The Impact of Big Data on SME ́s Strategic Management: A Study on a Small British Enterprise Specialized in Business Intelligence

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Abstract

The present article seeks to describe how Big Data impacts on SMEs strategy, focusing both on planning and the use of strategy tools. It is a result of a participatory and practical action research in a small British Company ($2.5 Million annual turnover) specialized in business intelligence, conferences and tradeshows during 2014 to 2017. Throughout the research period, Big Data had a profound and multifaceted impact on the strategy and operations of the company, resulting in the changing of its products, adoption of new and more dynamic CRM systems, rethinking of the strategic tools utilized by the senior management and definition of new long term strategic goals. As a conclusion, it was noted that cultural predisposition to adopt Big Data technologies had a defining influence over the course of the strategic planning and operations; as the strategy for Big Data has to go beyond simply implementing technological changes – it actually has to exist before the adoption of new technologies is even considered – demanding commitment from the senior management team as well as the operational side of the business.

Keywords: big data, sme strategy, strategy tools

1. Introduction

As the impact of Big Data in the economy grows larger – world revenues for Big Data in 2017 were predicted to reach $150.9 billion USD, a 12.4% growth against 2016 – the understanding of its impact upon small and medium enterprises (SMEs) remains unclear, with few academic studies focusing on the theme; despite the fact that SMEs form over 95% of all enterprises in Europe, employing around 65% of the workforce. However, it is undeniable that the access and use of Big Data is becoming more common for SMEs, which will generate economic and cultural consequences both on a micro and macro scale, affecting the innovative and technological ratings of SMEs and ultimately restructuring the competitive landscape (Deloitte, 2018; Rowe & Gampenriender, 2017; Muller et al, 2015; Sanders, 2014).

The present article endeavours to discuss the impact of Big Data on SMEs strategic management, focusing on a boutique style British company specialized in business intelligence, conferences and tradeshows (Note 1).

Presently, the studied company has 25 employees divided mainly into four departments – Sales & Business Development, Marketing, Research & Development (Conference Producers) and Events Management & Operations. The heads of each department – except for Events Management & Operations – take part of the strategic planning alongside the MD, the Founder & CEO as well as the Board of Investors. The Company currently caters for three main industries, organizing international events and tradeshows – Asset Management Technologies, Human Resources Management and Electronic Games – with an annual turnover slightly over £3.5 million Pounds.

In the past 8 years, the company has chosen to adopt a Geo-cloning (Note 2) strategy to support its growth plan and remain competitive facing an ever-growing number of smaller competitors as well as large global events.

The research was carried-out during three years (2014 – 2017) and had two main objectives. Firstly, it intended to bring the Concept of Big Data into the strategic discussions of the company in order to prepare for the impact of such

technology in the industry as a whole. Secondly, it was made an effort to identify and review the use of strategic tools at the company, taking into account the influence of Big Data over its products/services. As a result of the research, strategic changes were proposed for the company to remain competitive in a scenario wherein Big Data represents a growing influence over the market as a whole, especially on SMEs.

2. Big Data Landscape

Current reports on global trends by Ernst & Young (2014, 2015), PwC (2014) as well as Deloitte (2018) and (ROWE & GAMPENRIENDER, 2017) indicate a scenario wherein strategic operations in SMEs should take into account the following points:

- Globalization impacts virtually all strategic plans.
- E-commerce has become a vital strategic management tool.
- Technology and social media have become more accessible to SMEs.
- Artificial Intelligence and Big Data are the brain behind most emerging technologies.

All the points above have a common feature, they are intrinsically related with the development of Big Data technologies and they will have an impact on SMEs just as significant as in other larger organizations, which will have profound implications globally (Sen, Ozturk and Vayvay, 2016; Ernst & Young, 2014).

Executives and scholars have several points of agreement on the Big Data discussion, it is taken for granted that Big Data will change the nature of competition by process transformation, altering entire ecosystems and bringing about several innovative changes. The value of an organization will be measured by how effectively they use information to solve key challenges within their industry (Sen, Ozturk & Vayvay, 2016; Wamba et al., 2015).

3. Strategy-Concepts & Limitations

It is feasible to argue that the concept of strategy is one of the most discussed in business scenarios; it was initially borrowed from the war terminology and over the years adapted to a society of organizations; however, there has never been an agreement view in research concerning its definition (Mintzberg, Ashtrand & Lampel, 1998; Ansoff & & Mcdonnell, 1990; O'Regan & Ghobadian, 2002; Quinn, 1980).

The disagreements derive from the long spectrum of conceptual perspectives that strategy carries in its core, from the rationalistic vision of strategy as an intended plan of action, passing through the view of strategy as a reactive and unpredictable patterns of behaviour to a subjective perspective which renders strategy as nothing but a state of mind. However, authors do agree that it is a comprehensive process concerned with the formulation, implementation and evaluation of decisions that should ultimately enable an organization to achieve its objectives trough the creation of a unique, innovative and valuable position (Porter, 1980; Ansoff, 1965; Ansoff & Mcdonnell, 1990; Omae, 1982; Mintzberg & Ghoshal, 2003).

The criticism towards the rigid concepts of strategy is abundant in the literature; authors argue that there is not the best or right strategy; that it cannot be scientific or rational; that it cannot overcome all obstacles, being thus more an instinctive/reflective than a planned set of actions (Mintzberg, Ahlstrand & Lampel, 1998; Middleton, 2003; Omae, 1982).

However, the very criticism towards strategic management seems to offer its ultimate purpose; strategy exists to negate passivity, maximize results, minimize risks, and rationalize processes without being dogmatic. Ultimately, strategy planning is still the best way to ensure long-term survival (Middleton, 2003; Porter 1985; Kotler et al, 2008).

3.1 Strategy for SMEs

There are several limitations on the traditional strategic models when applied to SMEs; the most essential limitation derives from the different nature of the organizations which is directly affected by their size. Smaller organizations are likely to have a more dynamic decision-making process, they tend to be more prone to take risks – sometimes it is a matter of survival – and also they tend to be more flexible to respond to the environment and seize new market opportunities. The most crucial aspect, nonetheless, is that strategy and operations in SMEs are basically interwoven – it is not the exclusive activity of senior managers. Conversely, larger organizations have other type of advantages, related to scale, availability of specialists and access to resources – financial and technological – besides a dedicated team of senior managers only concerned with macro-environmental and strategic issues (O'regan & Lehmann, 2008; Vossen, 1998; Brambilla et al., 2012; Love & Roper, 2015).

Those natural limitations in adopting strategic tools are complemented by the comparatively lack of academic research on strategy for SMEs, specifically innovation strategy, very little is known about how SMEs actually apply

strategic thinking, not only there is no consensus on best practice, but there are conflicting theoretical models, overall lack of interest, knowledge gaps and inconsistencies (Love & Roper, 2015; Keupp, Palmié & Gassmann; 2012; Hitt et al, 2011).

Limitations aside, strategy for SMEs is an ever growing necessity; SMEs with a sound strategy may be able to overcome more efficiently the issues most smaller companies face regarding lack of resources, intense competition, low margins and lack of specialized people (O'regan & Lehmann, 2008; Hitt et al, 2011; Weinzimmer, 2000).

3.2 Big Data & SMEs Strategy – Concepts, Trends and Barriers

The development of Big Data technology was hectic and fast paced, as a result of that, Big Data definition is fluid and time sensitive, the technological advances render any stationary concept obsolete in a very short period of time. Also, its pervasive nature has made both public and private sectors eager to absorb the concept into their processes, leaving behind academic discursion, which only added to an overall sense of hype and confusion (Gandomi & Haider, 2015).

There are, however, some aspects that may be taken into account when endeavouring a clearer definition. The volume, variety and velocity of the data processing are still the three key indicators of Big Data. That's where the main changes take place, and despite those constant changes, they offer a common framework to describing data and following the ever-increasing technological and operational changes (Laney. 2001; Chen, Chiang & Storey. 2012; Kwon, Lee & Shin. 2014).

To add to the complexity of its concept, there are two other aspects that are key to the understanding of Big Data: the low veracity of the information as well as their high value. Those points are essential given that the intrinsic volatility of some data demand reliability from Big Data analysis in order to offer valid insights, which in turn are perceived as the real value of the data. (Wamba et al., 2015; Mayer-Schönberger & Cukier, 2013)

Big Data can be widely used in several different industries independent on their size, provided that some key questions are answered satisfactorily, such as: Can the data be sensed? Can results and insights be generated by the data? Can it be used to improve current processes? Can it create a profit? (Sanders, 2014; Mayer-Schönberger & Cukier, 2013)

There are many reasons that SME´s may find more difficult to adopt Big Data into their processes, all related to their size as well as their financial capability and resources availability (people, time and knowledge) (Labrinidis et al. 2014). Another great challenge is that Big Data *per se* is pretty innefectual, and there is very little that can be done with it, it is its use as a decision making tool and its integration with other disruptive technologies and managerial processes that gives Big Data value (Rowe & Gampenriender, 2018; Labrinidis & Jagadish, 2012; Gandomi & Haider, 2015).

Furthermore, Big Data may bring back to fore the idea of paralysis by analysis (Ansoff, 1965); as Constantiou & Kallinikos (2015) have argued, the fetish for real time data "*undermines long-term planning, and reframes the trade-offs between short-term and long-term decisions*".

Nonetheless, all the discussion now, both academic and amongst executives, revolve around breaking the barriers to adopt Big Data technologies; the benefits of using Big Data efficiently and systematically are no longer a question of how, but of when (Sen, Ozturk, & Vayvay, 2016; Wamba et al., 2015).

3.3 The Strategic Tools Analysed During the Research

The company studied, during its strategic meetings between owners and senior directors throughout the past 10 years, has consistently used several managerial tools to aid strategic planning and decision making. On the present article, four of the most widely used tools will be analysed briefly and the effect of the Big Data variable introduced in the equation examined in order to understand the strategic and operational implications. The tools to be analysed are SWOT & PEST Analysis, Porter's 5 Forcers and the BCG Portfolio Management Matrix.

The SWOT analysis is a tool to examine an organization's internal strengths and weaknesses as well as the opportunities and threats presented by the external competitive environment. It should be useful to the decision-making process for all sorts of situations in business and organizations (Middleton, 2003; Osita, Onyebuchi & Nzekwe, 2014).

To complement the SWOT analysis, the PEST (Political, Economical, Socio-cultural and Technological) analysis is also carried out in order to fully comprehend the framework of macro-environmental factors that in conjunction with the analysis of external micro-environmental factors and internal drivers ensure that the strength and weaknesses part of the SWOT analysis is robust and coherent (Carr & Nanni, 2009; Osita, Onyebuchi and Nzekwe, 2014).

That initial stage is then complemented by the Porter's 5 forces analysis, to carry on a structural analysis of the industry from a strategic standpoint. The forces analysed as well as their interaction are: Threat of new entrants; Threat of substitutes; Bargaining power of customers; Bargaining power of suppliers and Industry rivalry. The interaction of these five competitive forces will determine the ability of the company to earn, on average, rates of return on investment in excess of the cost of capital (Porter, 1985; 2008; Middleton, 2003).

That stage of the analysis required the participation of all senior managers and also smaller session focused discussion amongst departments. The purpose is to identify the level of competition in the industry as well as any potential competitive advantage the company may hold against their main competitors, thus seeking for a sustainable competitive advantage.

The strategy for growth devised by the company studied is initially based on the BCG Portfolio Matrix, focusing on the best ways to capitalize on the Cash Cows as well as to develop the Rising Stars within the current portfolio of products (conferences and tradeshows). The ultimate purpose is to develop a portfolio of products with different growth rates and different market shares (Armstrong & Brodie, 2004; Henderson, 2013).

The table below offers a succinct explanation of the different elements and types of products within a BCG portfolio.

Table 1. The BCG matrix

	LOW MARKET SHARE	**HIGH MARKET SHARE**
GROWING MARKETS	**Problem Child (question marks)** • They usually require more cash than they can generate. • Without cash injections, they tend to fail. • They require large added cash investments for market share to be acquired.	**(Rising) Stars** • It nearly always shows reported profits. • Stars are not cash generators. • They tend to become cash cows, but only if the leadership position is maintained.
MATURE MARKETS	**Pet** • They may show an account profit, however profits must be reinvested to maintain share. • The product is usually worthless except in liquidation	**Cash Cow** • Generate large amounts of cash, in excess of the investment required to maintain share. • The excess need not and should not be reinvested in those products. • Cash cows need a strategy of maintenance and protection activity as well as a thorough cost management plan, as growth efforts will not bear significant fruits.

Source: Based on Stern & Stalk (1998) and Henderson (2013)

The BCG matrix offers a framework to analyse portfolio position based on the function between market share and market growth. Analysing the company position with regards to portfolio management as a strategic tool is one of the most complex aspects of the strategic planning carried out during the three years of the study, as it deals with all major products/services available at the company, measuring their status based on several interconnected elements, such as market share, market expansion, new products, etc. (Stern & Stalk 1998; Henderson, 2013).

4. Research Methodology

Given the nature of the problem of the present research – the impact of Big Data technology on an SME business strategy – its intrinsically qualitative nature and the technical procedures adopted, the research was divided into two stages: Bibliographic & Documental Research and a Participatory & Practical Action Research.

The table below summarizes the overall research process throughout 2014 – 2017.

Table 2. Research process

Research Stage	Timeframe
Bibliographical and documental investigation on relevant literature as well as the internal company documents and reports.	Initial Research – March to June, 2014. Followed by bi-monthly researches and updates until December, 2017.
Brainstorming sessions with the senior management team in order to assess the impact of the findings on the company products/strategy.	10 Brainstorming sessions between July 2014 and September 2014. Followed by Bi-monthly meetings between October 2014 and December 2017.
Strategy review – The main strategic tools used by the company in the last five years (SWOT Analysis, PEST analysis, Porter ś 5 Forces and the BCG Portfolio Matrix) were reviewed taking into account the impact of Big Data.	First review performed in March, 2015. Followed by yearly reviews in 2016 and 2017.
New Strategic objectives – Based on the strategy review, it was analysed how far the impact of Big Data would change the company strategy, what would be the new scenarios and what should be done to maintain the company's competitive advantage.	Strategies reviewed in May 2015. Followed by Bi-annual meetings to discuss progress.

Source: Created by the Author

The results of the bibliographic research were discussed at length with the senior management during ten brainstorming sessions of one hour each across two months (July/September 2014), in order to assess the impact of Big Data and the necessary changes on the company strategy. Afterwards, the conclusions and insights were transcribed, the decision-making process revised and monthly meetings scheduled to discuss the theme.

The second stage of the research can be described as a participatory and practical action research (saunders, lewis & thornhill, 2016; denscombe, 2010; argyris, 2004), given that the author has worked in the company on a senior managerial position for the past 8 years in the area of sales and business development; observing in depth the strategic processes and exerting influence over it. The observations for the present study were carried out during the period of 2014 -2017.

5. Research Observations and Results

It was noted throughout the research-action some direct and indirect impacts of Big Data on the strategic tools used by the company. The observations were made on the following tools: SWOT & PEST Analysis, Porter's 5 Forces and BCG Portfolio Matrix.

Below it can be seen the strategic tools review and how Big Data has affected previous strategic planning/decisions:

5.1 SWOT & PEST Analysis

The 2015 SWOT analysis is presented on the table below. It was the last SWOT analysis done at the company without Big Data being placed at the centre of the discussions. Key points added after the Big Data research/discussion were written in bold.

Table 3. 2015 SWOT analysis (with added points post-research/brainstorming sessions)

Strengths	Weaknesses
• Some of the events are the largest in Europe. • The company has a staff turnover comparatively lower than its main competitors. • The S&M force is quite adaptable and can	• A severe liquidity challenge. • Experienced sales people feel demotivated on taking new products instead of the most advanced ones.

take up new projects in some specific months, without having to grow in number – seasonal demand. • As an SME decisions are taking fast and resources allocated without much delay. • **The senior management team is open and willing to make managerial changes in order to better use Big Data technologies.** • **The products/services are rather adaptable.**	• No database to support the sales force on new markets. • The knowledge of staff is restricted to the main markets the company operates – as they tend to be saturated, it is hard to create new events. • Generally, new events do not bring a ROI in the first two years. • **Despite adopting Salesforce CRM, the company has not got any sort of strategy/operational plan in course to use Big Data.** • **The knowledge of the staff on Big Data is quite limited.**
Opportunities	**Threats**
• The electronic games market, the asset management market and the human resource technologies market is expanding in the Americas, Europe and Asia (Note 3). • Flagship events can be easily geo-cloned, once Sponsors give support to them in order to be taken to different regions. • **Big Data impacts directly all industries serviced by the company; all conferences can be adapted to offer discussions – panels/speakership in that topic.** • **There are new vendors in the market for Big Data who can potentially become new clients (sponsoring events).** • **Big Data is related with other cutting edge technologies (A.I, IoT, blockchain) those areas can also be explored for future events.**	• Smaller competitors' events may compromise considerable chunks of revenue for new events in different markets especially on Mobile Games. • The geo-cloning strategy compromises the entire event brand in case of failure. • **Larger competitors have the means to adopt both technologies and to hire professionals that can utilize Big Data as a competitive advantage.** • **Big Data may compromise the whole conference/tradeshow industry in the future (as marketing and sales become more and more automated).**

Source: Adapted by the Author.

The Big Data technology has a direct impact in the whole business, as 100% of the studied company's clients are affected by Big Data trends. Despite the liquidity limitations the company faces, adapting the conferences and tradeshows to assimilate that topic does not cost anything extra, so the first step to prepare for a Big Data strategy has been taken throughout 2015/16, when all events had panels/speaking positions/fire chat discussions around that topic.

Given that Big Data has opened a wide range of threats and opportunities alike, the senior management team decided that the SWOT analysis should be now made twice a year to keep up with the flow of transformation.

In 2015, it was decided that adapting to the Big Data technologies scenario was the most important strength to be acquired in the next 24 months. Whereas it cannot be still considered an inherent strength of the company, the senior management willingness to follow this path is a cultural strength that has been slowly but steadily making a difference.

As the PEST analysis focus exclusively on macro-environmental factors (Middleton, 2003), the research did not affect profoundly the way it was carried out neither some of the main observations. However, due to the impact of Big Data on the technology sphere, it is now considered the most important factor in the PEST Analysis for the company. Whereas political, economic and social factors can be still analysed on a relatively homogenous and

structured way, technology changes need to be seen from their heterogeneous nature and the company has to be prepared to act promptly to those changes, adapting their final product on a very short notice.

5.2 Porter's 5 Forces

Porter's 5 forces analysis have been utilized by the senior management at the company studied to help determining their strategy for over 10 years; it's focus on the microenvironment – the forces close to the company – complement both the PEST Analysis and the SWOT analysis, giving a robust frame for strategic decisions. (Porter, 2008)

It is reviewed yearly given the volatility of the market. Below is the 2014/2015 analysis, the last one made without bringing Big Data to the centre of the strategic discussions, the changes occurred during/after the research are subsequently discussed.

As to establish the level of each of the forces, the senior management at the company choses three categories: Low, Medium and High. The table below resumes the analysis; as well as the impact of Big Data into the conclusions.

Table 4. The impact of big data on the Porter's 5 analysis at the company

	2014/15 Forces Analysis	**Big Data Influence**	**Level of the Threat According to Senior Management**
Threat of New Market Entrants	Lows costs allow for new conferences companies or for consultants/ publications to decide to organize their own events. Competition is global on most events and client base tends to be scattered.	Big Data when incorporated into other specific topics (asset management, HR, Sales & Marketing, etc.) will stimulate a surge of new conferences/ tradeshows, making the overall market more competitive and reducing profits.	It will remain high and possibly even more competitive on the long term.
Threat of Supplier Power	Practitioners in each industry provide speakers for the conferences; there is direct benefit for companies to provide speakers; however, as there is no formal contractual links, they can turn the conference down at last minute. A well strategized account management process has allowed for good relationship with key clients, which helps the speaker acquisition process.	Given the limited number of experts acquainted with Big Data, top speakers will be much more difficult to be acquired.	The supplier power will increase dramatically. It was considered medium until the 2014/15 analysis; but since experts will be able to charge higher to speak at events and choose from a wider range of options, profits will be restricted and their power increased to High.
Competitive Rivalry	There are a growing number of global competitors, most of them large organizations. All events/tradeshows have been copied at a certain point by new or	The use of advanced CRM able to process customer information more efficiently will demand a more sophisticated marketing & communication process, increasing competition.	Rivalry, which was already high, will increase with new events or new structures/agendas for traditional events.

	traditional competitors. Aggressive sales strategies seem to be the main differentiator, especially with less established events.		
Buyer Power	There are many choices in the marketing, including free events. Some of the buyers are large corporations, with considerable budget. Networking is vital to industries, and conferences are still seen as a proper channel to achieve that. Time has become an issue and even with budget available, high executives are weary about leaving their offices for more than one day.	The increase use of Big Data Technologies and other relevant technologies will make the educative side of conferences/tradeshows less relevant, thus attendance will occur mainly for networking in a growing level, reducing the number of times an expert need to attend a conference.	Truly effective events will become scarcer and new events should appear; the buyer power should increase from medium to high.
Threat of Substitute Products	Webinars and e-commerce are new technologies that are challenging the traditional conference/tradeshow format. There are cheaper alternatives to promote networking (one of the main reasons clients attend events) such as social media.	With the advance of Big Data and Artificial Intelligence, many events will become obsolete and irrelevant; the whole business model may change in few years.	The threat already high should become even more pronounced as competition becomes more multifaceted.

Source: Porter (1985) adapted by the author.

Considering table 4, it is possible to affirm that Big Data has a continuous and systematic influence over all 5 forces and in every scenario perceived; it will increase competition, reduce overall profits and affect the nature of the products/services within the company portfolio.

Furthermore, it will also affect the very nature of the businesses of main clients, who should adapt their overall strategy to make use of a larger and more dynamic flow of information, changing their networking strategies as well as their training methods, the two most relevant points catered by the conference/tradeshow industry.

5.3 The BCG Matrix Analysis

The company studied has been adopting the BCG Matrix to analyse its portfolio of products for the past 6 years, having been able to create some successful new products and renew the lifespan of more traditional ones.

The company adopts a geo-cloning strategy around its Cash Cows; all major events that have matured and demand a minimum investment. The Geo-cloning strategy seems to be the best strategy to turn Rising Starts into Cash Cows, as the new event can be consolidated using the same formula initially used by the Cash Cows whilst the new markets grow and get mature. However, there is a risk of Rising Stars not becoming Cash Cows, as new products – similar

events in different geographic locations – may not grow in the expected rate; and new market entrance, especially in Asia, is fraught with barriers.

The company has no Pets, which is a sign of branding strength, however, without consolidating the Rising Stars, the risk of losing the leading position in the market or losing profitability even being a leader in certain events is high, which is the main threat of a geo-cloning strategy based on diversification.

The main issue with the company's portfolio management is that about 40% of its events launched in the past five years failed to become Rising Stars – despite using Cash Cow's models, falling into the category of Problem Childs. The failure ratio goes up to 100% when considering the events launched in Asia. On top of that, 30% of the more traditional Cash Cows had been losing revenue as the demand is declining and no new ways to renew them have been found.

Big Data will not change the portfolio management strategy on a short term; nonetheless it can be used to tackle that challenge from two different angles:

A. The topic has been incorporated in the events to refresh the Cash Cows, giving them a new edge and attracting new clients/sponsors. As previously stated, 100% of the company's events are targeting industries heavily affected by Big Data (Asset Management, Electronic Games and Human Resources).

B. The use of a more advanced CRM system may help the company in their market and communication effort, turning the data into a competitive advantage to retain current clients and reach new ones.

The key priority for the use of Big Data in the portfolio management, as agreed by the senior managers during the research, was to ensure that Problem Childs become Rising Stars by optimizing the event launching process in new markets, with a more efficient data usage.

6. Conclusion

The present work analysed the impact of Big Data on SMEs strategy, focusing on the strategic planning of a British company of small size and the influence over the strategy tools normally used by their senior managers.

The company, in order to build sustaining competitive advantage, aligning its strengths with the external market, had been making use of traditional strategic planning techniques and tools (SWOT and PEST Analysis, Porter 5 forces and the BCG Matrix) for several years.

The effect on Big Data on the use of strategic tools was mainly determined by the nature of the data transformation on each the 5 Vs previously analysed (volume, velocity, variety, veracity and value) within the business context. Given that information is the essential input for any strategic tool, that change of nature and context affected mainly its operational side (more data to be added to the analysis and new insights), the impact on the results of such insights remains to be seen.

Throughout the three years of the research, from 2014 to 2017, the use of the strategic tools as well as the study of the relevant literature on Big Data has opened a wide range or alternatives that the company can take to further benefit from Big Data technologies in order to improve their CRM, optimize operational efficiency and also innovate their business model.

Big Data does not necessarily encourage the change of the strategies tools used by SMEs in general or the company studied in particular, but rather, it allows for those tools to be used more efficiently by giving access to essential data that can now be collected about the business environment which, in turn, can enable the company to remain competitive by responding seamlessly to market disruption and change and by adding value to its products and services.

There were two main direct changes within the company operations and strategy throughout the research process:

A. The company adopted Salesforce as their CRM tool, allowing the sales team and producers to access seamlessly the data generated by the marketing department such as email clicking rates, downloads, unsubscribe rates, etc. The next step on that path is to define the best practice for data collection and ensure that the team will adopt it and there will be departmental integration.

B. The company has changed their products/services (the content of the conferences) in order to incorporate the Big Data topic to their audiences. Furthermore, the research time for the conferences was extended, but the launching time shortened, thanks to the more abundant flow of information and the need to make rapid changes to the calendar or the conference agendas based on new technologies/trends appearing.

The latter point was rather important for it has demonstrated that the impact of Big Data on the company's strategy occurred before the company had adopted any internal Big Data strategy or process, which reflects the all-encompassing nature of that phenomenon which has already affected the whole tradeshow/conference/business intelligence industry.

Also, the company has adopted new objectives to further implement Big Data technologies and improve their strategy planning; below are the most relevant ones:

A. Diversify traditional revenues sources – Big Data technologies can change the whole monetisation scenario. Thanks to wearables and IoT; it is now possible to collect onsite key information from clients, which is very useful to the major conference/tradeshow sponsors and partners in order to maximize their own marketing & communications strategy.

B. Improving the CRM process – The company seeks now to be able to better process the information from clients and prospects alike, by enabling the development of innovative services, exploring new industries, business models and ecosystems and giving support to the geo-cloning strategy.

C. Data mining and data monetization – LinkedIn and other social media are ripe with relevant information that can be used in the conference/tradeshow industry, mining that information is now a key objective at the company.

It is possible to conclude that the effect of Big Data on SMEs strategy is a rather complex subject and hardly any definite conclusion can be taken; however, it is also possible to argue that the cultural willingness from the senior management to adopt those technologies and to adapt their companies is the vital element to ensure that Big Data will make strategy more efficient to SMEs.

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Notes

Note 1. The owners agreed to the publication of the article provided the name of the company as well as any key financial data was not published.

Note 2. Geo-cloning – The strategy of taking flagship events alongside their key multi-national partners (sponsors and exhibitors) reproducing them in completely new territories, maintaining the same modus operandi, which allows for the scalability of the process as well as mitigating the risks. (COSTA, 2012)

Note 3. The projects the company runs targeting those industries represented 90% of its revenue in 2016/17.