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A Comprehensive Model for Idea Evaluation at Early-Stage Level (Pre-Seed)

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Dissertation report presented as partial requirement for
obtaining the Master's degree in Information Management

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**A COMPREHENSIVE MODEL FOR IDEA EVALUATION AT EARLY-
STAGE LEVEL (PRE-SEED)**

by

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Information Management, with a specialization in Marketing Intelligence

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ABSTRACT

Nowadays, governments encourage people to be an entrepreneur and start their businesses. Because small and medium enterprises play a critical role in economic growth as well as social subjects. However, statistics show a larger number of start-ups eventually fail due to several reasons. Among all, the cause of this failure could be a lack of correct evaluation of the idea at the early stage. Therefore, this study is seeking the most crucial criteria of the idea evaluation process to aid entrepreneurs to take the right assessment and prevent failure. The study uses a mixed method, which consists of narratives and systematic review, and then follows a series of qualitative interviews with start-up coaches, business investors, and both successful and failed start-up founders to have comprehensive opinions about the explored criteria. In the conclusion, the study suggests a framework of idea evaluation that is consists of the 16 most significant idea evaluation criteria which distributed among four stages. This framework could be considered as a feed for future studies to use artificial intelligence for assessing start-up ideas at the early stage.

KEYWORDS

Idea Evaluation; Idea Assessment; Idea Quality; Idea Generation, Start-up Idea, Entrepreneurship
Idea

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LIST OF ABBREVIATIONS AND ACRONYMS

GDP	Gross Domestic Product
KPI	Key Performance Indicator
ML	Machine Learning
MVP	Minimum Viable product
R&D	Research and development
ROI	Return on Investment
SE	Small Enterprises
TCA	Tech Coast Angels
UK	United Kingdom
UN	United Nations
USP	Unique Selling Proposition
UVP	Unique Value Proposition

1. INTRODUCTION

Start-ups play a significant role in economic growth and economic dynamism as they create more jobs, increase the employment rate as well as spur innovation, and inject competition (Sullivan et al., 2021). Due to the global transformations and rapid development of technology, sustaining economies need a constant search of opportunities and unmet needs to create disruptive innovation, which innovative startups (e.g., cleantech) are better generators in comparison to large companies (Hegeman & Sørheim, 2021). Therefore, to speed up the distribution cycles, market-leading companies (e.g., Apple, Microsoft) offer platforms and infrastructure to build up societal transformative technology in the form of startups and startup ecosystems. Startups contributed to the technology revolution and created new industries over time which are the goals of any government in this critical edge (Corl, 2019).

Startups are a hedge towards the social security of the future. Therefore, it is critical to create startup ecosystems and finance green startups. For instance, European Innovation Council (EIC), is supposed to allocate up to €2.5 million in 2021 to fund companies developing technologies with long lead times that will take longer to produce returns (Naujokaitytė, 2021). Likewise, a report from the Statistica website shows that the number of investment cases in start-ups has increased over 270% in Europe during the last five years and reached 2301 in 2019 from 857 cases in early 2015 (Rudden, 2020).

However, a fact from Failory webpage states that 90% of start-ups fail eventually, and 20% of them have failed just in the first year (Cerdeira & Kotashev, 2021). Based on the Medium platform, 34% of startups close within their first two years and just over 50% of businesses make it to their fifth year and only 25% of them make it to the 15-year mark (Chernev, 2021). iGoStartup reported that 82% of first-time European entrepreneurs fail (Chernev, 2021). According to the literature, academicians and practitioners have reported numerous reasons behind startup failures, which is possible to categorize in different areas and stages as a story of failures. As far as entrepreneurship risk (eg., investment risk) is unavoidable, it is generally believed that failure should not call any step a mistake, while it needs to consider as a learning opportunity. Evidently, despite their high investment risks, technological startups increasingly attract corporate venture capital (Hegeman, & Sørheim, 2021). Therefore, the literature includes many recommendations and instructions for entrepreneurs to join them into the league of accomplishes. Articles on startups' management address the complicating factors of idea failures and failure in new venture creation (Kalyanasundaram, 2018) to develop a dynamic process model towards prevention and management of failure in business incubation (Nair & Blomquist, 2019). Accordingly, a study from Harvard Business Review classified more than 250 platforms into four categories as the most common reasons for failure naming unreasonable pricing of products, mispricing on one side of the market, failure to develop trust with users and partners, impulsively dismissing the competition, and late entry. (Yoffie et al., 2019). While the reasons and categorization of failures are controversial among experts, the idea evaluation process has been reported challenging due to the lack of a specific framework to evaluate an idea at the first step (Bergek & Norrman, 2008). The idea evaluation process at the pre-seed level has been reported to be more challenging than this level. First, the pre-seed level is a checkpoint to assure the quality of the generated idea and it considers strategic opportunities in the long-term period when assessing the ideas. Second, the most reason of failures has been categorized in Pre-seed level. For example, many ideas are failing because of a lack of customer need, wrong product strategy, weak entrepreneur personality, and a bad interrelationship between team members (Kalyanasundaram, 2018). Third, early assessment of a person's activities and thoughts maybe affect the idea generation processes and lead to making more creative products (Lubart, 2001). Finally, entrepreneurship theories confirm, early-stage startups are a milestone of transferring ideas into businesses at evaluation and exploitation level such as new venture conception, value creation, and opportunity recognition (Radovic-Markovic & Salamzadeh, 2012). In academia, research papers focus on a specific aspect of idea evaluation (e.g., software startups), and so far, holistic framework design is scarce for the idea

evaluation steps at the pre-seed stage. Even though earlier studies have taken different theoretical perspectives in understanding Idea evaluation from incubators' perspective (Nair & Blomquist, 2019), a process perspective of failure prevention and idea evaluation from idea generators and mentors was missing. Practically, a business review called for further research to find the reason for failure, and then, explore evaluation process criteria and their priority, and finally obtaining the identity of the business to draft a framework to address the complexity and heterogeneity of the idea evaluation process (Yoffie et al., 2019). Thus, this hybrid review study complemented by in-depth interviews tried to gather all aspects together to develop a framework as a roadmap for entrepreneurs, mentors, and business angels as a valuable filter for both idea generators and incubators to reduce the investment risk in the future. Thus, the main goal of this study is 1) to investigate the root and causes of failure as well as success in pre-seed level and come up with idea evaluation criteria in literature 2) scatter and expand of evaluation criteria and their priorities in academia as well as practice. This review study offers two substantial contributions. First, it highlights the reason behind the failure by reviewing the inclusion of a range of failure reason categories to draft a framework. Second, by an in-depth interview with experts, it further argues that what are the priorities of each categories' evaluation in real industries based on the market environment, type of startups, geography, and global trends to build the circulation and review cycle between academia and practices. This study intends to address the following research questions: What are the necessary evaluation criteria at the pre-seed level that can result in a high-quality and right idea evaluation? What are the significant criteria that must be priorities in the evaluation process in order to learn from failure and consider them as an investment for the start-up in a long run?

The following section describes the idea evaluation process of pre-seed startups and the global trends associated with it. The Literature review follows portraying the method used to apply hybrid review approaches and in-depth interviews. The results and discussion represent the results of hybrid reviews and interviews. Finally, the conclusions offer policy implications for both academicians as well as angel investors, venture capitalists, and private equity.

2. LITERATURE REVIEW

Start-ups define as "a company working to solve a problem where the evolution is not obvious, and success is not guaranteed" (Robehmed, 2013, para. 2). Small enterprises (SE) deliver significant impacts on socioeconomic aspects of societies at different levels of direct and indirect (supply side) effects. Direct effects are the start-ups' job creation and a novel product or service that cause growth and increased local fertility (Szarek & Piecuch, 2018). While indirect impacts raise local competitiveness and development. The indirect supply side impacts are expanded in different groups as secured proficiency, acceleration of organization conversion, boost innovation, and extensive diversity. More precisely, startups impel old players as well as newcomers to treat more effectively with a wide diversity of products and innovative solutions (Fritsch & Mueller, 2004). One of the most evidence for a successful and impactful startup, is to what extent it creates value and how much it is worth? Unicorns define as privately owned startups that already reached 1 billion US dollars' worth. The billion dollars thresholds recap the significance of the right investigation that leads entrepreneurs or investors to create value. Ant financial, Btedance, Uber, Airbnb are some famous examples of unicorns. However, valuing unicorns is a sophisticated process that involves considering various variables and develop long-term forecasts, being a unicorn is one of the most important goals of creating star-ups among others (Campos, 2019). According to the report from CB Insights that analyzes the global business situation, there are 496 unicorn start-ups around the world up to November 2020 which have a total cumulative valuation of 1'575 billion dollars (The Complete List of Unicorn Companies, 2020). Although a few and far between startups will do so well that they become worth over \$1 Billion, they come once in a blue moon and can impact the industry tremendously. The question here is how to evaluate startup ideas at the initial level to see whether they could be a unicorn or not? Lonergan et al. (2004) believe that idea evaluation for startups is mainly an integrative process that includes theoretically both the examining of the idea and generating new ideas or solutions to resolve the potential obstacles encountered, or problems expected to be faced during the execution phase.

Theoretically, startups are not vastly considered as the leading focus of theories in different domains however, there are some theoretical foundations which implicitly studied as "startup theories" in an organization, management, and entrepreneurship (Salamzadeh, & Kawamorita Kesim, 2015). Accordingly, the circumstances under which an organization is created, and the processes followed in its initial development have crucial consequences on its configuration and performance in a long life (Van de Ven et al., 1984). Organizational theories defined in the literature (e.g., organizational ecology theory, organizational approach configurations, uncertainty theory) were used mostly to answer the organizational questions and not organizational evaluation. While management theories are questioning the role of people and teams that cooperate their endeavors toward the united business goal and describe the relationships among organizational characteristics (Dean & Bowen, 1994). The entrepreneurial theories discuss the characteristics of the founder and/or promoter of a new business and could be divided into micro, macro, and meso level (Salamzadeh, & Kawamorita Kesim, 2015). In other words, while, management and organizational theories focus on people and management, entrepreneurship theories are more focused on pre-seed startups (Radovic-Markovic & Salamzadeh, 2012). Therefore, entrepreneurship theories are found to be more suitable for early-stage startups as they are a milestone of transferring ideas into businesses in evaluation and exploitation level such as new venture conception, value creation, and opportunity recognition.

Startup diversifications is expanded in different stages and are reported to be controversial. As an example, in terms of the life cycle, startups have been leveled from three to six stages and named respectively based on the identity of industry or services, but generally agreed on three stages: I) pre-seed, bootstrapping and ideation, II) seed, creation and III) scale-up, expansion. In the other words, Stand-up includes all processes regarding the creation of the business, a start-up that has operations for retaining the business, and Scale-up which consists of steps for the growth of the business (Rossetti et al., 2018).

In any business project, the phase of analysis is critical for the detection of a real problem in the niche market in which the startup intends to perform. Hence, the challenge is the way it solves the problem for the market or industry would be the key in contributing to the success or failure of the projected solution afterward. One of the shreds of evidence for successful startups maintains as an art of problem finding as 'I wish...' or 'What would be if...'. in human's daily life. For example, the concept for Uber in early stage was the start of when co-founders ask themselves "What if you could request a ride from your phone?" (Blystone, 2021). This analysis happens in the pre-seed phase, also named the ideation phase because it is all about to have the idea and persuade someone to follow it with you (What are the six stages of a startup?, 2021).

From a global perspective, the entrepreneurial system is a key driver of economic growth (Spilling, 1996). The effect of having entrepreneurs and their startups could be important on society as a whole (Frederiksen & Brem, 2017). This great impact increases the necessity of studying these startups.

Moreover, nowadays, social entrepreneurship is trendy as well. Peek (2020) defines social entrepreneurship as a practice that provides solutions to social issues. It is not a non-profit organization however, a social entrepreneur prefers to focus on solving social concerns including poverty, global warming, or education inequality rather than increasing profitability. The UN defines the goal of social entrepreneurship as "create value or generate a positive impact on society by offering services or products that answer unmet needs or by offering different solutions to social challenges" (World Youth Report, 2020, p. 14). In an article from Law (2021), social entrepreneurship is divided into four types:

1. Cooperative businesses that aid their members to overcome social, economic, and cultural requirements by solutions like community grocery stores or credit unions.
2. Social firms that provide job opportunities for people who suffer from a disability.
3. Socially responsible companies are defined as businesses that have a daily mission to serve humanity or the planet. For example, Nike collects plastics from the ocean floor and manufactures a new sneaker with re-cycle plastics.
4. For-profit businesses with a social impact are profit-focused firms that play their role in overcoming social causes via donation and raising awareness like Warby Parker that donates glasses to whom it may need.

In terms of the economic impact of social entrepreneurship, the European Commission announced that 13.6 million people are currently working in this area (Borzaga et al., 2020). According to a report from Financier Worldwide, just in 2018 in the UK, social enterprises worth than 60 billion £ which is 3 percent of GDP and 5 percent of all employment, and these numbers are extremely increasing (Summerfield, 2020).

Furthermore, in order to create a start-up, founders need to have access to infrastructure that can support them in standing up. Incubators or Accelerators provide a series of services like office space, administrative functions, education, mentorship, or funding opportunities (Kenton, 2021; Riggins, 2020). Start-up incubators aid entrepreneurs to refine or reassess their business idea and then, start the business from the ground whereas, start-up accelerators only provide services like education, mentorship, or resources to the new-born firms that have already developed their MVP in order to

accelerate their growth (Richards, 2021). As a result, incubators can have a positive impact on the economy by making long-lasting jobs for fresh graduates, mid-career laborers, or experienced managers (*The Importance of Business Incubators*, 2020). According to an article from The Economic Times, entrepreneurs can expect incubators to validate their ideas, mentor their processes, provide co-working spaces/ resources, and support in terms of fundraising (Mittal, 2014).

In addition to an incubator, a strong start needs an experienced mentor in that industry as well. An ideal mentor should be available most of the time to assess the founders' plans and demonstrate all the effects of founders' decisions and try to draw a big picture of the future of the business (Krach, 2018). Allen (2019) justifies why every entrepreneur needs a business by below reasons:

1. Each solo founder must hear a second opinion about his/her decisions.
2. Normally business mentors have already faced and have had overcome similar problems to entrepreneurs.
3. Mainly business mentors work for free.
4. Business mentors usually have good networks that can improve entrepreneurs' networking.
5. A business mentor can be trusted and have a long-term relationship with.

Next to a business mentor, entrepreneurs might need to have a business coach to receive advice for their actions. An entrepreneurship coach can discover the potential of entrepreneurs and support them to grow the business even in the challenging atmosphere or crises like Covid-19 (Michail, 2021). A Business coach can break down the goals into several milestones and determine KPIs to measure the current and future performance of entrepreneurs (Snedeker, 2020).

In terms of idea evaluation tools and techniques, Ough (2014) who has already assessed more than 5000 start-up ideas categorizes the evaluation methods into seven tools:

- Awareness trial availability repeat that is mainly used to estimate the market need before launching.
- Idea checklist evaluation that the founder must answer typical questions to make sure of the business success theatrically.
- Consequence mapping that includes all the activities, processes, possibilities, and suggestions for the idea.
- Delphi technique which is a projection method based on the opinion of independent specialists.
- Cost-benefit analysis is used when there are several ideas to pick the most beneficial one.
- Idea advocate is a technique that the entrepreneur must present the idea to two different groups and compare the feedbacks.
- Decision tree that demonstrates the consequence of different actions and aids to discover the best path of conducting the business.

Moreover, Princeton Creative Research has already developed a checklist of several key questions for assessing the business idea such as asking about the real need, the capability of solving a problem, the complexity of implementation, or user resistance (Palmer, 2014). By having a clear and rational answer to those questions entrepreneurs could find the confidence to start the business.

Regarding existing platforms for idea evaluation, Blohm et al. (2016) explained two IT-based mechanisms that had been used in open idea evaluation. They believe in the first mechanism, the idea is only assessed based on itself whereas, in the second one, the ideas are only compared to one another and finally the more feasible one will be selected. However, in Blohm et al. (2016) study, they have found different parameters involved in idea assessment at the early stage of improving a software product from SAP.

3. METHODOLOGY

This study applies a mixed approach to explore key influential factors of idea evaluation in an innovative start-up business. Tashakkori and Creswell (2007, p.4) define the mixed method as “research in which the investigator collects and analyses data, integrates the findings and draws inferences using both qualitative and quantitative approaches or methods in a single study”. Thus, this study consists of three sections as below:

- Section 1: Conducting a narrative literature review to explore the main discovered challenges by academia in the idea evaluation area.
- Section 2: Implementing a systematic review on the most relevant studies that precisely counted criteria in the idea evaluation process. Considering sections 1 and 2, the study is going to name the most significant criteria in the idea evaluation process.
- Section 3: Conducting qualitative interviews with experts in the start-up area in order to gather their opinion about the explored criteria in section 2 and design a framework of idea evaluation by interpreting sections 1,2 and 3.

According to the study of Morse (2003), the first principle of the mixed method is finding the most relevant existing theoretical drives of the research which this study has identified in the theoretical background section. The second principle is for explicit awareness for each study. The study follows this principle by reviewing the literature rigorously, and then, conducting interviews with experts to validate the criteria, steps, and framework.

There are several approaches to conducting a review study such as narrative, systematic qualitative review, meta-analysis, or a combination of two (Kim et al., 2018). Review studies are implemented with the main goal of analyzing the conversion and improvement of a discipline to refine comprehension of the evolution in a field and to find the trends out (Cheng et al., 2011). To conduct the first and second sections, the study uses the hybrid method which is a combination of narrative and systematic quantitative review. It means after reviewing the literature and exploring the involved criteria in idea evaluation, the study categorizes the similar criteria into one factor and prepares a draft of the framework for section 3. The main benefit of using hybrid review is it is an advantageous method to map the studies in a bibliometric way and it analyses the topical areas in terms of finding the differences and similarities in involved parameters (Mehran & Olya, 2018).

In the narrative review, the study analyses and categorizes the prior research (Czarniawska, 2004), that describes the existing theories in the idea evaluation area and argues the different points of view. This review aids to identify all the relevant parameters in the idea evaluation process.

By conducting the systematic quantitative review, the study retrieves the most used parameters in the idea evaluation theories that drive the design of the preliminary framework of the idea evaluation. The relevant parameters will be classified and reported in tables with their sources.

In the next section, the study conducts the qualitative interview as a supplementary approach for the suggested framework. The interviewees consist of mentors, and both successful and failed entrepreneurs to have diverse points of view. The main benefit of conducting interviews is that the preliminary framework will be validated, enriched, and revised by adding or removing the most significant parameters in the idea evaluation process. The main goal of this method is to dive into the

problem regardless of the procedures and rules. One advantage of using qualitative research is that it is an interdisciplinary field that covers a broader range of epistemological sights, investigation mechanisms, and interpretive powers of perceiving people's experiences (Denzin & Lincoln, 2002). Therefore, by conducting qualitative interviews with the leaders of 14 startups in Europe, Asia, and America this study seeks further criticism of the suggested framework and improved the framework based on the interviewees' point of view. To manage the qualitative interviews, the study uses standard open-ended interviews.

Therefore, by choosing this method, the study can extract detailed information plus the experience of both academia and entrepreneurs. The output of these three sections will be a comprehensive framework that aids the idea evaluation process at the pre-seed level. In the future, this framework analysis can be used as a reference to improve and build a new suitable evaluation model for a startup at the pre-seed level to guide in carrying out more structured evaluations.

4. RESULTS

4.1. RESULTS OF NARRATIVE REVIEW

The literature argues that the development of an idea is a circular and iterative process; an entrepreneur is probably conducting the assessment process multiple times at different occasions during the development; besides the evaluation might lead to the identification of further opportunities or arrangements to the primary insight as well (Ardichvili et al., 2003). Idea assessment as the main prerequisite of idea development is identified as a process that consists of both verifying the idea and generating new ideas for solving obstacles encountered or problems expected to be faced, in the execution phase (Mumford et al., 2003). The substantial expectation of idea evaluation is to cut uncertainties. Meijer (2008) found uncertainties exist in factors such as government policies, technology, competitors' movements in the market, existing suppliers, potential customers, and required resources (Tomy & Pardede, 2018). Evaluating entrepreneurs' ideas before the creation of the company at the pre-seed level is the most crucial stage as it tests the hypotheses of a business idea and turns the hypothesis into a product (Ebben& Johnson, 2006). From a financing cycle point of view, in a standard pre-seed round, the co-founding group (person) receives a small investment to proceed with some of the main milestones required before investing on the seed level. At this phase, the most common "pre-seed" investors are the co-founders themselves. In the other words, co-founders finance their company with their own money, which means 'bootstrapping'.

Although, there is no guarantee for avoiding bias and misunderstanding in the evaluation process there are some evaluation methods such as individual, expert groups, and crowdsourced to address the ideation phase. As a solution, some experts believe that the evaluation process can be implemented around failed start-ups to uncover mistakes (Nieminen, 2018). They believed that it would be tough to differ or grow the business without considering these key fail drivers. In this line, after reviewing many case studies Akter and Asif Iqbal (2020) have grouped the failed platforms' reasons into three categories which consist of startup organizational, business model innovation, and ecosystem. At this phase, startups are evaluated according to different checklists, score sheets, or criteria. Nonetheless, the idea evaluation process at the pre-seed level has been reported to be more challenging (Yoffie et al., 2019). Because idea evaluation at this initial level is one of the most important checkpoints to assure the quality of the generated idea as it considers strategic opportunities in the long-term period when assessing the ideas. To address this issue, first, by reviewing the failed business, there would be a potential to improve the idea evaluation process as well. Second, having a formal checklist would answer how much the ideas will be assessed fairly. Finally, a formal evaluation is interested because of its power for the comparison of ideas with one another, to supply a fair assessment process for idea generators, and to aid stakeholders by providing consistent information to make their decisions (Koen et al., 2002). The concept of fairness should be considered in the expansion and correction of an assessment tool for the same reason that face validity and credibility are measured. Therefore, investors, mentors, and business angels are trying to use a framework tool to base their assessment on fairness. Once stakeholders see evaluation as fair and meaningful, real participation is more probable, as opposed to outward acknowledgment or disengagement. Furthermore, information collected from one group can be used for modification to improve future realizations of fairness, which then causes increases in the quality of the outcomes (Tierney, 2016). Thus, scholars attempt to categorize idea evaluation by explaining various variables, theories, and reasons to explain the complex conditions that contribute to the failure and success of an idea in the real world. To explore all aspects of idea evaluation at the pre-seed level, this study defines four stages of the evaluation process from self-assessment, business angel, and mentor point of view to review the literature at a deep level (Figure 4-1).

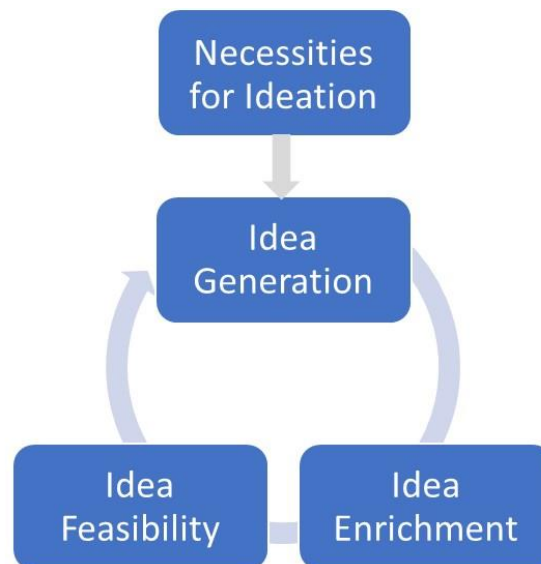


Figure 4-1. Idea evaluation process

4.1.1. Stage 0: Necessities for Ideation

Discovering necessities for ideation is a starting line for new ideas. Since most inventors aren't marketers, a new idea often needs someone other than its originator to move it along, while a disruptive idea may be smothered at the beginning if there is no assessment tool to evaluate it reasonably. This stage is vitally important as whether the progression of a new idea or failure reason in future are rooted in this step and skipping this step can delay or even sabotage the innovation process. Before starting to think about any idea, some requirements should be considered for developing business ideas.

According to the theory of entrepreneurial opportunity identification and development, the idea needs to respond to three concepts as opportunity development, opportunity recognition, and opportunity evaluation (Ardichvili et al. 2003). Evaluating the opportunities aids entrepreneurs to anticipate beyond the current frame of identified opportunity to recognize all the future aspects of that opportunity and thereby decrease the risk of implementation the idea. (Krueger Jr, & Dickson, 1994) One requirement for the ideation is the possibility of opportunities discovery as entrepreneurial alerts in the community (Tomy & Pardede, 2018). A quote from Ray and Cardozo (1996) says entrepreneurial alertness is "A propensity to notice and be sensitive to information about objects, incidents, and patterns of behavior in the environment, with special sensitivity to maker and user problems, unmet needs and interests, and novel combinations of resources". To find opportunities we need to make sure whether the idea is sensing or discovering the market needs, fit among the potential resources, or turning the new "fit" among other needs and resources into the business concept (Ardichvili et al. 2003). To expand the opportunity identification, we can refer to the geographical location, socio-economic, and culture in the entrepreneurship ecosystem as they have a tremendous influence on the process of idea evaluation (Tomy & Pardede, 2018). As an example, Michel Bloomberg found the opportunity of customer need of professional traders to have access to real-time data when they are trading in the stock market, so he started his own company in 1981 and invented the Bloomberg terminal in 1982 which brought transparency to the capital market (McCracken, 2015).

One of the oldest research traditions in idea evaluation and investment criteria is to predict the personal behavior of entrepreneurs (Sudek, 2006). The modified trait of this paradigm gained the

consensus that entrepreneurial behavior and characteristics are the driving force for startup success, opportunity exploration, and national innovation system development. (Rauch & Frese, 2000). Sudek (2006) reported business angels believed that the personality and character of entrepreneurs as trustworthiness, enthusiasm, knowledge, and track record of the entrepreneur need to be evaluated at the most initial stage. Likewise, Ardichvili et al. (2003) believe that personality traits, including creativity and optimism, are considered as a significant parameter in the idea development process. Dimov (2007) reveals that 'need for achievement', 'locus of control', 'risk propensity', and 'tolerance for ambiguity' are factors that differ entrepreneurs from general people to invest in their idea. In line with aforesaid findings, Nikoloudis and his colleagues claimed that investors consider the character of the entrepreneur, the competence and background of the entrepreneur and handling team, the product/ service, the market, and financial opportunities before they decide to invest in a generated idea (Nikoloudis et al., 2017).

Autio (2016) counted the network structure as a parameter that the entrepreneur must expand his business based on that at the early stage. As far as ecosystems including the social and the economic environment affect local or regional entrepreneurship, the resources and financial support available in the entrepreneurship ecosystem are accessible through networking with a wide spectrum supply chain. Informal connections with friends, families, colleagues and others as well as formal connections, and collaboration with public agencies, economic development organizations, and large and professional establishments. Furthermore, relationships with supporting cooperation such as lawyers and accountants, consultants as well as sources of capital provided by venture capitalists and angel investors (Dossou-Yovo, 2015). Therefore, evaluation of entrepreneurs networking behavior at the pre-seed stage is vital for managing the startup's risk in the future. From a societal and political point of view, governments are looking for enhancing networks between the entrepreneurs and venture capitalists at an early stage, that can be effective in terms of exchanging the experiences and support of the firm growth (Autio & Rannikko, 2016). Entrepreneurs who have expanded their networks, succeed to discover more opportunities in comparison with solo entrepreneurs. Similarly, the quality of connections in networks can have a significant effect on elements like alertness and creativity (Hills et al., 1997). According to research, "Informal Innovation: Entrepreneurship and Informal communities", active networking has a decisive impact on the business performance in terms of profitability, return of investment, capitalization, and revenue growth (Guerrini, 2016).

4.1.2. Stage 1: Generating Idea

In order to shape a business idea, the entrepreneurs need to generate ideas considering some metrics that lead to success and have a core competency in the market. In this stage, entrepreneurs will explore opportunities based on their knowledge backgrounds and networks and then embrace the value of fresh information (Shane, 2000). Regardless of existing theories and academic studies, there is so much content on the web regarding how to generate start-up ideas provided by entrepreneurs, business coaches, incubators, and investors. "Sometimes you find success when – and where – you least expect it. you spend all your time working hard and tinkering with an invention in the garage or plugging away on your computer trying to come up with the next great start-up, and then, boom, it just happens" quoted by Samson (2017). It is called "surprise success" like Uber story. Mainly, they are suggesting some instructions to do a self-assessment by funders for their business idea. These instructions normally are conclusions of former success and failure of start-ups that are categorized statistically and have enough evidence. As an example, Bondarenko (2016) believes that solving a problem is the most significant part of start-up idea generation. He suggests that start-ups should be built around a problem instead of technology. Precisely, the solution-based approach

needs to be substituted with technology acquisition as a solution and approach. These efforts will lead to change a problem to the development of business opportunity that described (Ardichvili et al., 2003).

According to the literature, in the idea generation phase, the problem needs to be evaluated to ensure whether it is popular, urgent, growing, expensive, mandatory, and frequent or not. According to the Y Combinator website, a problem will be changed to a business opportunity only if it has the customer's pain inside and frequency of facing a problem (Hale, 2019). The question raised here is to what degree the idea could address the problem? To evaluate this degree, the 'relevance' element needs to be considered during the idea generation process (Mccarthy et al., 2018). In other words, the idea needs to first, be applicable to tackle the problem clearly and second to solve it effectively (Dean, et.al, 2006).

"The ideas must be novel—different from what's been done before— but they can't be simply bizarre; they must be appropriate to the problem or opportunity presented" said Amabile (1997, p. 40). Novelty is a fundamental factor in the idea evaluation process as a degree of originality and paradigm relatedness (Eisenberge and Rhoades, 2001). The originality determines how much the idea is rare or uncommon and then, describes the amount of being imaginative and surprising (Barki and Pinsonneault, 2001). Paradigm relatedness is described as how to manipulate the elements and the relationship between the elements to reach a novel idea (Mccarthy et al., 2018). In other words, whether an idea changes or keeps a paradigm, it must be determined by new elements and relationships between the elements that are included in an idea (Dean et al. 2006). To evaluate novelty, the solution needs to be assessed and see whether it is an elegant solution with the same elements and relationships or a transform with both new elements and relationships? As an example, the solution needs to improve the functionality of the product/service and/or enhance production methods like changing in tools and techniques or using software and/or using a novel marketing method and/or having new business practices in both internal and external relationships of the organizations. (Correa & De Moura Ferreira Danilevicz, 2015).

Although assessing novelty is a necessary item but not sufficient at this level, as the idea has a promise of delivering value to the target customers, while it is novel and imaginative. The value proposition is a precise covenant made by a company to its customers that it will provide a specific package of benefits (Hassan, 2012). As an instance, in High-Tech start-ups, to the co-production of strong value propositions and collaborative development of new service offerings, they need to create a beta version of the product and use the feedback to adjust the value proposition (Molendijk, 2017).

In this phase, the concept of the product must position a competitive advantage that provokes the market to adopt that new product (Martinsuo & Poskela, 2011). For sustainable value propositions in start-ups, customer needs and behavioural change are crucial as economic and environmental objectives are matter. Therefore, the idea needs to be more desirable for the customers themselves and that can influence their behaviours in a righteous manner (Baldassarre et., al, 2017). In Addition, the competitive potential arises from the premier price/performance attributes and unique characteristics of the product when it is competing in the market (Cooper, 1994). Moreover, product supremacy must be discovered by the targeted customers, so differentiation of products is critical in the customer's eyes (Shenhar et al., 2001). For evaluation value proposition, we should consider three categories of benefits, favourable points of differentiation, and resonating focus (Anderson et al., 2006). All benefits type is a way that offers the most possible values to the customers regardless of consumer behaviour or other players in the market. Then, the favourable point of differentiation refers to the situation when there are some alternatives for a specific product or service and answers the question " why customers should buy our products instead of the competitor's?" However, in a resonating focus type, the supplier only focuses on one or two points of difference that deliver the highest value to that customer target group. Blockchains' start-ups present two extensive value

propositions: the decentralized data Infrastructure and membership management. At a more advanced level, many blockchain technologies provide the infrastructure for the automation of business processes as well as trading cryptocurrencies (Zutshi, Grilo, & Nodehi, 2021). Therefore, the value proposition parameter highlights how the start-up idea wants to serve in the market. A study from CB Insight shows that 42% of failed start-ups were because they couldn't position unique values for their product in the market (The Top 20 Reasons Start-ups Fail, 2019). Unique value proposition (UVP) as the whole benefits users receives from the product including sentimental feelings are concerned in this step of evaluation (Bondarenko, 2016). Airbnb and Uber are examples of having UVP. Furthermore, USP defines how different the product will be presented to the customers among competitors. For instance, having free cancellation option on the Booking website for a hotel room could be considered as a USP.

Given the public scrutiny of global concern regarding the impacts of the action on SDGs such as climate change and social justice, we need to consider the sustainability of the idea in the generation phase. Successful start-ups use sustainable and green business ideas to address the problems of concern. NielsenIQ has surveyed more than 81,000 Americans over the past five years to better understand the business behaviour regarding this issue and revealed that 66% of global consumers are willing to pay more for sustainable products projects and by 2021, the market for sustainable products in the U.S. will reach \$150 billion. (NielsenIQ, 2015). The sustainable idea examples for start-ups would be around energy auditing, environmental law, air duct cleaning, eco-friendly food supplier, manufacturing, or selling eco-friendly fashion design (Wood, 2021). The idea of Cryptocurrency start-ups routed in sustainability goals to help the planet in a way, like reduction of cutting trees for producing paper money, therefore, they have to re-think about sustainable business processes as well, otherwise, they might lose their customer attention.

At the end of this stage, we need to consider the market prospect for our product as the start-up's prospective future performance in an aforesaid competitive marketplace. In the case of a start-up, the idea must take an innovative and creative approach to make sure business idea have enough of those people in the market to purchase it as well as target customers are not willing to pay what you need them to pay; otherwise, the idea will fail (IdeaBuddyTeam, 2020). In order to fulfil this criterion, the start-up should create a buyer persona that identifies the ideal target customer by asking such questions: What will motivate my target customer to purchase my product or service? What price will my target customer pay? Who are my competitors? As a failure example, we can refer to Pinky Gloves start-up invented a glove for women to change their pad during menstruation. However, they have been mocked for their inability to evaluate the market prospect as it was absolutely unnecessary for women, environmentally unfriendly, and sexist (Berry, 2021).

4.1.3. Stage 2: Enriching Idea

After the idea generation stage, the idea must expand to respond to the existing uncertainties and be ready for a final fair evaluation. This stage is critical as many failures of novel ventures are the consequence of the incompetence of the co-founders to handle the uncertainties and manage them which have a significant effect on the innovation intentions and movements of entrepreneurs (Meijer, 2008). Resource allocation including human and non-human resources is considered tricky as identifying and planning the resources, evaluation of human resources, and preparation for emergencies are the necessary elements in the enrichment of the start-up idea (Athuraliya, 2021).

Uncertainties can be managed by creating technical resources and enhancing capabilities to anticipate, interpret, and learn (Zack, 2001) which are divided into external and internal groups. The internal environment covers the ability to provide financial and expert human resources, while external uncertainties are technological and political competition in the market.

Building teamwork as the main driver of development is a key challenge that early-stage start-ups have to cope with for enriching the idea conceptualization when they want to launch to the market for the first time. Specifically, literature significantly values this step for cutting-edge products such as software and high-tech start-ups (Giardino et al., 2015). The reasoning points are as follow: a) the teams reinforce the resolution of challenges that independently would not be overcome, b) teamwork is emerge in the context of entrepreneurship process as well as launch and growth in seed level c) social network, relationship and economic context within the start-up team empower them to deal with uncertainty and velocity and limited resources. Also, from a venture capitalist point of view the superiority of the executing team in survivability, and openness is significant as between 60-65% of failures problems within the start-up team (Lazar et al., 2020). As an example, Arthur Rock, a famous venture capitalist quoted that “Nearly every mistake I've made has been in picking the wrong people, not the wrong idea” (Bygrave & Timmons, 1992, p. 6).

Despite the rich literature in the opportunity evaluation process in entrepreneurship, only a limited number of studies classified the external uncertainties involved in pre-seed start-ups. To address technological uncertainties, it is necessary to evaluate technological development, innovation speed, process and methods, and technological infrastructure (Tomy & Pardede, 2018). For example, time to enter the market is one of the vital elements in the success of start-ups which can be managed/assessed by innovation speed that enables them to enter the market faster than their competitors. Entrepreneurs also need to make sure that they have accessibility to the ongoing technology and their start-ups are compatible with the technological shift. As technological uncertainty means that the probability of achieving a particular goal cannot be determined in advance based on available technological knowledge, an entrepreneur should describe how many technological infrastructures are available to them. For example, pandemic 2020 almost bankrupted airlines, hotels, and energy companies, yet Silicon Valley is still driving innovation, and start-ups like Air Garage, Capella Space are among the best start-up companies in America that have never seen more customers than now (FUNDZ, 2021).

Political uncertainty also refers to the unknown circumstances regarding the governmental policies, legitimate instructions, and their future strategies to manage inflation and exchange rates, recruitment laws, taxation, etc. Competitive uncertainty is the lack of knowledge about the competition in the market in terms of the competitors, their products, and strategies (Milliken, 1987). Customer Uncertainty defines as a lack of awareness in terms of customer acceptance and demand contemplating the novel technology. For example, governments obligate businesses to increase the salaries of their laborers to adjust to the inflation rate. Thus, start-ups wonder if they can afford that force raise or have to release their employees (Lazzaro, 2020). To address external uncertainties, allocation of budget reserve and establishing offshore zones are assessment criteria. likewise, the geographical locations, the socio-economic and cultural elements have a critical effect on the entrepreneurship process in both developing and developed countries, (Voung, 2016). In terms of financial criteria, revenue potential, growth rate, return of investment (ROI), and profit margin of the business are the most important parameters for business angles to assess the idea conceptualization (Sudek, 2006). Moreover, Stevanovic et al. (2015) added sales volume, rate of return, and payback time as financial attributes that should be gathered during the idea evaluation process. Homejoy was a start-up that was established in 2013 and raised \$ 38 million. Among several reasons, the expectation of rapid growth was the main reason for failure. Because just after six months, it had branched in 30 cities that caused a lack of stabilization for maintaining the business (Gilmanov, 2020).

Subjects like Potential market size, Market segmentation, market condition, purchasing ability of potential customer and purchase behaviour need to be refined and pre-planned in this stage (Tomy & Pardede, 2018). Even though, design, packaging, warranty, maintenance, and production costs as main parameters in the product strategy area will be assessed in this phase (Rebernik et al., 2008). In

Vietnam, a social commerce start-up is called Mio found a gap that other existing players in reselling groceries market have focused on larger cities, so Mio puts its marketing segmentation on smaller cities and rural areas by creating a network infrastructure and offering delivery on next day (Shu, 2021).

Next, the idea should be enriched by documenting the necessary resources to clarify the whole logistics and budget plan. Delmar and Shane (2003) believe that nascent start-ups that have done the planning at the early stage are capable of predicting contingencies and then, recognizing critical unclear information to make better decisions. In other words, every generated idea will be enhanced in terms of infrastructure and knowledge resource, understanding the customer needs precisely, and having a strategy to anticipate competitor's movements (Sääksjärvi & Hellén, 2019).

4.1.4. Stage 3: Idea Feasibility

Once the idea is enriched and documents are properly prepared, the mentors, evaluators, or investors could read it and do the feasibility calculations to evaluate the idea in general. Precisely, they will check to what extent the generated idea is workable or easy to implement (Dean et al., 2006). At this final stage of evaluation, the evaluator identifies the specification degree in which the business plan is completed and provided data in detail. In other words, feasibility assessment is consisting of accessibility to resources, considering how much the idea is acceptable in terms of law, social aspects, and politics, and finally calculating Implementability (Verhaegen et al., 2013). likewise, Bothos et al. (2008) believe that the feasibility process must be done in economic, ecological, technical, and organizational areas. Cady and Valentine (1999) define the quality of an innovative idea as the power in solving a problem and then, adopting it successfully by an organization. In other words, this phase will illuminate whether the idea applies to the stated problem and the start-up's solution is effective at solving the problem or not (Mccarthy et al., 2018). Furthermore, the ideas must be acceptable, means should not violate the common restrictions in terms of adapting the laws, government policies, economic situation, and cultural aspects (Tomy & Pardede, 2018) to assure everything is legal and welcomed to different societies. For instance, co-founders must pay re-check all involved legal departments before choosing the company name to prevent trademark, domain, and patent issues (Miaskiewicz, 2021).

A professionally generated and enriched idea persuades business angels or venture capitalists to invest in that developing project. However, the criteria that business angels consider for investing in an idea are different from the ones that idea generators think about due to financial consequences. In line with this fact, regardless of how much the idea is technically feasible, there are some other parameters like the degree of readability which idea generators should consider convincing the mentors. Klare (1963) defines readability as ease of comprehension of text based on its writing style. Blohm et al. (2016) believe the readability of that text is critical because the ideas are represented through text. Moreover, a study by Tan et al. (2014) shows that readability affects the relationship between the presentation of financial forecasts and the investors' understandings. Mentors can judge better when the ideas are more understandable. For example, the business plan must have clear 3–5-year financial projections which must contain profit and loss statements, balance sheets, needed cash flow, etc. (Harroch, 2018).

Entrepreneurship and innovation are the engines of economic growth and societal progress. Follow the Network for Business Sustainability – people dedicated to making business more sustainable and start-up sustainability is the extent that a start-up does business in an eco-friendly way. Among reviewing of how we run a start-up, global markets have begun embracing sustainability as an integral part of the strategy and a driver of profitability and pace of growth. Assessment of business sustainability is significant for investors and business angels due to several reasons. For example, Tesla has stopped accepting Bitcoin for its trade because Bitcoin miners use fossil fuels to produce electricity for mining Bitcoin (Atiyeh, 2021).

First, sustainability presents opportunities; for example, 'Dubai-based Liquid of Life' applied an innovative technology that generates drinking water from air which is a sustainable and cost-effective solution to meet the growing demand for high-quality drinking water in the Arab world (3BL Media, 2014). Second, Sustainability manages risk. Given the global investigation of global. Third, Sustainability is essential to competitiveness.

4.2. RESULTS OF SYSTEMATIC REVIEW

Data were retrieved from 30 pertinent journal articles published on the web of sciences database with keywords such as idea evaluation, entrepreneurship, idea development model, idea generation model, ideation model, and idea evaluation model. The domain of retrieved studies has been limited to more relevant areas such as management, social science, business, and business finance. 30 studies have been selected after reviewing 600 studies in all keywords. All the selected studies include some criteria of idea evaluation which are listed in table 1. Extracted idea evaluation criteria were entered into excel 365 spreadsheets for analysis. The types of extracted criteria are as follows:

1. Summary of idea evaluation criteria based on the web of knowledge category articles.
2. Frequency of 37 idea evaluation criteria in the study
3. Clustering and merging idea evaluation criteria into 15 criteria categories.
4. Frequency of final criteria in four phases of the idea evaluation process.

Evaluation criteria used in this study are summarized in table 4-1. The results of systematic review in start-up idea evaluation revealed that there are more or less 40 criteria used to assess ideas at the pre-seed level. According to table 1, the personality of the founder is called criterion (1). Then, Networking is called value (2). Next, opportunity identification is counted item (3). Novelty, originality of the idea, and paradigm relatedness criteria were merged and labelled to novelty (4). Then, Criteria social impact, vision, effectiveness, relevance, and economic efficiency were merged and labelled to relevance (5). Communication potential, market prospects, and service potential are categorized as market prospect criteria (6). After that, unique selling proposition, ease of use for the customer, value proposition, and usefulness were merged to value proposition (7). Then, availability to equipment and material, access to human resources, and management team merged into resource availability (8). Next, initial investment, return of investment, and growth rate is labelled as financial criteria (9). Implementation time, time to market and product strategy are merged to marketing strategy (10). Sustainability counted is counted as another criterion in idea evaluation (11). Then, the quality of an idea, technical feasibility, workability, and ease of implementation were merged to workability (12). Specificity, completeness, and ease of understanding were labelled as specificity (13). Later, patents and law, politics and law were merged to politics and law criteria (14). Moreover, there is a criterion that refers to the environment, culture, and economical aspects that are called business sustainability (15). Finally, risk analysis is named risk assessment (16).

Availability of equipment	Initial investment	Implementation time	Market Prospects	Effectiveness	Quality	Opportunity identification	Originality	Usefulness	Novelty	Criteria	Study Name
									X	(Berg, 2016)	
					X			X	X	(Mccarthy et al., 2018)	
					X		X			(Kennel et al., 2013)	
X	X	X	X	X				X	X	(Donata & Zhou, 2017)	
								X	X	(Sääksjärvi & Hellén, 2019)	
									X	(Bocken & Snihur, 2020)	
					X		X		X	(Verhaegen et al., 2013)	
									X	(Dziallas, 2020)	
					X		X		X	(Gabriel et al., 2016)	
										(Sudek, 2006)	
			X							(Nikoloudis et al., 2017)	
			X			X				(Ardichvili et al., 2003)	
										(Dimov, 2007)	
							X			(Sukhov, 2018)	
X			X							(Messerle et al., 2013)	
				X						(Stevanović et al., 2016)	
		X		X			X			(Blair & Mumford, 2007)	
			X							(Autio, 2016)	
					X		X			(Loneragan et al., 2004)	
			X			X				(Tomy & Pardede, 2018)	
			X				X	X	X	(Milan Stevanović et al., 2016)	
									X	(Schulz et al., 2015)	
			X					X	X	(Stevanovic et al., 2015)	
					X				X	(Blohm et al., 2011)	
			X		X					(Rebernik et al., 2008)	
			X				X		X	(D. Dean et al., 2006)	
			X							(Franke et al., 2008)	
			X							(Hart et al., 2003)	
			X				X			(Correa & De Moura Ferreira Danilevicz, 2015)	
			X	X			X		X	(Rietzschel et al., 2010)	

Ease of use for customer	Unique Selling Proposition	Specificity	Relevance	Workability	Paradigm relatedness	Vision	Technical Feasibility	Human resource availability	Availability of raw materials	Criteria	Study Name
										(Berg, 2016)	
										(Mccarthy et al., 2018)	
										(Kennel et al., 2013)	
								X	X	(Donata & Zhou, 2017)	
										(Sääksjärvi & Hellén, 2019)	
						X				(Bocken & Snihur, 2020)	
		X	X	X	X					(Verhaegen et al., 2013)	
X	X						X			(Dziallas, 2020)	
		X	X	X	X					(Gabriel et al., 2016)	
	X									(Sudek, 2006)	
										(Nikoloudis et al., 2017)	
										(Ardichvili et al., 2003)	
										(Dimov, 2007)	
				X						(Sukhov, 2018)	
							X	X		(Messerle et al., 2013)	
			X	X						(Stevanović et al., 2016)	
				X						(Blair & Mumford, 2007)	
										(Autio, 2016)	
				X						(Loneragan et al., 2004)	
							X	X		(Tomy & Pardede, 2018)	
				X						(Milan Stevanović et al., 2016)	
			X	X						(Schulz et al., 2015)	
							X			(Stevanovic et al., 2015)	
			X	X						(Blohm et al., 2011)	
										(Rebernik et al., 2008)	
		X	X	X	X					(D. Dean et al., 2006)	
										(Franke et al., 2008)	
										(Hart et al., 2003)	
			X	X						(Correa & De Moura Ferreira Danilevicz, 2015)	
				X						(Rietzschel et al., 2010)	

Value proposition	Product Strategy	ROI	Personality of founder	Management team	Patents and Standards	Time to Market	Sustainability	Service Potential	Economic Efficiency	Communication potential	Criteria	Study Name
											(Berg, 2016)	
											(Mccarthy et al., 2018)	
											(Kennel et al., 2013)	
											(Donata & Zhou, 2017)	
											(Sääksjärvi & Hellén, 2019)	
											(Bocken & Snihur, 2020)	
											(Verhaegen et al., 2013)	
					X	X	X	X	X	X	(Dziallas, 2020)	
											(Gabriel et al., 2016)	
		X	X	X							(Sudek, 2006)	
	X			X							(Nikoloudis et al., 2017)	
			X								(Ardichvili et al., 2003)	
			X								(Dimov, 2007)	
X											(Sukhov, 2018)	
	X						X				(Messerle et al., 2013)	
							X				(Stevanović et al., 2016)	
											(Blair & Mumford, 2007)	
											(Autio, 2016)	
											(Loneragan et al., 2004)	
											(Tomy & Pardede, 2018)	
											(Milan Stevanović et al., 2016)	
X											(Schulz et al., 2015)	
		X					X				(Stevanović et al., 2015)	
											(Blohm et al., 2011)	
	X						X				(Rebernik et al., 2008)	
											(D. Dean et al., 2006)	
	X	X	X	X							(Franke et al., 2008)	
		X									(Hart et al., 2003)	
					X		X				(Correa & De Moura Ferreira Danilevicz, 2015)	
									X		(Rietzschel et al., 2010)	

Study Name	Criteria	Politics & law	Risk analysis	Easy to understand	Completeness	Easy to implement	Network	Social aspects	Business Sustainability	Growth Rate
	(Berg, 2016)									
	(Mccarthy et al., 2018)									
	(Kennel et al., 2013)							X		
	(Donata & Zhou, 2017)									
	(Sääksjärvi & Hellén, 2019)									
	(Bocken & Snihur, 2020)									
	(Verhaegen et al., 2013)									
	(Dziallas, 2020)									
	(Gabriel et al., 2016)									
	(Sudek, 2006)									X
	(Nikoloudis et al., 2017)									
	(Ardichvili et al., 2003)							X		
	(Dimov, 2007)									
	(Sukhov, 2018)									
	(Messerle et al., 2013)	X							X	
	(Stevanović et al., 2016)									
	(Blair & Mumford, 2007)	X	X	X	X	X		X		
	(Autio, 2016)	X	X				X			
	(Loneragan et al., 2004)									
	(Tomy & Pardede, 2018)	X								
	(Milan Stevanović et al., 2016)		X							
	(Schulz et al., 2015)				X			X		
	(Stevanovic et al., 2015)									
	(Blohm et al., 2011)				X					
	(Rebernik et al., 2008)	X						X		
	(D. Dean et al., 2006)									
	(Franke et al., 2008)				X					
	(Hart et al., 2003)									X
	(Correa & De Moura Ferreira Danilevicz, 2015)							X		
	(Rietzschel et al., 2010)									

Table 4-1. Systematic review result

Figure 4-2 demonstrates the frequency of 16 criteria categorized in all 30 studies. The results of the systematic review of idea evaluation assessors show that 63.3 % reported and explained novelty and workability, 50 % relevance, and 46.6% market prospects. This review shows that having a novel idea that has a good performance in terms of solving customers' problems is the most important criteria to have a successful start-up. In addition, having good causes like social aspects and then marketing prospects are the most mentioned criteria which reminds how much they are significant to succeed.

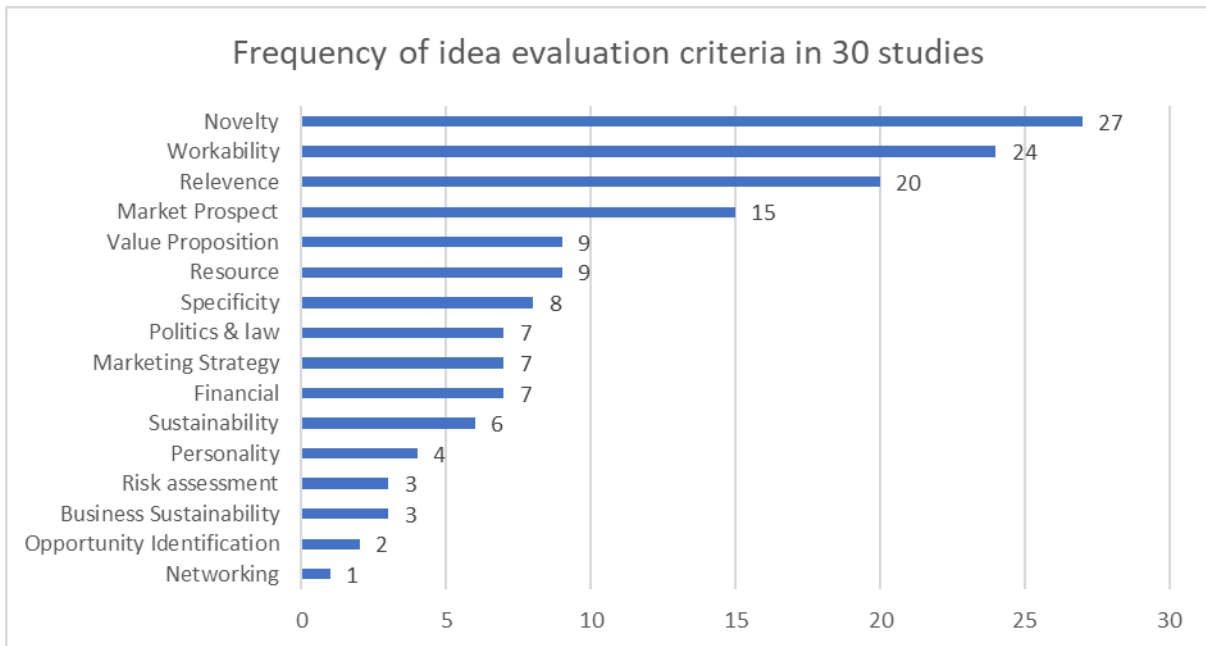


Figure 4-2. Frequency of idea evaluation criteria in 30 studies

According to the pie chart in figure 4-3, 44% of studies are belong to years between 2016 until 2020 and it followed by studies between 2011 and 2015. It can be concluded that the main extracted criteria are belonged to the last decade considering their trends and challenges. However, the systematic review includes studies from the first years of the 21st century after the dot-com bubble period and growing the online businesses to uncover the main criteria and significant challenges at that time.

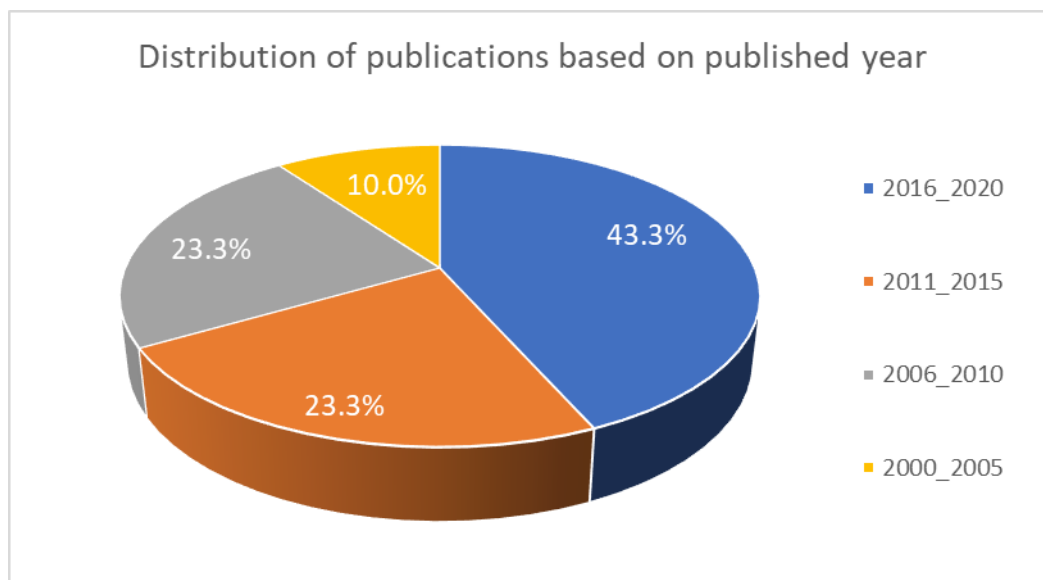


Figure 4-3. Distribution of publications based on published year

Among recent studies from 2016 to 2020, Novelty is the most frequent criterion in comparison to other parameters with 76.9%. It emphasizes how novelty and innovation become the main criterion

to evaluate business ideas. Then, workability (61.5%), relevance (46.2%), and market prospects are the most repeated parameters among recent studies, which shows the most significant criteria for academia to manage business ideas assessment. Figure 4-4 demonstrates the distribution of idea evaluation criteria in recent years:

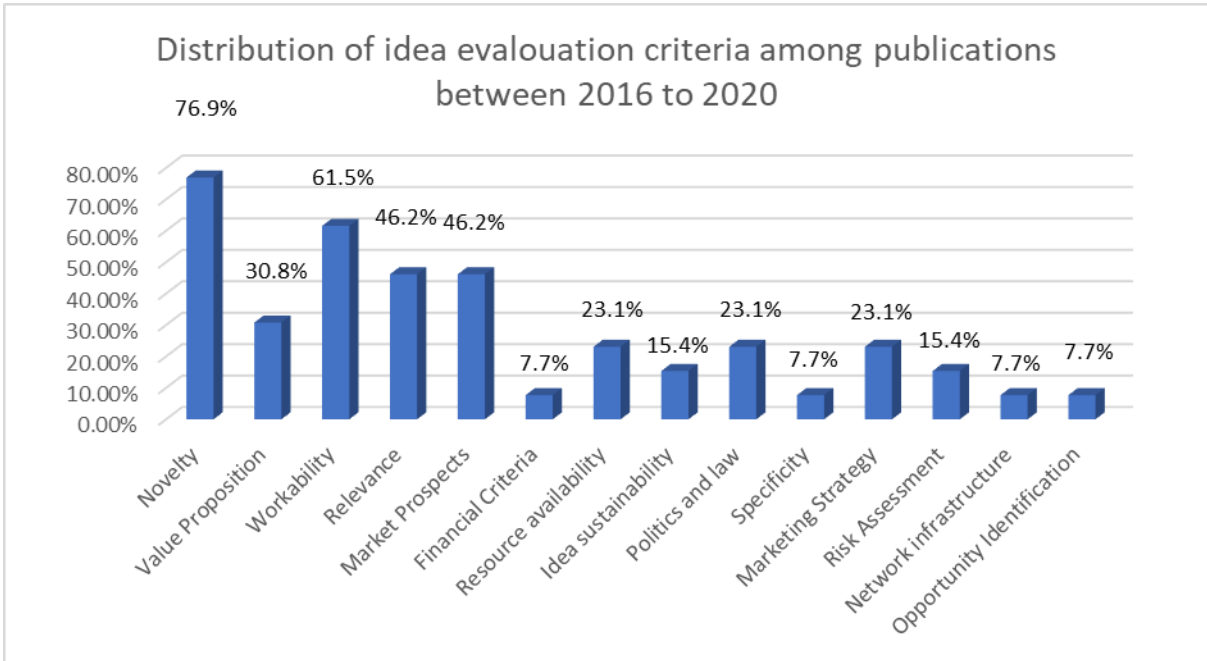


Figure 4-4. Distribution of idea evaluation criteria among publications 2016 to 2020.

4.3. RESULTS OF QUALITATIVE INTERVIEWS

To conduct the third section of the method, the study used qualitative interviews with experts who are actively doing business in start-up markets with different roles. The interviewees were identified on the LinkedIn website. After reviewing their profile, they have been invited to an interview by sending a direct message and elaborating the project and sending extracted criteria in the systematic review. 14 qualitative interviews have been done with experts all around the world in April and May 2021. All the interviews were conducted virtually by using Zoom and Microsoft Teams applications and were last 32 minutes on average. 12 of the interviewees were men and two of them were women.

Here is the distribution of interviewees living places:

Distribution of interviewees based on place of living

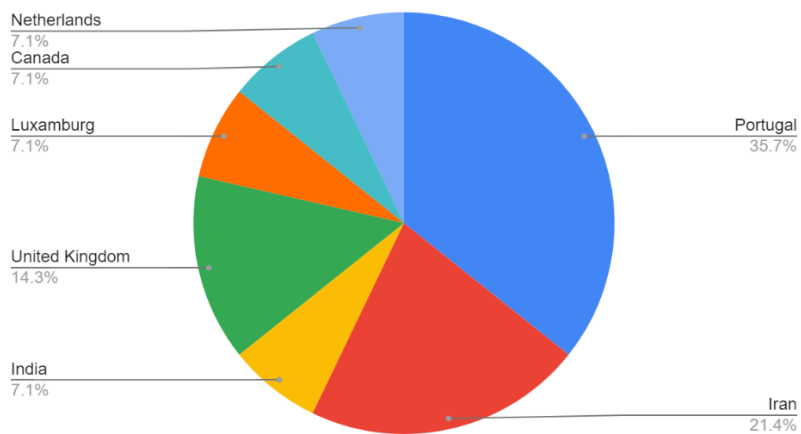


Figure 4-5 Distribution of interviewees based on place of living

Here is the information regarding the profession of interviewees:

Profession	Number of interviewees
Start-up founder	3
Start-up coach	3
Start-up mentor	5
Venture capitalist mentor	1
Business Angel	1
Innovation Management Ambassador	1

Table 4-2- Distribution of interviewees' profession

In addition, interviewees had different social classes in terms of income which aids to have opinions from all classes. Here is the distribution of interviewees income:

Distribution of interviewees in terms of yearly income

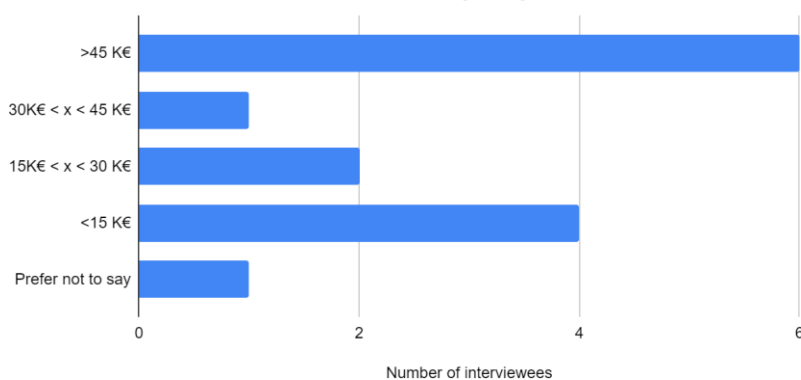


Figure 4-6 Distribution of interviewees in terms of yearly income

Since the interviewees have different backgrounds and roles in the start-up market, they have criticized the preliminary framework of idea evaluation criteria from different angles. The following graph demonstrates the percentage of main idea evaluation criteria that were mentioned during interviews.

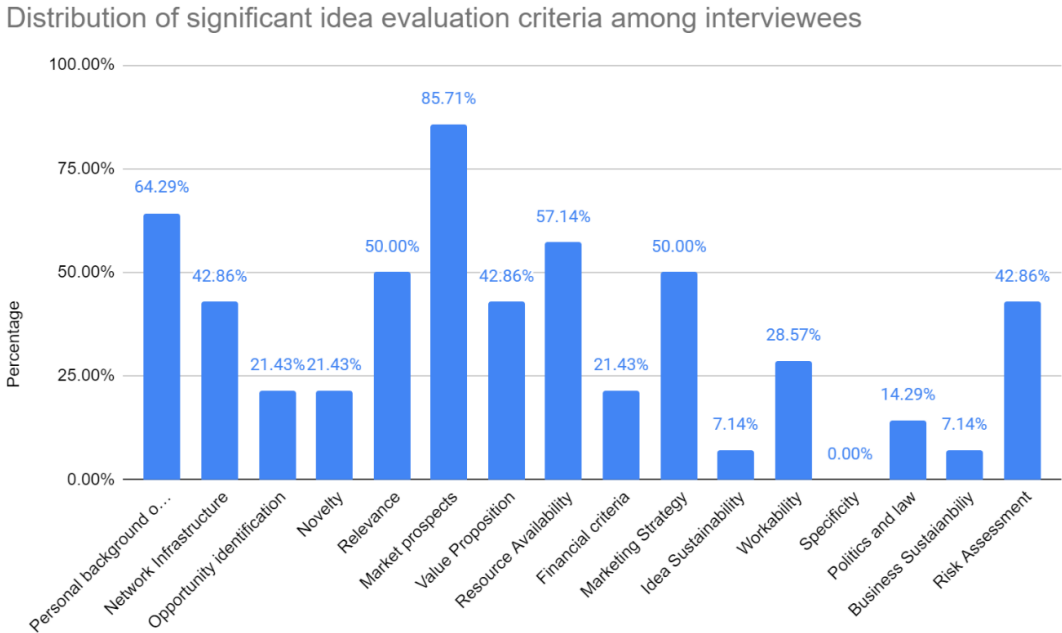


Figure 4-7. Distribution of significant evaluation criteria among interviewees

According to the above graph, 85.71 % of interviewees have counted market prospects as a criterion during the idea evaluation process. “Evaluating the market size is an important factor before starting any business” quoted by interviewee #2. For instance, interviewee #8 shared his experience about creating a health start-up in Portugal regarding elderly care problem, however, his team realized the size of the Portuguese market is not big enough and profitable to target, therefore they preferred to start the business in the United States market and as a result, they succeed at there. “Poor market research could cause early failure in start-up businesses due to waste resources for a product that no one would buy it,” said interviewee #7. Many interviewees highlighted the importance of proper market research before entering any business. This attention to market prospects complies with the fact from Failory webpage that marketing mistakes are the biggest killers of start-ups (56%) due to lack of product-market fit (Cerdeira & Kotashev, 2021).

The personal background of the entrepreneur was the second most frequently mentioned factor among interviewees (64.29%). Interviewee #4 mentioned that there are different drivers among entrepreneurs to create their own business. “Being head of a company, being anger with former clients, having more income, independence, and ambition are some examples of drivers to start your own business” quoted by interviewee #4. Besides, that interviewee admits each co-founder will be satisfied with a different amount of money and success. It means regardless of necessary skills, co-founders need to have similar business goals as well. Moreover, one interviewee confirms the importance of the personal background of the founders especially in the marketing area as it might be a common weakness among technical founders. On top of all these points, interviewee #11 believes working and being present in the industry that you want to start a business matter. He elaborated this point by the following example:

“Imagine there are some founders that have solid knowledge in artificial intelligence and programming. Then, they are going to create a start-up in the medical market. However, they have not worked in the medical market and have no idea about how their solutions would help doctors and patients or how the interrelationships are working in the medical industry. Would they be successful?” Interview outputs are compatible with the characteristics of start-up founders described by Forbes that are a deep and narrow focus, true domain expertise, clear vision, cultural leadership, and resilient resourcefulness (Carbonara, 2021).

57.14% of the interviewees have confirmed the importance of resource availability as an essential parameter in evaluating novel start-ups. Resource availability is consisting of human resources, team management challenges, material accessibility, and having access to the necessary technologies. “Team members should be able to complete one another to cover all sides of the business, otherwise, they get fail soon” quoted by interviewee #3. Another interviewee believes that investors do not invest in an idea unless there is a solid team behind it. Interviewee #5 named values, passions, trustability, and sharing mindset as main factors for having a good team. Moreover, he believed 80% of start-up failure is because of team management problems, therefore evaluating team quality must be done obsessively. However, an article from Forbes shows that only 35% of main fail reasons belonged to people, teams, and culture; reasons are not having a solid team on board to develop a minimum viable product (MVP), lack of alignment between founders and/or investors, and lack of passion of founders which cause to failure (Yohn, 2019). One of the key questions in Start-up Lisboa to accept a start-up idea is whether the team is able to implement the project successfully relieved by one of the interviewees who an idea evaluator at Start-up Lisboa is. Furthermore, having easy access to solid human resources, materials, and technology is one of the concerns that most of the interviewees mentioned for evaluating a business idea.

Relevance subject has been named among 50% of interviewees as a factor that must be considered during the idea assessment process. One of the interviewees who is a start-up coach believes that the social impact of a business idea must be considered during the idea generation stage regardless of revenue and profitability calculations. Besides, interviewee #6 mentioned that when we are evaluating an idea, we need to ask ourselves “Is this idea solve the real problem? This point of view is compatible with the quote from Dave Sloan, founder of Treehouse Logic, a pioneer visual product configurator platform for retails said ” Start-ups fail when they are not solving a market problem. We were not solving a large enough problem that we could universally serve with a scalable solution” (Burgess, 2019).

The next criterion in marketing strategy is mentioned in 50% of interviews. Interviewee #1 believes entrepreneurs need to have a customer point of view when they are analysing the product price by asking the question that how much the customer is willing to pay for the product. Moreover, another interviewee thinks that it is important to have several marketing plans based on analysing the market research report before entry into the market. On top of that, he as a start-up evaluator believes that the marketing strategy itself is more significant than the idea. It means that the idea could be something simple, but the way that entrepreneurs present it matters. An article reports that 20% of start-ups fail due to having a wrong market strategy which leads to being eaten by a bigger or more well-known competitor; Consequently, other players offer a better customer experience and win the rally (Burgess, 2019).

The next most frequent criterion mentioned by interviewees is network infrastructure (42.86%). “Networking could turn a person into an entrepreneur and depends on your people around. If they are mainly employees, you might not dare to come to create your own business” said interviewee #7. In addition, another interviewee believes that networking is the most important pillar in starting and maintaining the business because founders must watch out for customers, competitors, partners, and generally, they should know what is happening in that industry. Besides, networking aims to increase publicity and word of mouth about your business, and it can lead to finding ideal investors.

Ghalumyan (2020) believes that networking is essential for entrepreneurs because it brings more opportunities, advice, new businesses, improves personal profile, and friendship. In other words, networking is a key to success, especially in the start-up market.

Then, the risk assessment has also repeated in 42.86% of interviews. Parameters like how much the idea is feasible, desirable, and viable are one the risks that must be calculated before starting over a business. The risks that named in one interview are:

- Show that the team can develop the product in front of investors.
- Analysing the future risks and path of both local and international validation.
- Risk of market access
- Access to talents
- Access to capital

One more risk that was mentioned during interviews was the risks of the team members. Mainly teams have the appetite to take the risks at the beginning, however, when things go wrong, they behave differently about that and it could cause separation, arguments, or even failure of the business. Therefore, it is better to discuss the consequences of taking risks as well as the expectation of team members about loyalty and maintaining the business before starting over. Interviewee #7 talked about opportunity cost risk. It means that the founder needs to evaluate if there is a better business idea to develop rather than the current idea. Another risk could be a lack of knowledge of directing a business which could cause early failure. One interviewee as a business coach believes when some founders start a high-risk business, it is better to inform them about the risks because early failure is better than wasting time, money, and resources.

The rest of the criteria were also mentioned during interviews. For instance, interviewee #14 believes that in B2B's perspective, the value proposition is crucial rather than social impact or novelty. Moreover, one more question regarding resources asked by interviewee #1 was how much time a team wants to spend on a project? Does it worth it or not? It recalls how much resources are needed to allocate to a project. Interviewee #5 thought that you might have a good idea to develop, however, your product may be more expensive than existing products in the market. Therefore, it is crucial to consider the financial criteria before market entry.

Moreover, based on the interviewees' experience, each of them mainly highlights a couple of criteria more than others. Figure 4-8 illustrates the top two criteria mentioned by each interviewee. Surprisingly, resource availability that includes subjects related to team management is dominant among all criteria(21.4%). Interviewee #3 believed there is no good idea without having a good team behind. Therefore, entrepreneurs must know their team quality will be evaluated before their idea. The next criterion is market prospects that mentioned 17.9%. Again, many interviewees consider the market need and willingness of the customer to purchase the product or service to take precedence over other criteria. The personal background of the entrepreneur was the third most frequent parameter among interviewees (10.7%). Ambition, encouragement, and knowledge of the entrepreneur were the vital adjectives mentioned by interviewees.

Top 2 idea evaluation criteria mentioned by interviewees

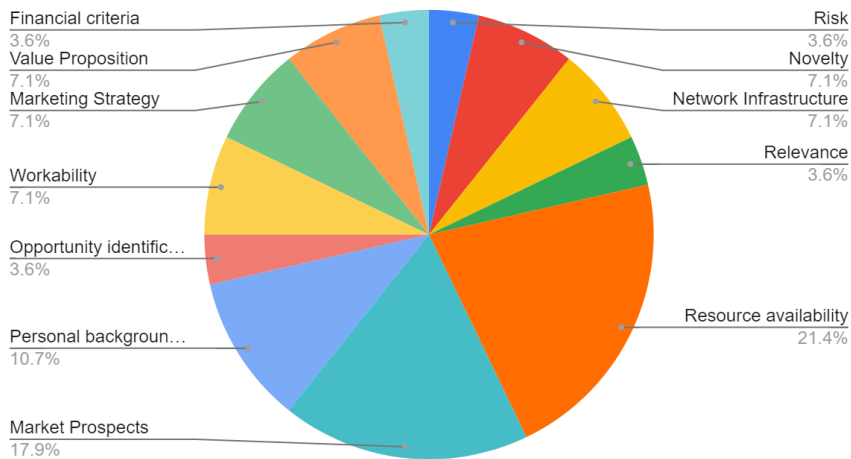


Figure 4-8 Top 2 idea evaluation criteria mentioned by interviewees

In addition, the necessity to have a solid framework of idea evaluation was discussed by interviewees. Figure 4-9 demonstrates the distribution of votes. 28.6% of interviewees were against having a framework for idea evaluation. For instance, interviewee #1 believes that we cannot generate a framework that is applicable for all industries. Also, interviewee #5 thinks the framework contains too many criteria which are not necessary at the beginning. However, most interviewees confirm that we need to organize the idea evaluation by making a checklist full of parameters. Because it forces entrepreneurs to consider all the aspects of the business as much as possible before spending too much resources and time. Therefore, the necessity of having a framework for idea evaluation was confirmed by the majority of interviewees (71.4%).

Interviewees vote for having an idea evaluation framework

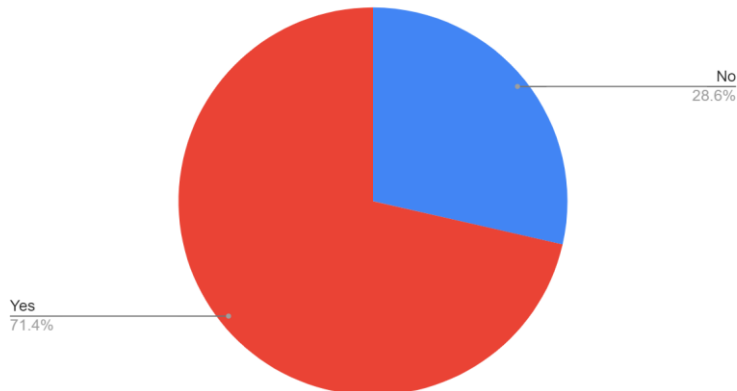


Figure 4-9 Interviewees vote for having an idea evaluation framework

4.4. FRAMEWORK

Based on the literature and confirmation of interviewees, the study suggests a framework that consists of four stages from idea generation to idea evaluation which was confirmed by experts as well. Therefore, the stages of idea evaluation could be shaped in four levels:

- Level 0: Necessities for ideation
- Level 1: Idea generation
- Level 2: Idea enriching
- Level 3: Idea evaluation

At level 0, it is needed to calculate how much the environment and founders are fit for starting a new business. The personality and professional background of founders, and the maturity level of the existing ecosystem that founders want to work on have their impact at the initial point. Without having a hard-working, patient, and business-oriented mindset, the founders will not get succeed. Moreover, the founders must consider where they are doing the business. Because a business idea could have different destinies in each country. For instance, a team might come up with an idea about producing electronic cars, however, the country that they want to sell that car is famous for its oil and gas resources. In this case, the team identified the opportunity rightly based on global need, although they have picked up a wrong place to develop their idea.

At level 1, the study has found essential criteria for generating business ideas in order to direct the entrepreneurs into thinking rightly and consider all aspects of initiating a business. Parameters like novelty, relevance, market prospects, and value propositions are fit for this stage to explore deeply. In terms of novelty, the study concluded that an innovative idea could be successful when it is really feasible, but it is not mandatory. Besides, the importance of novelty is to give more value to customers at an affordable price. For instance, Smart manufactures small electric cars at an affordable price which delivers lots of benefits to its customers. In addition, these days concepts like social entrepreneurship are trendy which means when founders are generating business ideas, they need to consider social or economic impacts. Furthermore, the study concludes that the founders need to pay attention to the customer needs at the generating stage. In short, founders must have a customer-oriented mindset instead of product-oriented.

Then, at level 2, the study has investigated the necessary parameters about how entrepreneurs could enrich their idea by doing research and analysing the pros and cons of the generated idea. In other words, this stage is supposed to make the generated idea lean. Therefore, this stage includes factors like resource availability, financial criteria, marketing strategy, and idea sustainability. The whole idea of this stage is to provide and to anticipate all the necessary resources for developing a business idea. Having a good team with the same business vision and diverse capabilities to support the whole aspects of the business is vital, otherwise, the business would fail in a short-term period. Besides, the founders must have a specific marketing strategy and different financial forecasts, especially when they want to pitch their idea and ask for fund from business angels or venture capitalists.

Finally, at level 3, idea evaluation criteria were explored by the study in order to demonstrate how a generated business idea could be assessed. Elements such as workability, specificity, politics and law, business sustainability, and risk assessment are considered for the idea evaluation stage. When the founders have gathered enough information about necessary resources and prepared the marketing and management strategies, then an idea evaluator, or a business coach or even an investor could assess the idea and see whether it is workable or not. Then, evaluators must consider the business sustainability as a significant parameter during the assessment. Because it can guarantee the life of the business. For example, if some founders come up with a product that emissions a large amount

of CO2, even if the business is profitable, there is no future for that due to law restrictions that will come in the future.

Thus, the final framework of idea evaluation is the figure 4-10:

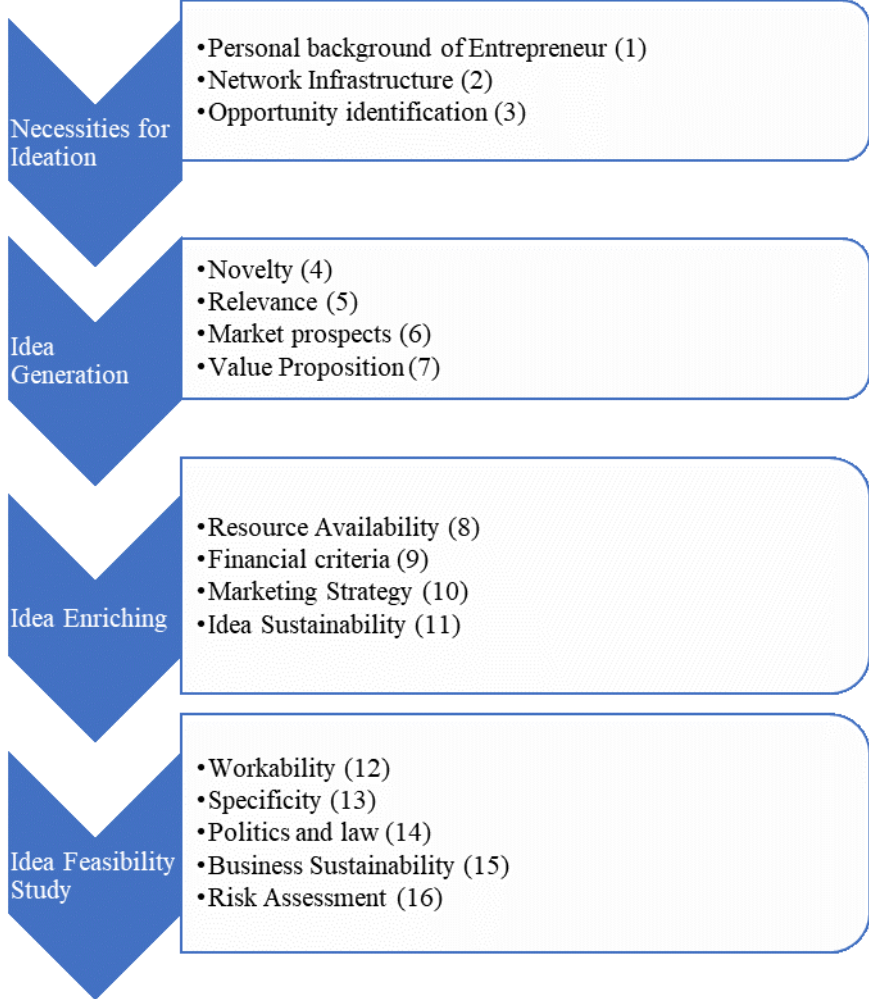


Figure 4-10 Framework of idea evaluation criteria at the pre-seed level

The framework consists of general criteria that would be applicable to many business areas, however, in some industries, it might be needed to add more parameters especially parameters related to manufacturing and quality.

In addition, having an idea evaluation framework can bring entrepreneurs, business coaches, mentors, and investors to the same page and can increase the understandability of one another. Besides, it enlightens the future path and challenges that an entrepreneur might face.

Regarding the distribution of criteria among four stages, after reviewing the literature, the study concludes that since idea development is a step-by-step process, it is better not to design a canvas that everything must be evaluated at one level. Moreover, the study has added a level zero to analyse the preconditions for having a successful idea development process by evaluating the

personal background of the entrepreneur, networking infrastructure, and the chance of identifying a business opportunity in that community.

In terms of functionality, this framework can be used for self-assessment, open idea competitions, fundraising, and advising. Also, the weight of each criterion can be extracted and be given to computers. Then, by implementing the machine learning (ML) technique and evaluating several ideas, the model can be enriched more and more. Finally, the model would be able to evaluate ideas solo or compare to one another and give a report of uniqueness, risks, success chance, or necessary budget. However, to have a more accurate response from the computer model, we need to add more parameters at the sub-level of criteria.

5. CONCLUSION

This study has several contributions to explore the critical criteria in the idea evaluation process for a start-up idea at the early stage. The study applied a mix-method of narrative and systematic reviews, then it followed by using the qualitative method. The first contribution was the narrative review that the study explored the most significant factors that involve in a start-up idea development by reviewing both academia and the real market. Second, some examples of failed start-ups have been explained in order to highlight the main reason for their failure. Third, a systematic review of 30 articles published in start-up ideas has been done to investigate the most frequent criteria in the idea evaluation process. The result of the review revealed a framework with four stages. Then, the explored criteria have merged and distributed among these stages properly. Fifth, by conducting qualitative interviews with experts, business coaches, and entrepreneurs, the study examined the initial framework in order to receive feedback from interviewees to modify and finalize the initial framework.

These extracted parameters are considered the first step to recognize all the involved criteria in the idea evaluation process, however, the literature, as well as interviews, proved that some factors are more important than others. Thus, this study is the first step in the roadmap and calls for further research to reach a full mechanism that could get help from artificial intelligence in order to evaluate business ideas. Accordingly, this study calls for more research to investigate which criteria are more important, to develop the framework into a mathematical and programming model that can be used by computers. As an example, once there is an idea competition and a large number of ideas should be evaluated, there is a possibility that poor understanding, bias, or other kinds of human errors might cause low scores for that idea. As a result, some good ideas might be rejected by mentors, and then, the founders decide not to continue working on them. Rejecting an idea with the wrong indexes can cause killing productivity, innovation, or motivation. One solution to manage this could be the mechanism that Blohm et al. (2016) developed; It is an IT-enabled assessment mechanism that can evaluate ideas based on defined metrics. All criteria have their weight, but the framework is still open to adding new parameters. Artificial intelligence is an emerging topic and soon will be able to perform decisions better than humans. However, in a more complex and creative context such as validating the innovation, the question remains whether machines are superior to humans.

In terms of the failure rate of start-ups, the study concludes that failure in a start-up is unavoidable. Breaking down is the nature of a start-up, however, by having a standard framework that examines the business ideas, founders can understand what their risks and weaknesses are. As an example, being too innovative or product-oriented could lead start-ups to increase their expenses or not have attention from customers and consequently, the business breaks down. Therefore, a framework with comprehensive criteria that allows evaluating a business idea from different angles could reduce waste of time, money, and human resources. In addition, the study calls for further research to investigate the failed start-ups and interview failed founders to explore the causes of failure. Because it aids to collect more data about weaknesses and threats of start-ups and has lessons learned to share with new founders. For instance, many start-ups are failing because of different mindsets among founders. Founders might have a different appetite in terms of vision, work and life balance, or money appetite. These causes could be documented and transferred to new idea developers to increase their knowledge about business ups and downs.

Moreover, having such frameworks could aid founders to conduct a self-assessment before any start. In other words, founders can take benefit from the criteria and have them as a checklist in order to make sure that they consider everything before consuming any resources. The goal is to have feasible plans and rational answers for each parameter to prevent failure in the future as much as possible.

6. LIMITATION

This study has been implemented during the Covid 19 pandemic. Consequently, there are two types of limitations related to lockdown. First, it wasn't possible to conduct the interviews in person and have the probability to talk to experts, and entrepreneurs during events to collect more data. Second, many entrepreneurship activities faced massive challenges during this pandemic such as closing the business, postponing the launching, laying off employees, cutting the supportive budgets from governments, and losing customers. As a result, the statistics related to 2020 and 2021 are not following the previous path and are more likely to recover from a financial crisis. Therefore, the study calls for further research to investigate more involved criteria for idea evaluation, especially during crises.

In addition, since some criteria are considered more crucial than others, the study calls for future research to find the key elements that can enrich the suggested framework by specifying the priorities.

Moreover, the study calls for further research to examine accessing the framework between two samples to see how entrepreneurs present their idea with and without seeing the framework to understand its impact on organizing the idea development process.

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