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Authors	Silva, Fábio;Fabrício, Rômulo;da Silva Pinto, Rodrigo;Galegale, Napoleão Verardi;Akabane, Getúlio Kazue
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UCC
University College Cork, Ireland
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Why technology-based startups fail? An IT management approach.

Fábio Rodrigues da Silva
Centro Paula Souza – São Paulo – Brazil
fabio@ifuture.com.br

Rômulo Fabrício
Centro Paula Souza – São Paulo – Brazil
romulo.fabricio@gmail.com

Rodrigo da Silva Pinto
Centro Paula Souza – São Paulo – Brazil
rodrigosilvap@gmail.com

Napoleão Verardi Galegale
Centro Paula Souza – São Paulo – Brazil
nvg@galegale.com.br

Getúlio Kazue Akabane
Centro Paula Souza – São Paulo – Brazil
getulio@akabane.adm.br

Abstract
The technology-based startups are highly innovative initiatives but are also known to be inserted in uncertain and risky scenarios. Proof of this are the high "mortality rates" of these initiatives. This study seeks to identify its main causes focusing on IT management.

Keywords: Startup, entrepreneurship, IT management.

Introduction

The discussion on entrepreneurship associated with startups phenomenon seems to have taken in Brazil a novelty character as something new. The discussion can become even more confusing when each student or entrepreneur uses his own experiences and concepts to define it. In fact, as noted by Hisrich et al (2014), the concepts of entrepreneurship - and the entrepreneur himself - are the subject of studies for longtime. In the table below Hisrich et al (2014) illustrates how these concepts have been addressed over time till the study of the same author.

Table 1 – Entrepreneurship Theory Development and the term entrepreneur.
Source: Hisrich et al (2014)

Middle Ages	Participant and person in charge of large-scale production projects.
XVII century	Someone who took risk (of profit or loss) in a government ´s fixed amount contract.

1725	Richard Cantillon - a person who takes risks is different from a person who provides capital.
1803	Jean Baptiste Say - entrepreneur's profits separated from capital gains.
1876	Francis Walker - distinguished between those who provided funds and received interest from those who obtain profits with administrative skills.
1934	Joseph Schumpeter - the entrepreneur is an innovator and develops technology that has not been tested.
1961	David McClelland - the entrepreneur is someone dynamic who runs moderate risks.
1964	Peter Drucker - the entrepreneur maximizes opportunities.
1975	Albert Shapero - the entrepreneur takes initiative, organize some social and economic mechanisms, and accepts risks of failure.
1980	Karl Vesper - the entrepreneur is seen differently by economists, psychologists, businesses and politicians.
1983	Gifford Pinchot - the intra-entrepreneur is an entrepreneur who operates within an organization already established.
1985	Robert Hisrich - entrepreneurship is the process of creating something different and with value by devoting the necessary time and effort, assuming the financial, psychological and social risks and receiving the resulting rewards of satisfaction and economic and personal independence.

These definitions can also vary according to the historical, social and even geopolitical moment. In examples cited by OECD (2013), Argentina and Brazil define startups as new technology-based companies, in Chile as companies with high growth potential and in Colombia and Peru as ICT companies. It is also attributed to the entrepreneurial process, especially in Brazil, activities with characteristics of high risk and volatility.

Although these rates are relatively high, as evidenced by Sebrae-SP (2012), and having a "mortality rate" on businesses by 27% in its first year of existence and reaching 58% after 5 years, they are even greater for startups - which can reach 90% according to GITAHY (2013).

It seems to exist a tacit acceptance of these high rates of risks and mortality and perhaps to a certain level of glamorization when quoting Thomas Edison in his famous phrase about his many failures in his experiments: "*I have learned fifty thousand ways it cannot be done and therefore I am fifty thousand times nearer the final successful experiment* ".

However, in the real business world and citing Peter Drucker (Drucker, 1964), the entrepreneur is someone who maximizes opportunities. And because entrepreneurs are, by definition, risk takers, a robust risk management would be an important source of competitive advantage (Hirai, 2010). And it is with this approach that this study will identify the main causes of failure of startups and best practices related to IT management that can help mitigate these risks in order to maximize the opportunities behind every entrepreneurial action of technology-based startups.

Theoretical Framework.

One must always bear in mind the dichotomy between the high risks - typically attributed to initiatives involving startups - and the huge income opportunities that they represent. Perhaps

this expectation of high profits clouds the perception of the risks involved in investments in innovative enterprises – this is the risk tolerance (justified or not) in search of better results (Hammond et al, 2004).

Anyway, the greater or lesser risk tolerance should not exempt the entrepreneur or investor from the concerns regarding the causation of their ventures' failure.

The perception of the risks involved in startups.

The development of entrepreneurship, especially new business combined with innovation, has always been a challenge. Schumpeter (1997) referred to the essence of entrepreneurship as the perception and exploitation of new opportunities, using available resources in innovative ways. Nowadays this same concept is exploiting the opportunities brought about by the advancement of technology and access to information.

The entrepreneurial concepts have already been widespread for many years, but the concept of startup effectively became popular with the advent of the Internet (Dornelas, 2008). Brazil has experienced significant growth in the number of startups and according to ABSTARTUPS (2014) it has more than 2.900 registered startups in their association only.

The importance of the innovative entrepreneurial startups process is that it affects positively the economic growth of nations, as highlighted by the GEM et al (2013).

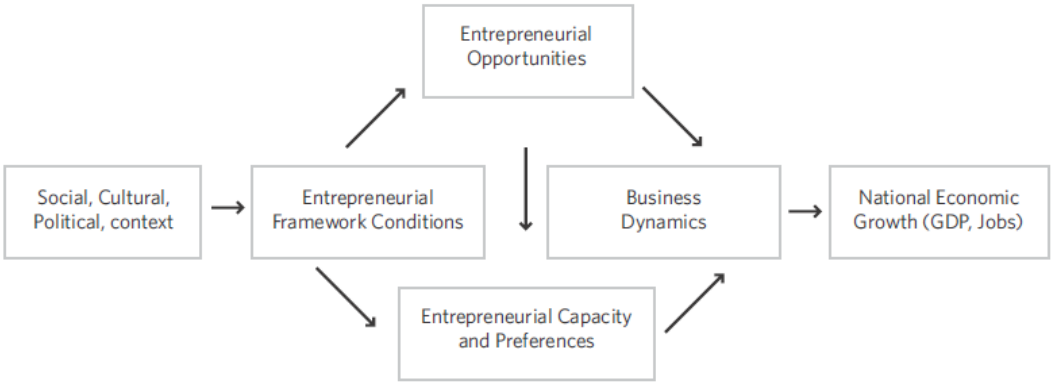

Figure 1 – Entrepreneur process affecting national economic growth.
Source: GEM (2013)

Typically, a startup is an organization formed to find a replicable and scalable business model in an uncertain and/or high-risk environment. Therefore, finance radical innovation requires more than just capital. This requires a predisposition to risk, experimentation and even to failure, according to a study of Nanda (2013). In the same study, there was a note that in some cases studied 50% of startups receiving investment had a near-zero output. In other cases only 10% of investments actually returned any significant value.

In fact, according to Nanda (2013), it is considered that great successes and failures of same proportions walk hand in hand in a world where the products of new technologies and business models are impossible to know in advance. According to a venture capitalist interviewed for this work Nanda (2013), the predisposition to failure provides the ability and the opportunity to be successful where others fail.

Yet even this "glamorization" on the ability to withstand failures in favor of great opportunity starts to fade. Companies mortality rates in the order of 27% for its first year of existence and reaching 58% after 5 years (Sebrae-SP 2012), reaching 90% (Gitahy, 2013) in the first year for startups are not encouraging. Hence the need to understand the ways that can

lead to failures, map them and address measures that can help mitigate these risks - or as would say Drucker (1964), maximize opportunities.

In Brazil one can already see this kind of concern with improving assertiveness in technology-based startups businesses. In the I and II Startups and Business Seminar, events that treated about startups and innovation (AMCHAM, 2014), the Trade Chamber America - Brazil, held on 07.18.2014 and 02.10.2014 respectively, improving this assertion was the subject present among many entrepreneurs, investors, funding agencies and experts present.

The failure reasons.

In a recent study, Marmer et al (2012) points out that entrepreneurs do not give much value to rules, as follows:

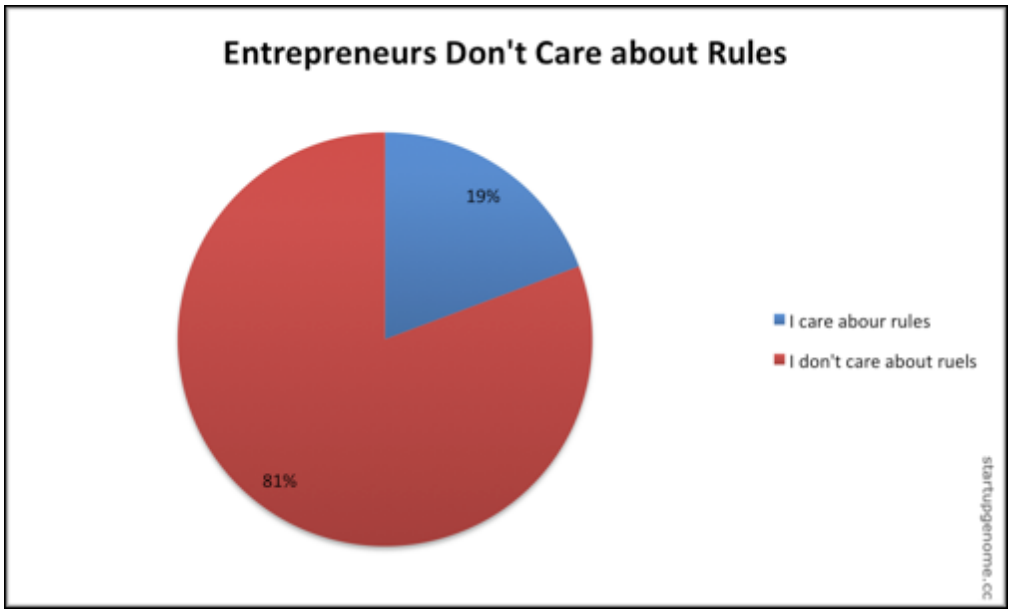

Figure 2: Entrepreneurs don´t care about rules.
Source: Startup Genome Report (Marmer et al, 2012)

It is unclear whether this "anarchic" behavior is a necessity imposed by the highly dynamic environment where startups are typically inserted or this kind of behavior denotes the lack of preparation of the founders with regard to all aspects to which the startups are actually submitted.

In a study conducted by CB Insights (2014) based on the post-mortem of 101 startups that failed (without the bias of any surviving company in this research), a series of important information were raised, especially through interviews with entrepreneurs and with some investors about the causes of these failures.

In compiling the data collected in these interviews, which sought to respond if there are some primary factors of startups fail, it was possible to list the top 20 reasons for failure in this startup group, as follows:

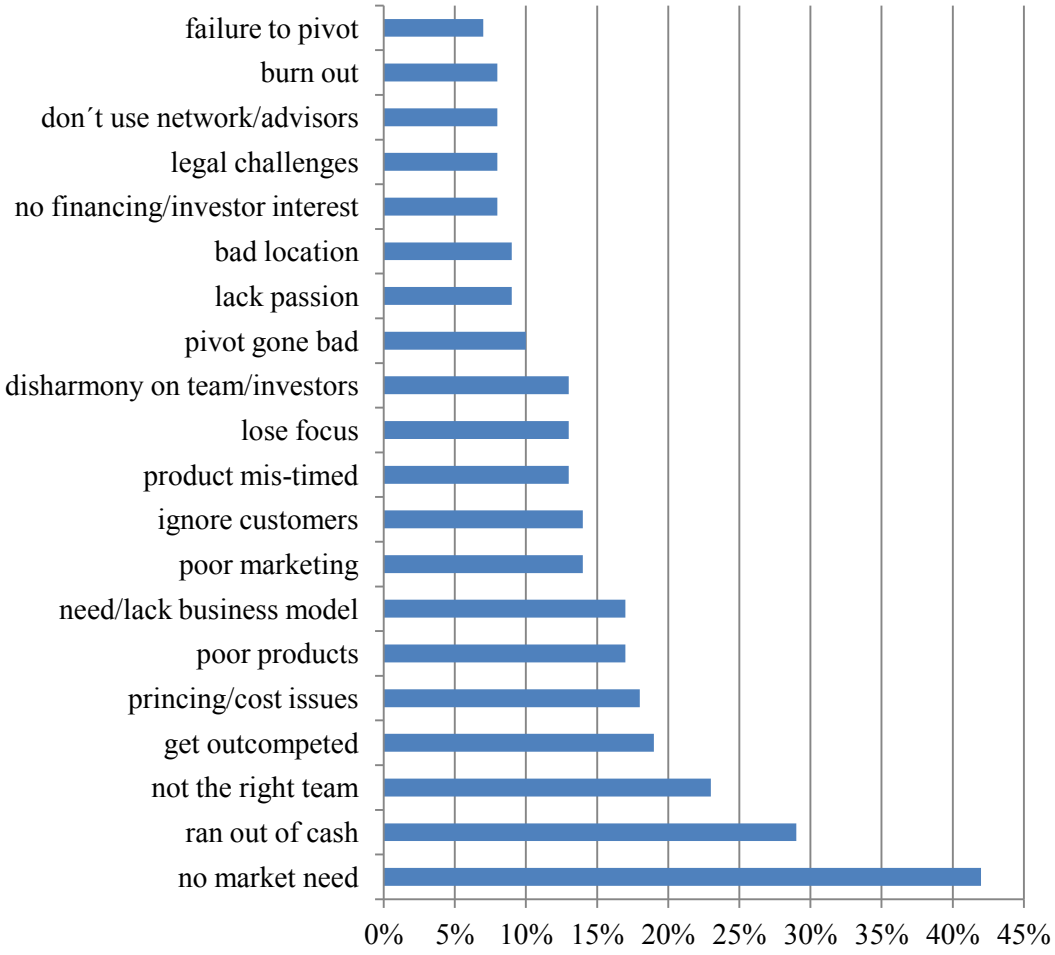

Figure 3 - Top 20 reasons for startups failure.
Source: CB Insights (2014)

Of the 20 reasons highlighted in the research above, we can highlight at least 6 reasons, gathered in four groups, that could benefit from a more efficient management of IT:

Failure or lack of pivoting.

Pivoting is usually associated with the change (or lack of) of product focus and / or service and in this study also has an aspect of losing too much time with a staffing or services that are not suitable for business. This can be negative in the sense it leaves employees frustrated with the lack of progress.

In some of the companies surveyed, pivoting a supplier when trying to escalate a product or service prematurely brought a number of complicating factors - a higher cost being only one of them - that contributed to the collapse of some of the startups.

Pivoting can be a crucial decision for action or a major strategic repositioning for the survival of startup. However, this is not a simple or ordinary action in startups. A study of Marmer et al (2012) shows interesting information regarding the startup´s ability to take actions based on the feedback from customers or the market. Typically, companies with more founders tend to pivot more often than those startups with only one founder.

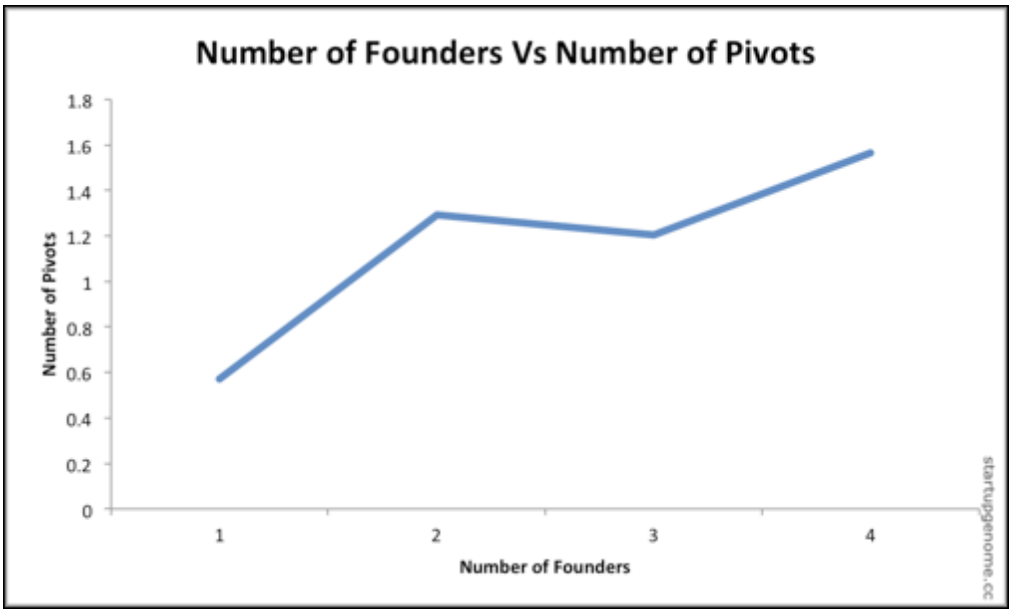

Figure 4: Number of founders VS number of pivots
Source: Startup Genome Report (Marmer et al, 2012)

Apparently, an environment with more founders seems to be more prepared to adapt to new demands (corrections or adjustments in products and services), the market, and suppliers and even with regard to workmates.

There are even surveys (Marmer et al, 2012) indicating that startups that pivot once or twice come to raise up to 2.5 times more capital, has a growth up to 3.6 times better and are 52% less likely to attempt to escalate business prematurely - compared to those startups that have pivoted more than 2 times or no time at all.

Bad location (location, location, location ...).

A concept, usually attributed to how a product or service can be launched and marketed in different places and for different audiences, in this study it also has an administrative and technical bias.

The location also had an important role in the failure of startups when it came to managing remote or virtual teams. It was reported in the survey that the lack of attention to provide effective communication resources would have led to poor work groups and even lack of planning. The problems arising were not only administrative problems, but also technical and productivity problems.

And, as noted by Silva (2013), even problems with moving the human capital to different places than those to which individuals have family and/or affective roots may also contribute to the failure of the startup. These individuals tend to have more and better contacts and even greater emotional stability in regions where originally resided.

Cost and/or price issues.

Research has indicated that the pricing of products and services is an especially difficult item for startups and an important factor in its success or failure. The cost/price of a product or service is a difficult equation to be solved and for this very reason, concerns with the values and pricing formats and cost are equally important.

In surveys in the study of Marmer et al (2012), it is clear that errors involving the right time to escalate a startup (in its various dimensions: discovery, validation, efficiency, scale, support and maintenance) lead to a scenario where the business can become unviable in several aspects. Examples of these scenarios happen when the startup does not have a properly defined product and/or appropriate marketing and decides, inconsistently, to escalate operations.

Ignore customers or unsuitable products.

In both cases the main problem is the lack of interaction with the customer in the construction or even throughout the life cycle of the product or service. Ignore the wishes and/or customer requirements, consciously or unconsciously, instead of constantly seeking customers' feedback is pointed as some of the main reasons for the failure of a startup.

In these respects Silva (2013) argues that the lack of adaptability of an organization and consequently their learning disabilities in constantly changing environments contribute to the aggravation of these scenarios. Several of the interviewed entrepreneurs mention the products being developed without customer participation or without real understanding of their needs. The products being developed only by the criteria of the technical team and guided by business models out of line with market needs and, above all, without appropriate mechanisms for validation, are the right way to big problems.

Method

The method used for the development of this paper was basically divided into two stages: (i) bibliographic database exploratory research and (ii) collection of secondary data.

The bibliographic database exploratory research focused on the concept of risk perception by investors and entrepreneurs, and its consequences for entrepreneurship and startups. It was used a deductive method, that is, using a descending chain of reasoning, from the general analysis to the particular analysis till a conclusion; and via syllogisms: two assumptions lead to a third logical result (Gil, 1994). The technical procedures were research in publications such as books, articles, journals and Internet.

The collection of secondary data aimed to contextualize the risks according to the current market reality and highlight relevant points for further discussions of the importance of the IT related management features that may be of interest to address these problems.

Results and Discussion

Clearly, technology-based startups have their own dynamism and - as maybe is required by the business model or even the training and capacity of the founders - resort to working practices rarely guided by good IT management practices. The results of the surveys conducted by Marmer et al (2012) show that this is a very present behavior from the studies conducted among 101 startups that failed. They are not the only causes (the study also addresses a number of other characteristics of the startups, as practices or the absence of marketing, competition and wrong launching time - among others), but are the most relevant for the purpose of analysis of this work and contribute significantly to the technology-based startups failures.

The human factor is present in all aspects raised in 4 groups discussed in the theoretical framework: pivoting (in team-building that brings results or frustration for the

delay of these same results), poor location (for allocating employees and management of remote times), cost/pricing (super teams or sub paid teams) and, finally, the devaluation of the customer return (for staff training issues and/or inadequate leadership position). This is not a simple equation to solve, in view of the expectations of each participant and the pressure for results - personal or imposed.

Technical aspects are also present in 4 major groups discussed in the theoretical framework and can at the same time be the cause of the problems or the means by which we can find solutions that minimize the problems noted.

The pivoting problems can be addressed with a more intense group work, as demonstrated in the case of companies with more than one founder which have pivoted more successfully or, in a more technical aspect, the development of a clear supplier management policy allowing certain aspects of a possible pivoting to be done at the proper time and in order to guarantee satisfactory results. The bad location problem, with regard to virtual teams and allocation of employees, seems to be something relatively simple to address given the resources already available for some time over the Internet. The main problem is to prepare participants to work this way - a paradigm shift of this nature is not always easily implemented.

For the problems related to cost and pricing they seem to be fully met by project management techniques such as those from PMI, which has specific topics to address issues of scope, implementation, estimation, budget and cost control (PMI, 2014). Finally, the difficulties encountered by the lack of interaction with customers (or potential customers) can be addressed satisfactorily with various methods, with the PMI (2014) itself being one of the possible solutions.

Conclusions

There is still little material exploring the relationship between management, governance and startup companies, especially in its early stages of discovery, validation and efficiency – as mentioned by Marmer et al (2012). In later stages (like scale, support and maintenance) it already becomes more common the use of management and governance resources.

The high dynamism and high degree of uncertainty of startups, especially in its early stages, and any funding problems and even teams training problems (when they do exist) do not seem to make it viable to use rigid or "heavy" methods to support IT management and governance.

However, it is clear that these initiatives would benefit enormously from the use of parts of these methods with the main objective of establishing good practices that minimize the risks involving startups - not only by the entrepreneur side (which would have a better and more reliable structure to attract investments), but also to investors who would see the risks mitigated.

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