based application can consider whether or not they need to fulfil [77]. Blockchain applications in finance and cryptocurrency sectors usually satisfy all aspects due to the handling of sensitive data and high transaction volumes while applications belonging to other sectors such as sports, education and citizenship services are found to satisfy a smaller number of the above aspects [78].

Considering the different technological requirements on ICO projects, entrepreneurial teams' level of technological experience and skills may become critical to the success of ICO projects. It is essential for the ICO projects with high technological requirements to set up outstanding technical capabilities to overcome the technical challenges in their product development [8]. In this research, we divide ICO projects into two categories depending on the level of technological skills required. This separation facilitates further investigation on the moderating roles of technological requirements on the relationship between entrepreneurial teams' experience and the success of an ICO project.

For entrepreneurial teams coming from the sectors such as cryptocurrency, finance and platform where products are normally developed by implementing both the fundamental elements of DLT and higher technological requirements [15, 78, 79], having technically-related ICO experience may indicate that they are more likely to have qualified technological capabilities. Moreover, their project plans proposed by the experienced entrepreneurial teams are expected to be of high quality [8], thus are more likely to attract investors and help the team achieve successful projects. On the other hand, the commercial-related ICO experience could also help the success of projects as entrepreneurial teams are able to facilitate access to valuable resources using their networks and thus better navigate the challenges and complexities of technology venture [21]. Therefore, the following two hypotheses are developed:

Hypothesis 4a: Sector characteristics moderate the relationship between entrepreneurial teams' commercially-related ICO experience and ICO success. The positive relationship is stronger for the start-ups from the sectors with high technological requirements.

Hypothesis 4b: Sector characteristics moderate the relationship between entrepreneurial teams' technically-related ICO experience and ICO success. The positive relationship is stronger for the start-ups from the sectors with high technological requirements.

III. Data and Variables

A. Sample construction and data collection

A Python-based web scrapper was developed and used for the collection of ICO projects from two popular ICO tracking platforms: ICObench.com and ICOdrops.com. These two platforms are independent platforms and are not affiliated with any ICO project. Information about ICO projects such as project description, team members, project location and financial information are available on both platforms, easing the way that investors search and assess ICO projects. These two platforms have been frequently used by researchers in the field (e.g., [14, 80, 81]). Since the two platforms do not contain all the information needed for the analysis of the paper, we cross-referenced the information from the platforms and collected additional data from the ICO projects' website, GitHub, and Bitcointalk forum. The scrapper collected 2502 projects in total which were listed by April 2019. After selecting projects with "Closed" status label and removing projects without information on the amount of funds raised, the number of projects was reduced to 428.

All 428 projects were listed before April 2, 2019, when the dataset was collected. Moreover, these projects are closed projects, meaning that they had completed the ICOs. This study focuses on closed projects because only when the ICO of a project is completed, the token-sales results can be made online, providing useful indicators for investigating the ICO performance. In the collected data, 52 projects had its ICO in 2017, 357 projects in 2018 and 19 projects in 2019 (by April 2). The project countries are across the world, more specifically in 76 countries. Furthermore, these projects cover a wide range of industries making the sample a good representative of whole ICO projects between 2017 and April 2019. The details of collected ICO projects can be found in Table A2 in the Appendix.

B. Dependent variable

We measure the success of an ICO project by evaluating whether the amount of funds raised in the project's ICO exceeds the pre-set ICO goal. This ICO goal is usually captured by soft cap which is a minimum amount of funds a project should raise to be considered a success. Therefore, we define the dependent variable, Success, as a dichotomous variable. It is one if the amount of funds an ICO project raised exceeds its soft cap, otherwise zero. This measure of ICO success has been widely adopted in the research field, such as [14].

C. Independent variables

Technical experience. We measure team members' technically-related ICO experience by looking at each team member's past ICO experience. Hence:

$$\text{Technical experience } = \sum_{\mathrm{i=1,\cdots,Size\ of\ team}} n_{tech}^{i} \quad (1)$$

where n_{tech}^{i} is the number of ICO projects that team member i participated in the past and worked as a technical member; $n_{tech}^{i} \geq 0$ where zero indicates that no technically-related experience is observed for member i. Technical members are defined as members who take technical roles, such as chief technology officer (CTO), developer, engineer, programmer, etc.

Commercial experience. Similar to technical experience, we measure team members' commercial experience based on team members' past ICO experience where they have a commercial role in their past ICO experience. The examples of commercially-related roles in our data sample include chief executive officer (CEO), marketing officer, business development manager, customer manager and investor relation manger. Hence:

$$\text{Commercial experience } = \sum_{\mathrm{i=1,\cdots,Size\ of\ team}} n_{comm}^{i} \quad (2)$$

where n_{comm}^{i} is the number of past ICO projects in which team member i participated, and had a commercial role; $n_{comm}^{i} \geq 0$ where zero represents that no commercially-related experience is observed for member i.

Sector. We define the variable Sector to measure whether an ICO project belongs to a sector requiring a high level of technological skills. A recent study provides a systematic review of blockchain-based applications and discussed the technological requirements for different types of applications [76]. A blockchain-based application can consider whether technical requirements such as scalability, privacy, interoperability, audit, latency and visibility should be satisfied [77]. It is found that blockchain applications in the finance, cryptocurrency and software platform sectors needed to satisfy more of these requirements as compared to other applications. For this reason, we separate ICO projects in these identified sectors from the rest. In particular, we define Sector as a dichotomous variable: it equals one if an ICO project belongs to sector Cryptocurrency, Finance or Platform; otherwise, zero.

Soft cap. In ICOs, the soft cap is the minimum defined limit for the raising of funds specified by a project's team. The variable Soft cap is measured by taking the natural logarithm of the soft cap value to account for the high skewness. The values of soft caps were gained directly from the collected dataset. As not all the projects were campaigned in the US, the amount of soft cap was converted from any other currency (e.g., euro) to US dollars using the exchange rate of the date when the token sale completed, to ensure the measure is comparable among all projects.

D. Control variables

To account for the effects of other antecedents of ICO financial performance, we include several control variables. **Size of team.** The variable *Size of team* is measured as the number of team members of an ICO project and is gained directly from the collected dataset. **Token offered.** This measure is the percentage of tokens offered for sale (see also [14, 82]). **Pre-sale.** The control variable, *Pre-sale* is a dummy variable which measures whether an ICO project held a token sale event before the main token sale (= 1) or not (= 0). **Token supply.** In ICOs, ventures can freely determine how many tokens will be issued. In our collected data sample, ICO projects issue a wide range of tokens from millions to over 10^{25} (see also [14, 83]). **Duration** (in days). ICO projects can freely set how long the token sale will be held (see also [84, 85]). **Github dummy.** The variable *Github* is a dichotomous variable and has a value of one if an ICO project has a Github page to publicise its project. If an ICO project does not have the Github presence, then the variable Github is zero. **Bitcointalk dummy.** Bitcointalk is an online forum created for the discussion of bitcoin and blockchain-related topics. Similar to Github, many ICO projects use Bitcointalk to publicise their projects and communicate with potential investors. The variable *Bitcointalk* is defined as a dichotomous variable: it is one if an ICO project has a Bitcointalk page; otherwise zero. **Video dummy.** The variable *Video* is also a dichotomous variable: it is one if an ICO project has published a video about it; otherwise zero. This information was directly obtained from the collected dataset as the two tracking platforms provide such information. **Country dummy (US).** The location where an ICO project takes place is found to be important as it indicates whether a specific environment is friendly to ICOs and in attracting investors [14]. We therefore include a dummy variable to capture whether an ICO project is held in the US (i.e., = 1) or not (= 0).

IV. RESULTS

A. Descriptive analysis

Descriptive statistics for all the variables employed in the study and the correlation matrix are presented in Table 1 and 2 respectively. Briefly, the mean of the dependent variable Success is 0.69 with the standard deviation at 0.46, indicating that over half of the ICO projects in our sample data was successful. More specifically, 294 projects successfully raised funds over its soft cap while 134 projects failed. In our collected data, most teams did not have ICO experience: 351 teams with no prior technical experience with ICO projects while 304 teams with no prior business experience. The average of *Technical experience* is only 0.19 and the average of *Commercial experience* is 0.32. The distribution for both variables is right-skewed. Moreover, the maximum of *Technical experience* is 6. That is, the team members of the ICO project which has the maximum technical experience participated in 6 ICO projects in the past and had technical roles in these projects. The maximum of commercially-related experience is 8.

With respect to the variable Sector, the mean is 0.54 with the standard deviation at 0.50, indicating about half of the ICO projects belong to the sectors that have a high level of technological requirements. The variable Soft cap is skewed: 52 ICO projects did not set the cap but considered the ICO successful as long as some funds were raised; the largest goal was set at 4160m USD (the logged value = 22.15). We use a natural log transformation to account for the skewness. Finally, the correlations are generally small in magnitude. Model 2-8 are developed to test our hypotheses and is presented in the next section. The variance inflation factors (VIFs) calculated from Model 2-8 of Table 3 are all below 2. More specifically, the VIFs of Model 8 are presented as follows: size of team (1.105), token offered (1.171), pre-sale (1.280), token supply (1.139), duration (1.085), GitHub (1.306), Bitcointalk (1.127), video (1.188), US (1.065), technical experience (1.684), commercial experience (1.066), sector (1.223), soft cap (1.256), indicating that multicollinearity is not likely a concern.

B. Multivariate analysis

As the dependent variable *Success* is a dichotomous variable, we use logistic regression to test our hypotheses. Table 3 reports the results for our hypotheses based on the 428 observations. Model 1 is the baseline model which contains only control variables. Models 2 to 8 test the hypotheses on team's former ICO experience as well as the moderating effects of ICO project sector and soft cap (i.e., corresponding to H1, H2, H3a and H3b, H4a and H4b respectively) where Model 8 contains all the interaction terms. Looking at the AIC values for the eight models, it is reduced from 539.87 when the technical experience and commercial experience are added respectively. The value reduces further when the interaction term *Technical experience* × *Sector* (Model 4) and *Commercial experience* × *Sector* (Model 5) are included. However, the AIC value increases as *Commercial experience* × *Soft cap* and *Technical experience* × *Soft cap* are added (i.e., Model 6 and 7). It reaches 308.62 when all the interaction terms are included in one model, i.e., Model 8. The median value of deviance residuals for Model 4-8 is at 0.087 which is low, suggesting the models can be accepted. We also calculated Pseudo (McFadden's) R-squared for all the models. The values are between 0.18 (Model 1) and 0.38 (Model 4).

Regarding the control variables, *Pre-sale* is found negatively related to *Success* (Coeff. = −0.230, p-value < 0.001). This finding is surprising, as the funds raised in the pre-sale phase could help with the development and marketing of the blockchain project. One explanation might be that investors interpret pre-sale as a signal for the capability of the ICO team, having the pre-sale might suggest that the team lacks funds for delivering the project [86]. A negative relationship is detected between ICO success and ICO duration: a project having a shorter duration of token sale was more likely to succeed (Coeff. = −0.001, p-value < 0.01). This finding is in line with previous research [14]. Another significant control variable is *Github*: the ICO projects which had a presence on Github were less likely to be successful (Coeff. = −0.143, p-value < 0.01). Unlike *Github*, if an ICO project had published a video to publicise the project, the project had a higher chance of succeeding (Coeff. = 0.122, p-value < 0.05).

Hypothesis 1 predicts that the commercially-related ICO experience of an ICO entrepreneurial team is positively associated with the likelihood of success. In Model 3 of Table 3, *Commercial experience* is found to have a negative and statistically significant coefficient estimate (Coeff. = −0.049, p-value < 0.05). Therefore, hypothesis 1 is not supported.

Hypothesis 2 proposes that the technically-related ICO experience of team members has a positive effect on the success of an ICO project. In Model 2 of Table 3, *Technical experience* has a positive and statistically significant coefficient estimate (Coeff. = 0.093, p-value < 0.05), providing support for hypothesis 2.

Hypothesis 3a and 3b suggest that the soft cap set by an ICO project can positively moderate the relationship between the ICO success and the entrepreneurial team's commercially- and technically-related experience. We gauge the effects of the interactions by including two interaction terms *Commercial experience* × *Soft cap* and *Technical experience* × *Soft cap* in the regression analysis. The coefficients of both interaction terms in Model 6 and 7 of Table 3 are found to be insignificant, rejecting hypothesis 3a and 3b.

Hypothesis 4a and 4b posit that the sector characteristic may positively moderate the effect of entrepreneurial team's commercially- and technically-related experience on ICO success. In Model 4 of Table 3, the interaction term *Technical experience* × *Sector* is positive and significant (Coeff. = 0.162, p-value < 0.05), offering support for hypothesis 4a. We graph the interactions in Fig. 1 where Sector is specified as the moderator. The figure aids in the interpretation of the interaction effects: although both lines have a positive slope, the effect of *Technical experience* on the ICO success is greater when an ICO project belongs to a sector with high technological requirements (i.e., Sector = 1). Therefore, being in a sector with high technological requirements, the positive relationship between *Technical experience* and *Success* is strengthened. In Model 5 of Table 3, the interaction term *Commercial experience* × *Sector* is positive and significant (Coeff. = 0.102, p-value < 0.05), suggesting that hypothesis 4b is supported. Although the relationship between *Commercial experience* and *Success* is found to be negative, the coefficient of the interaction term is positive and greater than the absolute value of the coefficient of the negative main effect, showing that the moderation variable overturns the negative main effect. As shown in Fig. 2, when *Sector* changes from 0 to 1 (a sector with high technological requirements), the negative slope becomes positive. Therefore, if an ICO project does not require a high level of technological capabilities, the relationship between

Commercial experience and *Success* is negative; however, if an ICO belongs to a sector requiring a high level of technological capabilities, the relationship is positive; that is, an ICO entrepreneur's commercially-related experience helps to increase the likelihood of the ICO success.

C. Robustness checks

Our paper uses the number of past ICO projects to measure entrepreneurs' technical and commercial experience. To capture the impact from the duration of work experience in past projects, we looked into all the past projects in which the team members had participated, and collected the information on the number of years they were involved. The variables 'Technical experience in years' and 'Commercial experience in years' are included in Model 2-7 of Table A3. The Pseudo R-squared values of Model 1-7 ranges between 0.17 (Model 1) and 0.28 (Model 6). The results confirm the positive relationship between technical experience and ICO success, negative relationship between commercial experience and the success, as well as the moderating effects of ICO sectors.

To rule out the effects from project details on the ICO success, we collected the white papers of all 428 projects and the technical rating of white paper from the platform ICObench.com. More specifically, we include two control variables 'white paper word count' and 'white paper technical rating' in the specification, where the former variable is obtained via Microsoft Word count. The latter variable is based on the ICObench.com rating data which is given by experts on the platform and has been used in other studies (e.g., [80, 81]). The results presented in Table A3 indicate that the word count of white paper has a negative effect ($p < 0.05$) on ICO success, which is consistent with studies contributing to crowdfunding literature [6, 87]. Moreover, the technical rating of white paper has been found to have no impact. After adding these two control variables, the results remain similar as in the original models (Table 3).

In addition, we replace the dependent variable Success with the amount of funds raised as an alternative measure for ICO project performance. Specifically, the new variable, *total raised*, is defined as the natural logarithm of the amount of funds that a project raised in its ICO in order to account for the skewness of the variable. This measure of ICO crowdfunding performance has been used in prior research, such as [14]. Table A4 (Model 1) shows that the results remain similar. However, the relationship between total raised amount of funds and the sector variable becomes positive suggesting that being in the sector with high technical requirements on projects is positively associated with higher amount of funds raised.

Furthermore, besides the number of projects and years the entrepreneurs participated and spent in their prior ICO experience, we take into consideration of an additional aspect of past experience by looking at the roles that entrepreneurs were in. We define two variables, *Role_CTO* and *Role_CEO* which are given the value 1 if the entrepreneurs took CTO and CEO roles respectively in the past, and 0 otherwise. Since some ICO projects had stopped running or failed when collecting this additional data, we construct the measures for 203 projects. We also added another control variable, project rating which is the rating provided by ICO tracking platform (ICObench.com) based on project quality and popularity. After running the regression model with the new constructs (Table A4), the role of CTO is found to have a significant positive relationship with the ICO success, and the relationship is strengthened when the project is in a sector where high technological capabilities are required. The project ratings are found to have a positive relationship with both ICO success and the amount of funds raised. These findings suggest the main models (Table 3) stand. Fig. A1 in the Appendix summaries and visualises all the analysis steps conducted in the study.

V. Discussions and Implications

This paper builds on the upper echelon theory [27, 28] that emphasises the role of team composition, and the cognitive resource perspective [22, 40] that stresses the role of heterogeneous teams in generating positive performance outcomes. Based on these theories, we argue that prior experience in different functional areas can lead to diverse expertise, knowledge and skills (e.g., [25]) within entrepreneurial teams, and this diverse experience and complementarity of skills can generate positive organisational outcomes [88]. In this paper we empirically examine the effect of entrepreneurial teams' ICO experience on the likelihood of the success of the ICO project. Importantly, the data allowed us to separate the accumulation of experience based on the functional areas team members if team members were previously involved. In particular, we examined the effects of the following two types of experiences: firstly, the effects of entrepreneurial teams' commercially-related ICO experience; and secondly, the role of technically-related ICO experience are examined respectively. Hence, our research extends the existing literature by focusing on two disaggregate measures of experiences and examines their effects within the growing literature of ICOs.

The empirical results provide novel and interesting insights. Specifically, we found, on the one hand, that the entrepreneurial teams' technically-related ICO experience has a positive effect on fundraising performance. This is in line with prior entrepreneurship and engineering management literatures which suggest that entrepreneurial experience provides entrepreneurs with experience-based knowledge which may improve the performance of their subsequent projects [22, 24, 86]. In the ICO context, it can be argued that 'learning by doing' is generated via participating in specific ICO projects which allows those individuals involved to obtain ICO-related technical knowledge, skills and expertise. Therefore, these individuals are more likely to develop high-quality product development plans, which can be reflected, for example, in their white papers. The high-quality white papers can then help to convince potential investors that the entrepreneurial team has the technology capability to realise their product or service and successfully launch their project, thereby making it a worthwhile investment.

On the other hand, the results point towards a negative association between entrepreneurial teams' commercially-related ICO experience and the likelihood of ICO success. This finding contradicts prior studies suggesting that having commercial related experience increases the chances of receiving venture capital funding (e.g., [56, 57]). Hence, our study discloses that the entrepreneurial experience is different depending on the functional roles that entrepreneurs took in prior projects. This also points towards the importance of separating the two opposite effects, particularly in the engineering management research area where technical and project management skills are often considered together, since in the process of aggregation the effect of experience may remain hidden (e.g., the two opposite effects may cancel each other out). This finding therefore has both theoretical and empirical implication when we try to unpack the effect of experience on performance.

This new finding suggests that, unlike the important role that the technically-related ICO experience plays on the acquisition of the ICO related technical knowledge, former commercially-related ICO experience does not lead to the success of designing and planning new ICO projects. The latter association can have several potential explanations. Firstly, one may argue that teams with commercially-related ICO experience are more likely to become overconfident on their new ICO projects. Moreover, ICOs usually take place in a short period of time and in our sample dataset, the past experiences for all entrepreneurial members are observed within two years. As the business of past ICO projects were still running after the token sales, the entrepreneurial members actually work on the new ICO projects while continue running business related to previous ICO experience. A number of studies have suggested that involvement in one or more other projects may send a negative signal to prospective investors who may concern the time, efforts, and other resources spent on the current project [48].

However, this somewhat surprising finding has been also documented in the existing literature. For example, similar findings are observed in a recent crowdfunding study by Lim and Busenitz [63] that examine how the ongoing start-up experience of the campaign founders affects the amount of funds raised. The study measures the ongoing start-up experience as the number of ongoing start-ups that are possessed by founders of a campaign. Although the study does not explicitly differentiate between different types of experience, their measurement is similar to the commercial experience variable used in this paper as their measurement focuses on management experience. Specifically, they suggest a negative relationship between start-up experience and funding obtained when considering the moderating impact of entrepreneurial team type, which confirms our findings.

In this research, we also investigate the moderating roles of ICO projects' characteristics on the relationship between entrepreneurial teams' ICO experience and ICO performance. We find that the positive relationship between entrepreneurial teams' technically-related ICO experience and ICO success becomes stronger when the ICO projects are from the sectors with a high level of technological requirements. In the meanwhile, the negative relationship between entrepreneurial teams' commercially-related ICO experience and ICO success is weaker. The results may indicate that entrepreneurial teams' ICO experience plays a more important role on ICO success when their projects require a high level of technological skills. Further to the soft cap, its moderating role on the relationship between entrepreneurial teams' ICO experience and ICO performance is not supported in our examination. This result might indicate that the effect of entrepreneurial teams' ICO experience on ICO success is the same for the ICO projects with different fundraising goals.

Overall, our findings contribute to the emerging stream of research on ICOs by empirically unpacking the association between experience and ICO project performance. This study adds to the knowledge gap by investigating the relationship between ICO team's functional-based experience and ICO success and stressing the different impacts of team's functional-based experiences that can be generated. The findings of the research are also meaningful for industrial practice since it provides a useful tool that can be used to synthesise teams based on team members' experiences. Additionally, the findings underscore the importance of assembling ICO entrepreneurial teams with diverse expertise particularly technical experience and highlight the need of ongoing training initiatives for entrepreneurial teams. In industrial practice, organisations that prioritise commercial experience may need to re-consider the specific technical demands, and re-evaluate the composition of their entrepreneurial teams, emphasizing the importance of technical expertise. Given the rapidly changing nature of the blockchain industry, team members need to be continuously exposed to new blockchain technologies and update their skills to be able to complete and contribute to their ICO projects.

Moreover, the findings align with the growing recognition of the necessity for adaptability and flexibility in project management for industrial practices. As organisations face increasing complexity and uncertainty, the ability to leverage technical expertise effectively becomes critical [51,53]. The emphasis on technical experience suggests a need for managers to adopt more dynamic and responsive management strategies that prioritise technical competencies in their teams. This is particularly relevant in the context of managing innovation projects, where the interplay between technical knowledge and project success is of great importance [53].

The moderating role of ICO projects' characteristics also provides interesting insights on how the effects vary within sectors, thus providing further practical industry-specific implications. Policy makings and regulators may consider this aspect when designing regulations and guidelines for ICOs particularly for the sectors where projects require a higher level of technical capabilities, such as fintech or decentralized finance. For instance, policy makers may consider introducing accreditation schemes to verify the technological proficiency of an ICO project and therefore improve the credibility and transparency of the ICO market. Apart from the important practical implications, our research sets the foundations for further academic work in the ICO field, and on digital entrepreneurial finance [56] in general. We therefore call for future theoretical work on experimental learning that considers other important group functions and features (e.g., gender heterogeneity, training, education) that can potentially alter the relationship between experience and performance directly or indirectly. We also show that desegregating experience can generate more refined evidence, which can be otherwise 'hidden' in the process of aggregation. In the next section we list a number of specific limitations that is left for future work.

VI. Conclusion

In the presented work, we investigate the relationship between an entrepreneurial teams' functional-based ICO experience and ICO success, and the moderation roles of the characteristics of ICO projects. We collected data on 428 ICO projects from two ICO tracking platforms, and utilized the data to examine our research hypotheses. The results of the study show that entrepreneurial teams' technically-related ICO experience has a positive effect on their ICO success; however, commercially-related ICO experience is found to have a negative effect. Our further examination shows that the positive relationship between entrepreneurial teams' technically-related ICO experience and ICO success becomes stronger when the ICO projects are from the sectors with high technological requirements. In the meanwhile, the negative relationship between entrepreneurial teams' commercially-related ICO experience and ICO success is weaker. Further to the soft cap, its moderating role is found to be insignificant. This study contributes to both entrepreneurship and crowdfunding literature and organizational learning research, extending the investigation of entrepreneurial team size [50] to team experience.

The contributions of this research should be understood in light of the limitation of our work. First, previous research proposes that both education and experience are key entrepreneurs' characteristics reflecting human capital [42]. However, because of the great anonymity in ICOs, entrepreneurs normally do not provide their education information, making it difficult to include education as a variable in our research. Future research could make up for this inadequacy of our research by collecting entrepreneurs' education information via surveys. Second, we do not investigate entrepreneurial teams' non-ICO experiences which include both industry and start-up experiences but are not related to ICOs. These types of prior experiences may affect ICO projects' performance as well, so future research could investigate the effects of these types of prior experiences by collecting relevant data via surveys. Third, although the method for measuring ICO performance in this study is comprehensive as compared to extant research, additional measurements on ICO performance, such as funding speed and token trading performance, can be employed to systematically disclose the effects of ICO experience. We hope that our work will stimulate further theory development and empirical analysis in the areas of ICOs.

Appendix

Additional figures and tables are placed at the end.

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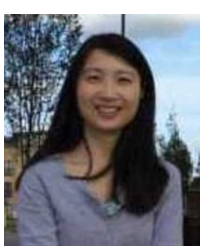

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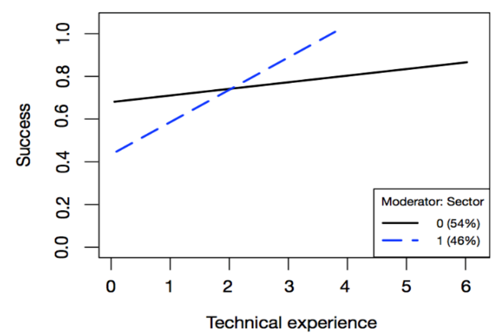

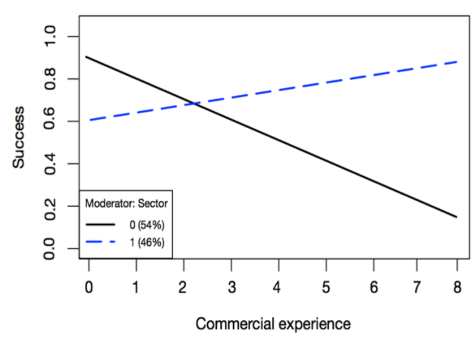

Fig. 1. Moderation effects of project sector on the relationship between technically-related ICO experience and ICO success (Sector: 1 = a sector with high technological requirements).

Fig. 2. Moderation effects of project sector on the relationship between commercially-related ICO experience and ICO success (Sector: 1 = a sector with high technological requirements).

TABLE I
VARIABLE DEFINITIONS AND SUMMARY STATISTICS.

Variable	Definition	Mean	S.D.	Min	Max
Success	= 1 if the amount of funds an ICO project raised exceeds its soft cap (0 otherwise)	0.69	0.46	0	1
Technical experience	Cumulative number of ICO projects that all the team members of an ICO project participated in the past and had technical roles	0.19	0.66	0	6
Commercial experience	Cumulative number of ICO projects that all the team members of an ICO project participated in the past and had commercially-related roles	0.32	0.94	0	8
Sector	= 1 if an ICO project belongs to a knowledge-intensive and technology-driven sector (0 otherwise)	0.54	0.50	0	1
Soft cap (log.)	Natural logarithm of the soft cap set by an ICO project	8.79	7.14	0	22.15
Size of team	Number of team members of an ICO project	10.55	5.89	1	36
Token offered	Percentage of tokens offered for sale	55.03%	19.47	1%	99%
Pre-sale (dummy)	=1 if an ICO project held a pre-sale event (0 otherwise)	0.64	0.48	0	1
Token supply (log.)	Natural logarithm of the number of issued tokens	19.67	2.12	8.52	25.33
Duration (in days)	Number of days that an ICO project's token sale was held	59.42	52.71	1	488
Github (dummy)	=1 if an ICO project has a Github page (0 otherwise)	0.53	0.50	0	1
Bitcointalk (dummy)	=1 if an ICO project has a page on Bitcointalk (0 otherwise)	0.65	0.48	0	1
Video (dummy)	=1 if an ICO project has published a video to publicise the project (0 otherwise)	0.63	0.48	0	1
Country - US (dummy)	=1 if an ICO project was established in the US (0 otherwise)	0.08	0.27	0	1

Notes: $N = 428$ ICO projects

TABLE II
CORRELATION MATRIX.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Success	1.00													
2. Technical experience	0.16*	1.00												
3. Commercial experience	-0.04	-0.17**	1.00											
4. Sector	-0.02	-0.10	-0.01	1.00										
5. Soft cap	-0.56***	-0.00	0.06	0.07*	1.00									
6. Size of team	-0.02	0.04	0.21**	0.04	0.20***	1.00								
7. Token offered	-0.02	-0.24**	0.11	-0.09**	0.02	0.08**	1.00							
8. Pre-sale	-0.22***	-0.00	0.07	-0.05	0.34***	0.15***	0.11**	1.00						
9. Token supply	0.00	0.08	-0.03	0.07	0.12**	0.13***	-0.25***	0.07	1.00					
10. Duration	-0.13***	0.30***	-0.19**	-0.02	0.09**	-0.00	0.14***	-0.01	-0.03	1.00				
11. Github	-0.04	0.18*	0.07	-0.05	-0.02	0.07	-0.04	-0.05	0.01	-0.10**	1.00			
12. Bitcointalk	0.04	0.20*	0.02	-0.11**	-0.08	0.03	0.04	-0.06	-0.09*	-0.01	0.53***	1.00		
13. Video	0.05	0.20**	0.13	-0.03	-0.07	0.12**	0.00	0.07	0.04	-0.05	0.52***	0.53***	1.00	
14. Country - US	-0.05	0.08	0.04	0.02	0.05	-0.11**	-0.12**	-0.04	-0.05	0.02	-0.06	-0.05	0.00	1.00

Notes: $N = 428$ ICO projects. ***: p-value <0.001; **: p-value <0.01; *: p-value <0.05

TABLE III

LOGISTIC REGRESSION ANALYSIS ON THE PREDICTORS OF THE ICO SUCCESS (DEPENDENT VARIABLE: SUCCESS).

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Size of team	-0.000 (0.953)	0.011* (0.040)	0.014* (0.025)	0.013* (0.040)	0.015* (0.020)	0.010* (0.043)	0.013* (0.029)	0.053* (0.025)
Token offered	0.000 (0.751)	0.002 (0.482)	0.000 (0.895)	0.002 (0.515)	0.000 (0.904)	0.003 (0.287)	0.001 (0.614)	0.001 (0.008)
Pre-sale	-0.230*** (0.000)	-0.451*** (0.000)	-0.475*** (0.000)	-0.502*** (0.000)	-0.436*** (0.000)	-0.232* (0.029)	-0.269* (0.018)	-0.465 (0.327)
Token supply	0.004 (0.715)	-0.002 (0.909)	-0.002 (0.929)	-0.004 (0.868)	-0.000 (0.977)	0.012 (0.584)	0.010 (0.652)	0.092 (0.068)
Duration	-0.001** (0.003)	-0.001 (0.220)	-0.001 (0.389)	-0.001 (0.502)	-0.000 (0.402)	-0.000 (0.501)	-0.000 (0.719)	-0.009** (0.003)
Github	-0.143** (0.009)	-0.182* (0.048)	-0.165* (0.039)	-0.196* (0.043)	-0.202* (0.042)	-0.088 (0.396)	-0.083 (0.431)	-0.980* (0.409)
Bitcointalk	0.030 (0.609)	-0.277* (0.043)	-0.279* (0.045)	-0.298* (0.028)	-0.283* (0.041)	-0.274* (0.030)	-0.274* (0.036)	0.071 (0.414)
Video	0.122* (0.033)	0.293* (0.037)	0.363* (0.011)	0.311* (0.025)	0.346* (0.015)	0.196 (0.135)	0.274* (0.043)	0.593 (0.402)
Country - US	-0.109 (0.188)	-0.133 (0.476)	-0.105 (0.582)	-0.241 (0.204)	-0.119 (0.528)	-0.038 (0.825)	-0.010 (0.956)	-0.204 (0.510)
Technical experience		0.093* (0.020)		0.024 (0.638)		0.045 (0.412)		0.193* (0.120)
Commercial experience			-0.049* (0.046)		-0.092* (0.016)		-0.044 (0.391)	-0.058 (0.026)
Sector				-0.214* (0.047)	-0.248* (0.040)			-0.164* (0.029)
Soft cap						-0.031*** (0.000)	-0.027** (0.002)	-0.038** (0.006)
Technical experience × Sector				0.162* (0.038)				0.932* (0.658)
Commercial experience × Sector					0.102* (0.045)			0.376* (0.326)
Technical experience × Soft cap						0.004 (0.312)		0.003 (0.118)
Commercial experience × Soft cap							0.001 (0.795)	0.002 (0.003)
AIC	539.87	115.58	118.54	113.59	117.43	302.16	307.90	308.62

Notes: $N = 428$ ICO projects.
***: p-value <0.001; **: p-value <0.01; *: p-value <0.05

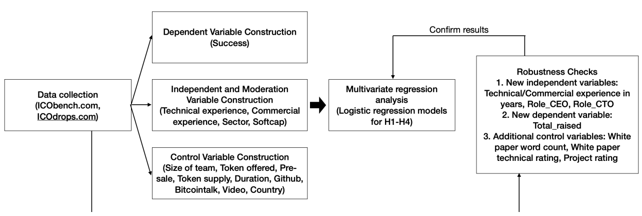

Fig. A1. Overview of analysis steps.

TABLE A1

A SUMMARY OF COMPREHENSIVE LITERATURE REVIEW.

Theme	**Literature Reference**	**Author(s) & Year**	**Key Findings**	**Relevance to the Study**
ICO Financing	[14]	Fisch (2019)	ICOs provide a novel financing mechanism, success factors identified.	Provide foundational understanding of ICO financing and highlight the factors influencing ICO outcomes.
	[15]	Adhami et al. (2018)	Determinants of the ICO success were analysed: Success is more likely if the code source is available and when a token presale is organized; Success is also more likely when tokens allow contributors to access a specific service, or to share profits.	
	[64]	Giudici & Adhami (2019)	Governance signals significantly impact ICO fundraising success.	
	[78]	Hsieh & Oppermann (2021)	ICO under-pricing is enormous. ICO initial returns are influenced by various factors including length of offering phase, presale, whitepaper, and the creation of an independent blockchain.	
	[69]	Amsden & Schweizer (2018)	Blockchain crowd sales have characteristics similar to a gold rush.	
	[79]	Block et al. (2021)	ICOs and crowdfunding have distinct but overlapping dynamics in different sectors.	
Entrepreneurs' Characteristics	[16]	An et al. (2019)	Founders' experience and characteristics (i.e., human capital) significantly impact ICO success and	Offer insights into the importance of founder

			speed of fundraising.	characteristics and experience, relevant for understanding impact of human capital in tech firms.
	[45]	Hsu (2007)	Experienced founders are more likely to secure venture capital funding.	
	[62]	Stuart & Abetti (1990)	The entrepreneurial experience, measured as the number of previous new venture involvements and the level of the management role played in such ventures was found to be the most significant factor.	
	[60]	Scarlata et al. (2016)	Founder experience influences performance in philanthropic VC firms.	
	[58]	Ganotakis (2012)	Founders' human capital is critical for firm performance.	
	[63]	Lim & Busenitz (2020)	The importance and detrimental impact of specific human capital characteristics on funding were studied. Management experience with large organizations does not impact funding.	
Team Dynamics	[22]	Vogel et al. (2014)	Team diversity influences funding decisions and entrepreneurial outcomes.	Relevant for understanding team dynamics in funding and provide theoretical background on team composition, evolution and outcomes.
	[57]	Beckman & Burton (2008)	Narrowly experienced teams have trouble adding functional expertise not already embodied in the team. Firms beginning with more complete functional structures are likely to go public faster, and firms beginning with broadly experienced team members obtain venture capital more quickly regardless of the experience and structural composition of the top management team in place at the time of these outcomes.	
	[27]	Cannella & Finkelstein (2008)	Strategic leadership theories and the impact on organizational outcomes.	
	[61]	Muzyka et al. (1996)	Team composition impacts VC investment decisions.	
Entrepreneurial Learning	[44]	Holcomb et al. (2009)	The research highlights the effects of heuristics under two different learning contexts: experiential learning and vicarious learning.	Relevant for understanding organizational learning dynamics and knowledge learning and application in experiential learning.
	[72]	Yan et al. (2016)	Ambidexterity development was largely beneficial from the multilevel organizational learning at both the strategic level and operational level.	

TABLE A2
NUMBER OF PROJECTS BY COUNTRY, INDUSTRY AND YEAR.

(a) Number of projects by country (top eight countries are highlighted)

Australia 8	Barbados 1	Georgia 8	Germany 4	Mauritius 1	Mexico 1	South Korea 5	Spain 4
Belarus 3	Belize 11	Gibraltar 4	Greece 1	Montenegro 1	Morocco 1	Sweden 1	Switzerland 27
Bosnia and Herzegovina 1	Brazil 1	Hong Kong 26	Hungary 1	Netherlands 7	New Zealand 1	Taiwan 1	Thailand 3
British Indian Ocean Territory 1	Bulgaria 4	Iceland 1	India 2	Nigeria 3	Norway 2	Turkey 1	Ukraine 3
Canada 5	Cayman Islands 9	Ireland 4	Israel 2	Others 9	Panama 1	United Arab Emirates 6	United Kingdom 40
Chile 1	China 2	Japan 1	Kazakhstan 1	Philippines 2	Portugal 1	United States of America 33	Vanuatu 1
Comoros 1	Costa Rica 2	Latvia 4	Liechtenstein 2	Romania 1	Russia 24	Vietnam 1	Virgin Islands (British) 6
Cyprus 6	Czech Republic 3	Lithuania 3	Luxembourg 2	Saint Kitts and Nevis 2	Serbia 1	Zimbabwe 1	
Egypt 1	Estonia 33	Macao 1	Malaysia 2	Seychelles 5	Singapore 47		
Finland 1	France 5	Malta 7	Marshall Islands 2	Slovenia 5	South Africa 3		

(b) Number of projects by industry

Business 54	Charity 5	Internet & Connectivity 19	Games & Entertainment 37	Health & Medicine 11	Transport 18	Social Media 7	Study 5
Cryptocurrency 49	Ecology 4	Finance 48	Platform 136	Travel 10	Real Estate 10	Sports 6	Other 9

(c) Number of projects by year

2017	2018	2019
52	357	19

TABLE A3
ROBUSTNESS CHECKS USING ADDITIONAL VARIABLES (DEPENDENT VARIABLE: SUCCESS).

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Size of team	0.001 (0.762)	0.000 (0.899)	0.001 (0.735)	0.000 (0.909)	0.000 (0.781)	0.006* (0.037)	0.007* (0.023)
Token offered	0.000 (0.745)	0.000 (0.581)	0.000 (0.895)	0.000 (0.629)	0.000 (0.824)	0.000 (0.709)	0.000 (0.846)
Pre-sale	-0.221*** (0.000)	-0.224*** (0.000)	-0.221*** (0.000)	-0.229*** (0.000)	-0.216*** (0.000)	-0.051 (0.222)	-0.049 (0.254)
Token supply	0.006 (0.567)	0.001 (0.519)	0.006 (0.576)	0.006 (0.547)	0.005 (0.591)	0.016* (0.081)	0.015 (0.109)
Duration	-0.001** (0.003)	-0.001** (0.001)	-0.001** (0.003)	-0.001** (0.001)	-0.001** (0.003)	-0.001* (0.016)	-0.001* (0.033)
Github	-0.139* (0.011)	-0.147** (0.007)	-0.139* (0.012)	-0.146* (0.008)	-0.139* (0.011)	-0.106* (0.023)	-0.098* (0.039)
Bitcointalk	0.003 (0.650)	0.020 (0.733)	0.027 (0.648)	0.017 (0.767)	0.023 (0.689)	0.013 (0.793)	0.018 (0.721)
Video	0.125* (0.031)	0.123* (0.033)	0.125* (0.031)	0.124* (0.031)	0.122* (0.035)	0.041 (0.401)	0.047 (0.342)
Country - US	-0.097 (0.243)	-0.097 (0.241)	-0.097 (0.248)	-0.101 (0.221)	-0.087 (0.296)	-0.027 (0.699)	-0.022 (0.761)
White paper (words count)	-0.000* (0.042)	-0.000* (0.043)	-0.000* (0.048)	-0.000* (0.049)	-0.000* (0.045)	-0.000* (0.036)	-0.000* (0.045)
White paper (technical)	0.018 (0.488)	0.015 (0.554)	0.018 (0.485)	0.016 (0.536)	0.019 (0.464)	0.021 (0.345)	0.023 (0.299)
Technical experience in years		0.050* (0.024)		0.029 (0.295)		0.006 (0.832)	
Commercial experience in years			-0.049* (0.046)		-0.029* (0.018)		-0.008 (0.728)
Sector				-0.035* (0.044)	-0.056* (0.023)		
Soft cap						-0.037*** (0.000)	-0.036*** (0.000)
Technical experience in years × Sector				0.059* (0.020)			
Commercial experience in years × Sector					0.056* (0.042)		
Technical experience in years × Soft cap						0.005* (0.048)	
Commercial experience in years × Soft cap							0.001 (0.696)
AIC	540.39	537.16	542.31	539.27	542.90	400.72	409.15

Notes: $N = 428$ ICO projects.
***: p-value <0.001; **: p-value <0.01; *: p-value <0.05

TABLE A4
ROBUSTNESS CHECKS WITH NEW DEPENDENT VARIABLE (TOTAL RAISED) AND NEW MEASURES FOR ENTREPRENEURS' PREVIOUS EXPERIENCE (ROLE_CTO, ROLE_CEO).

Variables	Model 1 (DV: Total raised)	Model 2 (DV: Success)
Size of team	0.061** (0.021)	0.057**(0.020)
Token offered	-0.004 (0.006)	0.001(0.006)
Pre-sale	-0.436 (0.278)	-0.451(0.301)
Token supply	0.138* (0.059)	0.073(0.062)
Duration	-0.004* (0.002)	-0.008**(0.002)
Github	-0.456 (0.302)	-0.659*(0.328)
Bitcointalk	-0.325 (0.311)	-0.210(0.029)
Video	0.942** (0.307)	0.319*(0.258)
Country - US	0.075 (0.447)	-0.198(0.336)
Project rating	0.809** (0.249)	0.622**(0.189)
Technical experience	0.119* (0.288)	
Commercial experience	0.137* (0.284)	
Sector	0.228* (0.255)	-0.129*(0.018)
Soft cap	-0.045*(0.019)	-0.035**(0.005)
Technical experience x Sector	0.378*(0.422)	
Commercial experience x Sector	-0.096 (0.261)	
Technical experience x Soft cap	0.010 (0.027)	
Commercial experience x Soft cap	0.005 (0.019)	
Role_CTO		0.281*(0.089)
Role_CEO		-0.069(0.023)
Role_CTO x Sector		0.513*(0.278)
Role_CEO x Sector		0.249*(0.201)
Role_CTO x Soft cap		0.005(0.102)
Role_CEO x Soft cap		0.006 (0.007)
Observations	428	203
R-squared (Adjusted R-squared)	0.236 (0.197)	0.312 (0.269)