Worldwide, depending on diverse factors, many firms have been created, bought by others and also unfortunately have gone bankrupt. Our analysis will focus particularly on Small and Medium Enterprises (SMEs), since they play an important role in the world economy. In the European Economic Area (EEA) with Switzerland, SMEs are more than 16 million and they provide two third of all jobs. The aim of this research paper is to analyze different types of turbulent environment that SMEs could encounter and the implications for management. To further develop the analysis of SMEs in turbulent environments, a research of empirical cases of SMEs in different environments was conducted, in different journals databases. From this research, three cases were selected to be analyzed accordingly to their level of turbulence. To support the theoretical approach discussed, we conducted a SWOT analysis of two cases related to SME’s embedded in turbulent environments. Our research studies also pointed the importance of the alignment of managers regarding the guidance for external markets and its positive relationship with the ability to perceive opportunities in the environment. Some perceived problems of SME’s adaptation to the environment can also be referred to the high level of informality in these organizations. We present four key challenges and strategies for the management of SME’s in turbulent environments. Our approach suggests that while the environment provides favorable conditions for success, can also lead quickly to SME’s bankruptcy prediction in harsh environments and high instability.

Palavras-chaves: Turbulent environments, Small and Medium Enterprises
1. Introduction

The 21st century brings to the world a huge amount of changes and an important one occurs in the business environment. Worldwide, depending on diverse factors, many firms have been created, bought by others and also unfortunately have gone bankrupt.

Our analysis will focus particularly on Small and Medium Enterprises (SMEs), since they play an important role in the world economy. In the European Economic Area (EEA) with Switzerland, SMEs are more than 16 million and they provide two third of all jobs. Also, they contribute to entrepreneurship and innovation. SMEs can be defined using headcount, annual turnover or annual balance sheet and the number of employees. Throughout the world these criteria are determined by each country or economic area. (European Commission, 2005, as cited by FESTING & ENGLE, 2008).

The aim of this research paper is to analyze different types of turbulent environment that SMEs could encounter and the implications for management. To succeed, managers have to lead theirs teams through every type of internal or external turbulence. They have to define new strategies and engage efforts to implement them in order to prolong the company’s life.

The examination will begin with a theoretical background with definitions of turbulent environments, following by the classification and the measurement approaches. To continue, the second part analyzes empirical cases of SMEs.

2. Theoretical background

2.1. Definition

The environment - for Andrews, Mintzberg and Quinn (1992) - of an organization in business is “the pattern of all the external conditions and influences that affect its life and development”. For Brown and Eisenhardt (1998) this kind of environment is defined as “a situation that is subject to continuous and substantial changes which are uncertain and unpredictable”. A turbulent environment is an environment in which one cannot predict the outcome of one’s actions (DANKBAAR, 1996). Stigter (2002) made a compilation of those concepts in a tentative to understand how SMEs should position themselves in a way that bring success even (or specially) in turbulent environments. A turbulent environment is characterized as difficult to understand and requires a flexible organization to respond quickly and adequately in order to remain competitive. The author Stigter concludes that a turbulent environment consists in a situation that is subject to continuous and substantial changes which are uncertain and unpredictable.

It is important to distinguish turbulence and quick change. Quick change can be predictable and turbulence is equal to unpredictability (EMERY & TRIST, 1965). According to Kim, Cameron and Whetten (1987), “turbulence is change experienced by the organisation that are major, rapid and discontinuous “. These changes are no longer incremental. Usually they are more radical, non-linear and frequent (KIDD, 2000). Johnson and Scholes (1989) define turbulent as consisting of two parameters; dynamics and complexity.
Hedlöf & Janson (1999) used a concept of Andrews (1992) that implies that environment of an organization in business is “the pattern of all the external conditions and influences that affect its life and development”. As one of pioneers, Emery in 1977 argued about turbulent environments. His conception about was related to environment in which “modern countries appear to be moving and it is not sure whether adaptation is very probable. It is doubtful that individual systems can by their own efforts successively adapt to such richly textured fields”.

Emery argued that, in a turbulent environment, adaptation is not possible unless one somehow comes to grips with the complex interaction of the effects that different parts of the ecological-social-economic-political environment are having on one another.

2.2. Types of turbulent environments

Stigter (2002) points that SMEs are confronted with changes in their business environment. These changes originate from different forces, like political, demographic, economic, legal, technological, infrastructure, ecology and social forces. The author Van Noort (1999) emphasizes that the main forces “globalisation, internationalisation, innovation, technology and mass individualization” as the most influencing elements in the environment of SMEs.

For Johnson and Scholes (1989), there are four groups of key drivers behind change, in short called PEST (Political, Economical, Sociocultural and Technical). Hedlöf & Janson (1999) describe the first group as the political group, being responsible for “changes in legislation and taxation are some factors that affect an organization”. According the authors, “the economical group is related to interest rates, GPD trends and unemployment affect the organization”. The third one, are Sociocultural factors, “which includes changes in population, income, mobility, and attitudes”. The fourth and last group is the technical group. Within this group Hedlöf & Janson (1999) found changes in “government spending on research, government and industry focus on technological efforts, new discoveries/development, speed of technology transfer, and rates of obsolescence”. This force is a critical point to “continuous innovation keeping success on business survival”.

We can also define another force, going deep in the topic, brought for Pine (1993) ‘Market turbulence’ that is an imprecise term but connotes the amount of instability, uncertainty, and lack of control within a firm’s marketplace. Market turbulence can be defined more precisely as the number of and magnitude of market events requiring a company’s attention per unit of time.

2.3. Measurement approaches

Emery and Trist (1965), on their theory of organizational environments, classify four types of environments based on two different dimensions: complexity and dynamism, as shown on Erro! Fonte de referência não encontrada.. The dynamism dimension measures the degree of movement in the external environment of an organization, while the complexity dimension assesses the structural nature in terms of intricacy and density of the aforementioned environment. Edelmann and Benning (1999) explain that the turbulent field is located in the highest level of dynamism and complexity, and it arises from variances in components of the environment in which the organization is part of. These variances affect the whole organization, and leads to high levels of uncertainty.
Another method frequently cited (KIPLEY & LEWIS, 2009a and 2009b; CAMPBELL, 2010; EDELMANN & BENNING, 1999; CARVER & KIPLEY, 2010); to measure turbulence is provided by Ansoff and McDonnel (1990). In their work, they classified turbulence in 5 different levels.

The matrix below provides a visualization of the five levels of turbulence, as well as a 5 points scale useful to help categorize the actual stage in which an organization may be.

<table>
<thead>
<tr>
<th>Turbulence Level</th>
<th>Environment Turbulence</th>
<th>Complexity</th>
<th>Changeability</th>
<th>Predictability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Repetitive</td>
<td>National Economic</td>
<td>Familiar</td>
<td>Recurring</td>
</tr>
<tr>
<td>2</td>
<td>Expanding</td>
<td>Regional Technologica</td>
<td>Extrapolable</td>
<td>Forecastable</td>
</tr>
<tr>
<td>3</td>
<td>Changing</td>
<td>Global Socio-Political</td>
<td>Discontinuous</td>
<td>Predictable</td>
</tr>
<tr>
<td>4</td>
<td>Discontinuous</td>
<td></td>
<td>Familiar</td>
<td>Partially Predictable</td>
</tr>
<tr>
<td>5</td>
<td>Surprising</td>
<td></td>
<td>Novel</td>
<td>Unpredictable surprising</td>
</tr>
</tbody>
</table>

Table 1. Turbulence levels (ANSOFF & MCDONNEL, 1990)

The level 1 is the “repetitive” level, where the environment basically repeats itself day by day, without major changes. Level 2 represents the “expanding” stage, where the change is incremental, slow, visible, and predictable. The level 3 is the “changing”. The environment
presents now a fast pace of change, though it is still incremental and fully visible. Levels 4 and 5 are where the turbulence is most strong. At level 4, “discontinuous”, the changes are not incremental. It presents a limited visibility, partial predictability, rapid change and usually an inability from the firm to react to the new change within the required time frame. The level 5 is known as “surpriseful”. Changes at these levels occur without notice, without visibility, unpredictable and extremely rapid.

The following part will provide an analysis of the application of these theories in empirical cases.

3. Analysis of empirical cases

3.1. Overall turbulence level

To further develop the analysis of SMEs in turbulent environments, a research of empirical cases of SMEs in different environments was conducted, in different journals databases. From this research, three cases were selected to be analyzed accordingly to their level of turbulence (as defined by Ansoff): one Swiss SME in the food sector (KOCHER; KAUDELBAUM & WOLF, 2010); B-to-B SMEs in India (JAVALGI, TODD & GRANOT, 2011), from different sectors; and SMEs from manufacturing, merchandising and service sectors from Botswana (Z.T Temtime, 2008). Cases which were characterized as level four and five were then submitted to a SWOT analysis.

The results of this analysis are summarized in the Table 2.

Table 2. Turbulence levels analysis. Source: The authors.

<table>
<thead>
<tr>
<th>Turbulence Level</th>
<th>Overall Turbulence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changeability</td>
<td>Predictability</td>
</tr>
<tr>
<td>Complexity</td>
<td>Rapidity of Change</td>
</tr>
<tr>
<td>Familiarity of events</td>
<td>Comparable to Response</td>
</tr>
<tr>
<td>Visibility of future</td>
<td>Predictable</td>
</tr>
<tr>
<td>Swiss SME</td>
<td>Flora</td>
</tr>
<tr>
<td>Score</td>
<td>1</td>
</tr>
<tr>
<td>SME in Botswana</td>
<td>Regional</td>
</tr>
<tr>
<td>Score</td>
<td>4</td>
</tr>
<tr>
<td>Indian B2B SME</td>
<td>Regional</td>
</tr>
<tr>
<td>Score</td>
<td>4</td>
</tr>
</tbody>
</table>

The scores were based on the overall situation of the SMEs as described on each original
For the purposes of this article, we based the scores on the following assumptions:

### 3.1 Swiss SME (FLORA)
- **Complexity:** the dairy food sector for this enterprise comprises only the national market, thus not being a factor of concern or higher complexity.
- **Familiarity of events:** the enterprise confronts pressure to adapt to new regulations in the market. This way, the enterprise has to only extrapolate their own experience to adapt to the new conditions.
- **Rapidity of change:** the enterprise confronts regulation changes or takeovers from competitors, but they have enough time of response for these issues.
- **Visibility of future:** the changes on the environment are in general predictable (deregulation or acquisitions).

### 3.1.2 SMEs in Botswana
- **Complexity:** with high HIV ratios among adults (UNAIDS, 2006), the complexity of this environment is very high, with strong local social issues.
- **Familiarity of events:** there is a lack of national standard for business skills for SMEs, which contribute to difficulties when identifying familiar events.
- **Rapidity of change:** one of the four most strong economies of the region (World Competitiveness Report, 2011-2012), faces constant and fast changes. Additionally, their lack of structure contributes to poor decision making.
- **Visibility of future:** they are not long-term oriented, and the country faces many changes – what makes the future not easily predictable.

### 3.1.3 SMEs in the B-to-B sector in India
- **Complexity:** Indian SMEs are going international, mainly in the technological sector – which situates them between a regional and global complexity.
- **Familiarity of events:** given their new directions, they face increasingly unfamiliar events.
- **Rapidity of change:** the changes are fast and the consumers demanding - nevertheless, Indian SMEs seem to be prepared for this environment and responds timely.
- **Visibility of future:** the government supports the SMEs, though the sharp expansion of India makes the future only partially predictable.

### 3.2 SWOT Analysis
The Table below will show us the four main points of the SWOT Analysis approach. We analyzed the two cases of the companies that were in a high level of turbulence environment (3.75 / 4.25). The Table will give us an overview of the situation and will provide also the
guidelines for our discussion about the challenges given in a changeable and unpredictable environment.

<table>
<thead>
<tr>
<th>TURBULENT ENVIRONMENT</th>
<th>CHANGEABILITY</th>
<th>PREDICTABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STRENGTHS</strong></td>
<td>• Experience of managers</td>
<td>• Managers international orientation</td>
</tr>
<tr>
<td></td>
<td>• Reaching customer needs in a effective and efficient manner</td>
<td>• Market orientation</td>
</tr>
<tr>
<td></td>
<td>• Informal planning</td>
<td>• International Orientation</td>
</tr>
<tr>
<td></td>
<td>• Lack of staff participation in the planning</td>
<td>• International Performance</td>
</tr>
<tr>
<td></td>
<td>• Lack of communication process goals and objectives</td>
<td>• Lack of strategic awareness by the management</td>
</tr>
<tr>
<td></td>
<td>• SMEs in Botswana incorporate more short-term and fewer strategic issues in their plans</td>
<td>• Gap between information flows of the company's managerial team and employees</td>
</tr>
<tr>
<td></td>
<td>• SMEs has only operational rather than strategic implications</td>
<td>• Not enough capital to do business abroad</td>
</tr>
<tr>
<td></td>
<td>• Lack or resources and expertise</td>
<td>• Lack strategic awareness and planning for long-term competitiveness</td>
</tr>
<tr>
<td></td>
<td>• Absence of a qualified management team</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Gap between goals of company and managers</td>
<td></td>
</tr>
<tr>
<td><strong>WEAKNESSES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Globalization</td>
<td>• Globalization</td>
</tr>
<tr>
<td></td>
<td>• Advance of ICTs</td>
<td>• Advance of ICTs</td>
</tr>
<tr>
<td></td>
<td>• International Agreements</td>
<td>• International Agreements</td>
</tr>
<tr>
<td></td>
<td>• New requirements from customers</td>
<td>• Competitors predicts the market before</td>
</tr>
<tr>
<td></td>
<td>• Cultural Differences</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Competitors provide same offers</td>
<td></td>
</tr>
</tbody>
</table>

Table 3. Swot Analysis. Source: The authors.

As we can see in Table 3, the two main strengths that contribute to a changeable environment are the high experience of managers and the level of effectiveness that SME’s have to understand and reach customer needs. Relating to predict actions and going forward of competitors, Javaldi et. al (2011) showed that exists a positive relation between the
international managers orientation and the international market orientation in which the SME’s are inserted. Such alignment has a positive relation with the International Orientation and Performance of SME’s. Going to foreign markets, in a success way, gives to the SME’s a huge field of possibilities to create and exchange experiences “going out their usual box” with consumers that could increase and open their markets.

When we talk about SME’s changeability weaknesses in a high level of turbulent environments, the most important points are related to the lack of a well defined long and short term formal planning, that in some cases does not involve all the staff. There are also problems with communication process. The same happens with the absence of a strategic plan. Problems related with the lack of resources and expertise will reflect at the quality of the management team. This also can get worse due to the gap between company and managers goals.

In a Predictability perspective, we realized that there is some lack of a Management strategic awareness (most of times it only exists in the manager or owner mind, without being systematized in a routine or explicated to the entire organization). Problems with the information flows can occur at the managerial team and the employees, due to communication problems in demonstrating the real goals of the company in a collective level.

Structural problems can also be a problem to SME’s, when the capital demanding for doing business in foreign countries goes over than the actual capability of the companies.

In the other hand, we can see as great opportunities to SME’s maintaining their competitiveness in turbulent environments, the fast globalization process that starts at the second half of last century. During the nineties the process was intensified due to rapid evolution of ICTs, facilitating communication, providing endless possibilities for developing new business models. International agreements may also be cited as good opportunities for doing business and reducing barriers abroad. The high speed at the trades that occurs nowadays can either help the SME’s to adapt quickly to abrupt changes on the environment, and also contribute to the prediction of potential markets.

Some threats involving SME’s business are related to new requirements of customers and also the high speed of environment changes. At the same rate that access to information has been incremented to the organizations, the same happened for consumers. The ease of access to information brings higher levels of demand.

Respecting and understanding cultural differences are also critical when companies locate themselves in foreign markets. The lack of adaptation to different cultures can lead organizations both to failure and to predict wrong environmental conditions. Competitors become threats when they first launch products, anticipating market conditions and the environment.

3.3. Challenges and strategies

Managers have to adapt their decisions according to the different environment they have to face. The SWOT analysis revealed a number of challenges that SMEs have to deal with. Their success will depend on their ability to find strategies and tools to overcome such challenges. This section will deal with these strategies and how they can be applied by SMEs.
3.3.1 Challenge A: To turn turbulent events into real opportunities

Companies that operate in an environment of rapid change are open to a larger share of turnover and new or improved products than those that operate in stable and predictable conditions. Organizations that get environment opportunities in a successful way usually are those that are able to create, amplify or even modify your resources base. In the face of turbulent markets and scenarios that require organizations to remain extremely competitive, it’s very clear the need of transforming the knowledge base of organizations, following the changing markets and technology (EISENHARDT & MARTIN, 2000). The realignment of the skills of knowledge helps companies integrate their internal processes and external knowledge.

Companies need to be flexible and innovative, when the market changes and technological changes require quick decisions, or when competition and market structures are difficult to predict. In other words, dynamic capabilities must be established at the core of strategic management processes, consisting of a set of specific and identifiable processes. Organizations need to use the knowledge generated externally, to internalize (sensing and capture) and match (transform) the information and new knowledge with existing knowledge base.

Systems that facilitate and guide these processes are associated with the capacity to feel and capture the resources available in the environment in order to transform and realign - in adaptation - organizations. In other words, dynamic capabilities consist of recognizing relevant changes and reconfigure its asset base and processes continuously to match the demands of the changing environment (TEECE, 2007).

3.3.2 Challenge B: To create an organizational structure

The ability to identify new developments and change patterns is essential (BURGELMAN, 1991) to get over the turbulent times. The analysis of Botswana’s SMEs showed that one of their weaknesses is exactly their organizational structure.

This issue is not always a problem. Brown and Eisenhardt (1998) suggested that in order to be innovative, firms need to create a culture where an acceptance of continuous change is central. North (2010) teaches that the organizations can be organized in four ideal types, based in knowledge. This organization types take into account not only the hierarchies of the enterprise, but also how is the flow of knowledge of this particular enterprise: where it is located, where it is generated, how to apply it. This type of organization seeks knowledge outside of its internal borders.

3.3.3 Challenges C: To Transform Competences and Knowledge into Success

According to Stacey (1992), managers have the challenge of defining competences that they need. In addition they have to find a way to avoid conflicts that could emerge when people with different perspectives and ideas are brought together, in new functions and groups. This is especially true for SMEs, since they have a limited number of resources, or maybe even confront social turbulences in their environment (as it is the case in Botswana and their high HIV rate).
3.3.4 Challenge D: understanding the turbulent market and staying competitive

Managers face the task to stay competitive and constantly respond to the market (Ansoff 1990). This is seen on the Indian SMEs case, since their environment is highly turbulent, and the enterprises are still competitive in their sectors.

Management has to plan the work, reach short-term goals whilst keeping long term goals of the firm in mind. SMEs in Botswana incorporate more short-term views, neglecting the long-term issues (Z.T Temtime, 2008). Igor Ansoff (1990), suggests that for a firm to optimize its competitiveness and profitability, has to match its strategy and supporting capability with the environment.

4. Conclusion

Understanding the environment has a great importance in times where the changes occur quickly and unpredictably. The lack of adaptability in some cases can be critical, especially for SME's, where resources are often relatively limited compared to the reality of large organizations. In order to better understand this reality, we used concepts that addressed the characteristics of turbulent environments, different levels and methods for its measurement.

To support the theoretical approach discussed, we conducted a SWOT analysis of two cases related to SME's embedded in turbulent environments. That was characterized as discontinuous and high levels of instability environments, with constant changes and higher unpredictability.

The analysis of the turbulent conditions of the environment, allowed us to realize that the experience of managers has a key role in adaptation of SME's. Also the ability of perception customers’ needs and market opportunities are fundamental.

Our research studies also pointed the importance of the alignment of managers regarding the guidance for external markets and its positive relationship with the ability to perceive opportunities in the environment.

Some perceived problems of SME's adaptation to the environment can also be referred to the high level of informality in these organizations. The lack of systematic processes in this case may affect the performance of organizations, and are also related to lack of strategic planning, resources and market knowledge.

The biggest opportunity refers primarily to the current speed of the flow of information and advancement of technology and globalization. Developing markets that are currently heated also are showed as good opportunities for the development of SME's. Those conditions must be properly utilized by these organizations through a proper planning and structuring the in order to be adapted to the environment.

Based on these considerations we present four key challenges and strategies for the management of SME's in turbulent environments. Our approach suggests that while the environment provides favorable conditions for success, can also lead quickly to SME's bankruptcy prediction in harsh environments and high instability.

To support innovation and market success, companies need assets, processes and structures that enable strategic flexibility and opportunities for business support detection and capture opportunities. We considered in this term paper that the dynamic capabilities consist of skills associated with "sense" and "capture" the opportunities of the environment to "transform / realign" organizational processes in pursuit of competitive advantage.
Bibliography


**CAMPBELL, R.** *Strategic Planning and Organization Performance in a Volatile Economic Environment*. PhD thesis. Capella University, Minneapolis. ProQuest Dissertations and Thesis 15 November, 2010


**JAVALGI, G., TODD, P. & GRANOT, E.** *The Internationalization of Indian SMEs in B-to-B market*, pp. 1-7, 2011.


