Exploratory Study on Value Proposition Barriers for Civil Engineering Entrepreneurships - Pilot Study

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Abstract

This research analyzes how business models arise for people, specifically civil engineers, who want to start their own business based on construction and who want to establish their own Ecuadorian company. Small, medium, and large construction companies were taken as a reference. For this, surveys were conducted with eight companies, and the questions were based on adequately knowing personal barriers, how they can be overcome, and effectively knowing the value propositions and qualities that should be emphasized. The results obtained from this research show that most people within this industry face different personal barriers, both when wanting to communicate their ideas and when having confidence in themselves. In the same way, limitations were found, as well as how to know how to take advantage of them. Also, thanks to this, it is highlighted that the greatest competitive advantage is creativity and that it is necessary to have superior quality and decent prices both at the public and private level to stabilize at a good level compared to other companies. Finally, it is observed that within large, medium, and small companies there are personal barriers on the part of civil engineers, which disappear on a day-to-day basis, and that the best way to move forward is to try to improve day by day and not remain stagnant with something that can be optimized or improved in several ways.

Keywords: Obstacles, competitive advantage, anxiety, Civil Engineer, entrepreneurship

Estudio exploratorio sobre las barreras de la propuesta de valor para las empresas de Ingeniería Civil -Estudio piloto

Resumen

Esta investigación analiza cómo surgen los modelos de negocio para las personas, específicamente ingenieros civiles, que quieren iniciar su propio negocio basado en la construcción y que desean establecer su propia empresa ecuatoriana. Se tomó como referencia a pequeñas, medianas y grandes empresas constructoras; 8 de las cuales fueron encuestadas. Las preguntas se basaron en conocer adecuadamente las barreras personales, cómo superarse, y entender efectivamente las propuestas de valor y cualidades que se deben resaltar. Los resultados obtenidos de esta investigación muestran que la mayoría de las personas dentro de esta industria se enfrentan a diferentes barreras personales, tanto a la hora de querer comunicar sus ideas como a la hora de tener confianza en sí mismos. De la misma manera, se encontraron limitaciones y cómo aprovecharlas. También, gracias a esto, se destaca que la mayor ventaja competitiva es la creatividad y que es necesario tener una calidad superior y precios...
INTRODUCTION

Anxiety and lack of motivation have always been problems for entrepreneurs, who fear being judged and criticized [1]. Blockages are a common problem in people who want to undertake a new project. In the same way, and despite what can be assumed, it is difficult to break these blocks to have freedom of thought. This is basically because the intrinsic problem and thoughts cause this blockage. The risk faced by entrepreneurs who suffer from this blockage is that they can remain stagnant, without allowing themselves and their initiatives to advance in their professional life and developing anxieties, frustration, and even depression.

Currently the existence of emotional and psychological problems in workers is more noticeable. In contrast to the past, awareness of the anxiety that exists today is much greater than it was in the past. This has led to the study of the locus of these problems. This problem is latent in most independent entrepreneurs and those who want to start an independent company after leaving another [2]. The main locus is newly graduated civil engineers who do not know how to start their own company. This is due to several factors, which may be specific to the person or external. An example of this is the experience required to start a job; experience involves knowledge, so a lack of experience can cause insecurity in a person’s knowledge. In other words, a newly graduated civil engineer feels insecure about their knowledge and is afraid to encourage wrong ideas.

In this investigation, it has been noted that recent graduates of the civil engineering profession, alongside already established civil engineers, encounter social and personal impediments that hinder the realization of their endeavors according to their aspirations. This hindrance primarily stems from a sense of stagnation wherein ideas fail to progress optimally. Specifically, it is acknowledged that the value propositions extended by these enterprises and/or companies often parallel those already manifest or within the purview of knowledge possessed by other firms.

The first research question is: What are the personal barriers in an enterprise? This is answered by considering that personal barriers have a great responsibility at work, generating a great limitation in job growth. On the other hand, the second research question is: How does one stand out from other competitors? This question is answered considering that one seeks to have privilege in the market and position oneself correctly in it to achieve profits over time.
BACKGROUND/FRAMEWORK

Starting a new business is challenging because it is often unclear where to start and how to make the business known to everyone. Stress and work overload tend to dampen creative thinking. In periods of high stress, creativity is at a minimum [3]. This opens barriers to creativity, also known as personal or social blocks or limitations. They are psychological barriers that prevent constituting new ideas [4]. Barriers are blocks that inhibit creativity. There are certain obstacles that nullify the ability to invent, and this can lead to a state of frustration, which can be aggravated by the persistence of the situation [5]. The most common barriers are usually personal, since they are communication interferences that come mainly from the emotions, values, and habits of the person. These are of a mental nature because they influence blockages of thought and emotions. These personal barriers relate to the factors that are personal to the sender and receiver and act as a hindrance in the communication process [6].

The personal barriers on which this research focuses are i) lack of concentration, which is difficulty in thinking clearly, focusing on a goal, or keeping attention on something [7]. This is the most common block that exists in people and even more so in professionals when generating ideas [4]; ii) anxiety, which is one of the most common limitations of creativity in society and is a feeling of fear, dread, and uneasiness that might cause sweat and feeling restless and tense [8]; iii) stress and exhaustion, barriers that affect professional growth due to the limitation of ideas. Stress is a state of physical and emotional tension originating as a reaction to a stimulus or pressure, whether positive or negative [9], and exhaustion is a state of physical or emotional fatigue that also implies a feeling of reduced achievement and loss of personal identity [10]. This is a response from the brain and the nervous system and can be either positive when it helps to prevent some danger or detrimental to health when it lasts for a long time [4]; iv) lack of motivation limits the flow of the mind, forcing people to feel withdrawn, without ideas, stressed, and thus damaging mental health. Also known as demotivation, it is the lack of the driving force that allows taking necessary actions [11]. Social blocks are barriers that have to do with the environment in which people are born and develop. Therefore, they prevent thinking clearly and affect the actions of daily life [12]; v) the fear of being wrong is the fear that people have because they are afraid of making a fool of themselves for making mistakes, since society seeks perfection [13]; vi) the fear of change is generated by being used to a routine and not wanting to get out of it for fear of what could happen [14]. Everyone is afraid of the possibility of trying to change and failing in the process, given the idea of taking the reins of life and being responsible for their own actions [15]. These barriers make the outlook cloudy, which is why we must identify and understand how to overcome them to obtain a clear and well-structured idea that allows the company to have an identity. Said identity can be known as the value proposition which is considered as the element that differentiates it from the competition and promotes the development of the enterprise, since it motivates the consumer to choose one product over another [16].

The value proposition starts from the concept of an original idea, which is considered as the element that differentiates one’s products from the competition and promotes the development of the venture, since it motivates the consumer to choose one product over another [16]. Due to the attractive and lasting characteristics, it is possible to create an advantage over the competition; however, the idea alone is not enough.
for the venture to succeed. For it to achieve success, it must be accompanied by a good business plan and model [17]. It is difficult to find the idea that perfectly fits the consumer's need, which is why the client must be understood and owners should try to reach a balance between the benefits achieved for the client and for the company. The competitive advantage is conceived as the way in which factors are added that give authenticity and differentiation to the company with respect to its competitors, so that said company can obtain a superior positioning in the market thanks to the creation of additional value for consumers, which is unique and unrepeatable by the competition [18]. Competitive advantages make the company recognizable in the market and protect it from the effects of competitive forces. Competitiveness is the result, fixing the presence of competitive advantages, without which it is impossible [19].

In the same way, the value proposition is the set of products, services, benefits, and added value that the company offers to the consumer, after having carried out a market study to make an option that helps to anticipate the competition and the market [20]. It is important to consider that the entrepreneurship process is the set of activities to form a value proposition, based on the efforts of risky people who have worked together to give value to a product or service [21].

In order to direct employees to the benefits that are wanted to deliver to the consumer, certain characteristics must be met: demonstrate the quality, functionality, image, service, and price offered to the customer; report on issues of expectations, risks, and delivery times; state the differential characteristic of the company; understand the elements that attract potential buyers and characteristics that reflect the company to customers; be simple and concise so that the consumer can easily understand the benefits of the company; and look for customer loyalty [22]. An important benefit is to identify the key element that differentiates the business, which is important when building the value proposition. This will lead to the development of communication, marketing, and sales plans that focus on the strengths and the main points that distinguish the company from the rest [23].

The competitive advantage seeks to excel in the competition and in the aspects and characteristics of other companies [24]. It can be divided into internal and external competitive advantages. The internal competitive advantage occurs when the product has the same quality as the competition, but its value is lower. The external competitive advantage includes factors such as better quality, loyalty prizes, promotions, and others [25]. With the competitive advantage there is a basis to define the value proposition, and with this defined it is known what is going to be made known to customers about products or services, so the competitive advantage is directly related to the marketing strategy [26].

**METHODS**

The aim of this research is to determinate the primary obstacles in establishing a competitive entrepreneurship or company. The objective is to assist emerging construction entrepreneurs in initiating their enterprises from the ground up and aid owners of civil engineering-related companies in enhancing their businesses. This
involves a comprehensive consideration of their value propositions and competitive advantages in relation to other companies.

The undertaken study seeks to diminish barriers to creativity and enhance competitive advantage and value propositions relative to other companies. Initially, comprehensive presentations were recorded, elucidating essential topics to facilitate comprehension of methods for improvement and the commencement of a company. This was carried out between June and July of the year 2022. The other part of the study was carried out on various civil engineering companies and civil engineers within Ecuador. Data collection was conducted between August and September of the year 2022. Here, surveys were carried out with six questions referring to the barriers of creativity and six questions referring to the value proposition and competitive advantage, to find out what blocks civil engineers have and what competitive advantages and value propositions they have on other companies and engineers. The survey questions were designed by the research team and were guided by existing literature. For the methodology we used a survey instrument with semi-structured questions.

Each of the presentations lasted approximately 45 minutes, and a total of 16 of these were performed. The interviewers were civil engineers between 28 and 50 years old and were chosen according to their field of expertise in engineering business in Ecuador. All interviews were transcribed one by one and then color coded for content analysis. Clusters focused on entrepreneurship and innovation, barriers to creativity, the value proposition, and the competitive advantage.

The sets of questions were divided into two parts—the first with six questions about personal barriers, and the second with six questions about value proposition and competitive advantage. Eleven of the survey answers were in the interviewees’ own words; only one of the twelve questions was of multiple choice, but at the same time they had to argue why they gave that answer. This key question for the study was to choose whether they completely agree, agree, neither agree nor disagree, disagree, or completely disagree with some barriers to creativity, which are stress and exhaustion, anxiety, lack of concentration, lack of motivation, fear of making a mistake, and fear of change, to understand which are the greatest blockages of engineers and, in turn, which have their greatest strengths.

Once all the interviews carried out with eight civil engineers were obtained, the interviews were transcribed one by one to be clearer about what was discussed in each one. With this, it was possible to compare responses and get a joint response from all the interviews. It was also possible to conclude more clearly the pros and cons of people in their companies related to civil engineering and how they can have a greater advantage over others.

**RESULTS**

The first question of this study was “What are the personal barriers in a venture?” The main answer is that personal barriers have a great responsibility in work, generating a strong limitation on labor growth.
TABLE 1. What are the personal barriers in a venture?

<table>
<thead>
<tr>
<th>a. Emerge from a series of bad experiences or from the way in which a recently graduated professional assimilates.</th>
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<tbody>
<tr>
<td>Lack of motivation</td>
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<tr>
<td>Anxiety</td>
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<td>Lack of concentration</td>
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<tr>
<td>Stress and exhaustion</td>
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<td>Fear of making mistakes</td>
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<td>Fear of change</td>
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Firstly, these barriers stem from a series of bad experiences or the way a newly graduated professional assimilates information. This is attributed to a deficiency in motivation, as the prospect of undertaking and advancing seems nearly insurmountable. Furthermore, the role of being a civil engineer is pivotal, requiring ingenuity and adeptness in discerning how to progress and identifying potential courses of action. According to interviewee 1, “In very few occasions I had lack of motivation because if there is no motivation you cannot get ahead.” Similarly, according to interviewee 2, “Lack of motivation is something that affects your productivity when you start working and this is due to the fear of failing and disappointing our loved ones, but you always have to keep in mind that if someone else can, why not me?” And finally taking into account interviewee 3, “(…) the lack of motivation can be linked to a negative environment because, in our midst certain circumstances prevail because everything is done with money, then the money through the banks, and financial institutions can sometimes disengage with the flows and the work schedule for lack of cash flow, then those are the problems that one is exhausting and one is stressed.”

Anxiety assumes a significant role, particularly when delivering, presenting, or publicizing projects. It is customary to experience anxiety concerning potential feedback or the mere anticipation of whether the audience will appreciate the showcased content. However, it is crucial to possess coping mechanisms that aid in managing this anxiety during presentations, fostering self-confidence in effectively conveying the intended message. According to engineer interviewee 3, “I agree, and anxiety can be of medium type. Then we beat this anxiety by investing more time in the basis of the production and how to develop projects, or further breaking down each item such as the budget or any of the activities to be developed.” Now considering what interviewee 4 says, “If I have anxiety when presenting a new project, it is because there is always the doubt that something may not fulfill the customers.” And finally, interviewee 5 says, “At some point I have had anxiety, for example when presenting a project to a client or during the bidding process at the Sercop.”

At some point in our lives, we all must have lacked concentration, but when applying professional life there is a great responsibility behind us as civil engineers. For this reason, lack of concentration is not an option because this can bring great short- and long-term effects.

According to interviewee 1, “It has not happened to me, but I would say that as civil engineers, we have a great responsibility behind us, so the lack of concentration is not admitted.” Considering interviewee 6, “I never had a lack of concentration, but it is something that affects a large majority of engineers, but you always have to try to improve this because of the affectations that may have in our work (…).” Similarly, according to interviewee 2, “At
first I had a lack of understanding, which made it a little difficult to work, but after 11 years of exercising I learned to focus without distractions on what I do.”

Secondly, it is necessary to identify the limitations to know how to improve professionally. Based on surveys carried out previously, it is known that most civil engineers agree that in most of their professional lives they have suffered or suffer from stress and exhaustion that has been difficult for them to control, and this is due to the charges that are applied through high demand as a professional. According to interviewee 7, “I think all people at some point in their working life have suffered from stress from different factors starting with food, working in groups, among other factors.” According to interviewee 2, “Whenever I have to present a project, I have enough exhaustion and stress until I manage to give it everything I ask, but once I do, my goal becomes rest for a while so I can do my other projects quietly.” Now according to interviewee 6, “Stress has been part of professional life as civil engineers and construction professionals. The calendar has always been our worst enemy, because we already plan dates and suddenly, we do not reach the deadlines. We must have a great planning of work, great planning because stress is part of us and we must avoid such collapses, ask for help from specialists to review several times the project. The paper resists everything, while in the practical part the problems are much bigger both in time and in costs. Time is money and for that reason we must avoid such problems.”

In the same way, it is normal to be afraid of making mistakes, so when you are in a construction, when making cost analysis or doing laboratory tests, there will always be a fear of making mistakes, since these errors can be very expensive. However, you have to be risky and throw yourself into what you do because this is how you achieve success. According to interviewee 3, “Fear is permanent because fear requires you to prepare better, because when you prepare, you have better knowledge, fear you already take differently. No longer take it as fear but as what is called risk. Then we as professionals avoid it because if we were afraid, we could not keep our customers and we could not fulfill the works. Then it is normal fear, but better call it risk.” According to interviewee 7, “Always before making any construction you are afraid to make mistakes, but it is a risk that as engineers we must face.” And now considering interviewee 1, “At the beginning I was afraid of making a mistake in the calculations when making a building, but nowadays and thanks to the experience I have I no longer feel this fear.”

The most common thing is that there is fear of change, but you must always be innovating and looking for new things to be more efficient and reach everyone more easily; if you stay in the past without constant innovation, you will not have a great reach in the public. According to interviewee 2, “I have not been afraid to discover the new; I like facing the new changes.”

Interviewee 3 says, “I have been an engineer for 43 years. Had I had the fear of change, I would not have succeeded in this industry; technology is an example because as it progresses, we become outdated and we do not have the ability to continue with technology, so we are less productive than the new professionals who already have a lot of skill in using technology. For that reason, we either go to vocational training to update our skills or we partner/hire people with such skills.”

The second question of this study was “How does one stand out from other competitors?” The main answer to this question is by seeking to have prestige in the market and position oneself correctly in it to achieve profit over time.
TABLE 2. How does one stand out from other competitors?

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<tr>
<th>The aim is to have greater prestige in the market and a better positioning in it to achieve profits over time.</th>
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<tr>
<td>a. To stand out from other competitors, the main competitive advantage is quality.</td>
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<tr>
<td>Quality product</td>
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<tr>
<td>They call more attention</td>
</tr>
<tr>
<td>Best prices</td>
</tr>
<tr>
<td>Innovative ideas</td>
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<tr>
<td>Updated in programs and digital tools</td>
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<tr>
<td>Best construction methods</td>
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<tr>
<td>b. It’s necessary to have young staff and learn from foreign companies.</td>
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Firstly, current entrepreneurs share the idea that the main competitive advantage is quality, since if customers do not obtain a quality product, they do not hire that company again; or that many times the customer chooses a lower quality product due to its lower cost, but this does not work for them, so they go back to the company with better quality. In addition, they consider that customer service goes hand in hand with quality. They also consider that the products attract the attention of customers from the beginning so that in this way they are hooked. According to interviewee 3, “Today in our environment it is very important that each of the companies behave professionally. There are direct and indirect costs where the indirect costs allow you to negotiate with the competition if one is efficient and by the repetition of having developed the projects. One can manage indirect costs and try to manage with a rational equilibrium point. Indirect costs may range from 18 to 25%. So today some of these indirect costs become contributions to tax and endless so much so that the current profitability every day is reduced. For that reason we must avoid making mistakes in the waste of materials. Only then can resources be optimized.”

Secondly, you need young staff and to learn from foreign companies. All this helps to have innovative ideas which are appreciated when starting a venture. A lot of young staff are also used, since they are up-to-date on digital programs and tools that help the company innovate, although many times they lose a bit of credibility due to lack of experience, which endangers the market. According to interviewee 8, “In our environment as it is Yantzaza, a small and new canton that is growing, all new technologies are of utmost importance in addition to people always seeking to be hand in hand with trends. That is why many people have emigrated to other countries around the world in search of these and have achieved it by bringing new ideas, equipment, polishers, among others. For this great competition, each person if they can travel and bring ideas would greatly help their company to innovate and in such a way not jeopardize the position in the market.”

In the process of being a participant in a construction project, there will always be new construction methods since not every project is the same; construction challenges will always arise. These challenges may be related to the way or speed of resolving a problem related to the project, such as project delivery in the established time or resolving the supply of material so that the project is executed properly. In order to get to this point of knowing how to solve any type of problem in a construction project, you must go through a beginning and learn from more experienced professionals from whom you can take advantage of their teachings to refine the knowledge taught at the university,
as well as new techniques that are a complement to the constructive techniques and knowledge that are acquired throughout professional life. It is important to bear in mind that it is never wrong to ask and be wrong. According to interviewee 3, “Nowadays in our environment it is very important that each company and each professional has their direct and indirect costs, where indirect costs allow you to negotiate with the competition.”

**DISCUSSION**

The first issue that came across was personal barriers to entrepreneurship, considering that personal barriers have a great responsibility at work and that these generate great limitations when wanting to grow and improve; when you want to start a new business, you do not have a clear idea of where you want to start and how to make this known [3].

Currently, one of the greatest post-pandemic effects is anxiety, which plays a very important role; it is more common than believed to go through anxiety when wanting to present, deliver, or advertise a project for all that this entails [8]. That is why we must rely on something or someone when publicizing a project to show greater confidence in yourself.

Another personal barrier on which this research is based, and the most common block, is lack of concentration. It must be considered when applying it in our career; lack of concentration cannot be an option because this can cause failures to exist when doing a project, which can generate big problems in the short and long term [7].

Together with the surveys that were conducted previously, it was taken as data that most civil engineers have suffered or suffer from stress and exhaustion due to the great loads that are applied to them while they have studied and at work, since there is a high demand in the professional field. Stress and exhaustion are barriers that affect professional growth due to the limitation of ideas. This is a response from the brain and the nervous system and can be either positive when it helps to prevent some danger or detrimental to health when it lasts for a long time [4].

The fear of being wrong is the subconscious fear of making a fool of ourselves by making mistakes, because society always seeks perfection in others [15], but this is normal, and one must learn to be risky because this is the way to achieve success. In the same way, another fear is change, because you get used to the old ways of doing or using things, but you must always be innovating and looking for new things and opportunities to stand out from the competition and, likewise, reach everyone more easily [14].

Now, when talking about the best way to stand out against the competitors, you must seek prestige in the market and position yourself correctly to achieve better profits and be efficient in constructions. As mentioned earlier, in order to direct employees to the benefits that you want to deliver to the consumer, certain characteristics must be met, such as demonstrating the quality, functionality, image, service, and price offered to the customer; reporting on issues of expectations, risks, and delivery times; stating the differential characteristic of the company; understanding the elements that attract potential buyers and characteristics that reflect the company to customers; being simple and concise so that the consumer can easily understand the benefits of the company; and looking for customer loyalty [25].
Current businesspeople share the idea that the main competitive advantage is quality and price because customers prefer to have superior quality products to be satisfied and to be able to trust that company for future contracts. You also need to have young staff and learn from companies abroad to apply all the knowledge they will have in the future in other constructions [18].

CONCLUSIONS AND FUTURE WORK

In conclusion, personal barriers like anxiety and lack of motivation have always been a challenge for entrepreneurs. These barriers can lead to blockages, which can prevent individuals from advancing in their professional lives and lead to anxiety, frustration, and depression. While emotional and psychological problems are becoming more noticeable among workers, particularly among independent entrepreneurs, recent graduates of civil engineering face personal barriers that prevent them from starting their own businesses. These barriers can result from a lack of experience or knowledge, or the perception that the value proposition they offer is not unique. To overcome these challenges, individuals must address their personal barriers and find ways to differentiate themselves from competitors in the market. By doing so, they can position themselves for success and achieve long-term profitability. In terms of standing out from competitors, it is crucial to have a clear value proposition that sets the business apart from others in the market. This can involve offering unique products or services, targeting a specific niche or audience, or utilizing innovative marketing strategies to create a strong brand identity.

Additionally, entrepreneurs must be adaptable and willing to pivot their strategies as needed to remain competitive and meet the evolving needs of their customers. For future work, it is necessary to consider how to reduce the stress and overcome personal barriers by adding value propositions. For this, we will revise the written project proposals of the companies and our interviewees’ work and conduct a content analysis to identify patterns for competitive advantages and their connections to new customers.

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AUTHOR CONTRIBUTIONS

A.V. wrote the manuscript. A.V., M.B., L.S., and A.T. collected data and conducted the interviews. M.A.G. supervised the project and revised the manuscript.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest in relation to the publication of this article.
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