CATÓLICA LISBON
SCHOOL OF BUSINESS & ECONOMICS

UNIVERSIDADE CATÓLICA PORTUGUESA

IBM Smarter Buildings

Strategic Alliance –Friend or Fowl?

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Supervisor: Professor Nuno Cardeal

Dissertation submitted in partial fulfillment of requirements for the degree of MSc in Business Administration, at the Universidade Católica Portuguesa, June 2013

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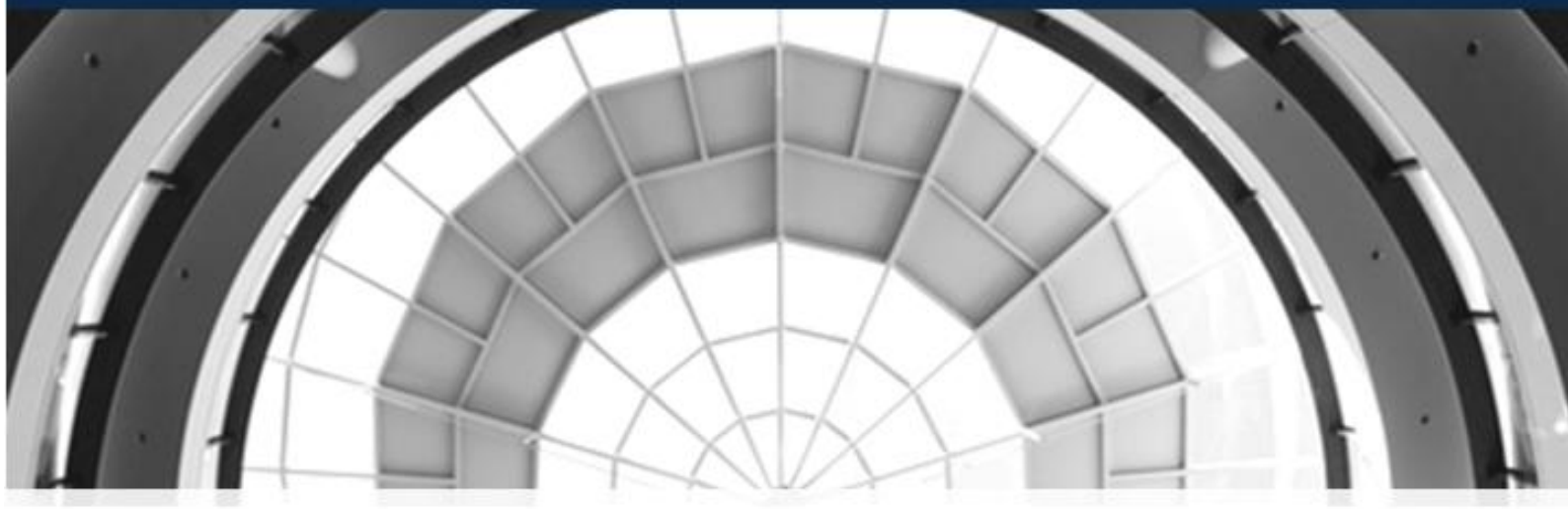

Smarter Buildings

Strategic Alliance – Friend or Fowl?

IBM

Author: **Roxana Schimilechis**
Supervisor: **Professor Nuno Cardeal**

Abstract

Title: IBM Smarter Buildings -Strategic Alliance, Friend or Fowl?
Author: Roxana Schimilechis

This thesis aims to provide a teaching case study in the area of strategy by developing the strategic alliance case of IBM and Schneider Electronic in Portugal. The goal is to offer students a ground for class discussion where they can apply strategic frameworks to a practical case.

IBM, one of the largest multinational technology and consulting corporation is presently introducing a new product: an energy management solution for buildings. In order to ensure the success of the new product IBM has to decide on a market entry strategy. One of the possibilities at hand is to engage into a strategic alliance with another company, possibly Schneider Electric.

This topic of strategic alliances will form the focus of this case study. The strategic decision of whether to enter a partnership will require the analysis for main implications, potential advantages and practical challenges of such.

The paper is divided into three sections: The first presents the case itself with an introduction of the main characters, the companies and the business situation. The problem structure and business decision is presented with detailed background information on the current market and competitors.

The second part contains the literature review where relevant theory and useful frameworks are presented. The literature works as a linkage between the case study and the teaching note in the last section.

The teaching note gives detailed guidelines for instructors on how to apply the case in class and suggests main discussion topics and key questions to allow in-depth analysis for students.

Resumo

Titulo: IBM Smarter Buildings - Aliança Estratégica
Autor: Roxana Schimilechis

A presente tese desenvolve um caso de estudo académico na área de estratégia, documentando a aliança estratégica entre a IBM e a Schneider Electronic em Portugal. O objectivo é oferecer aos estudantes uma base para discussão na sala de aula, para que possam aplicar ferramentas estratégicas a um caso prático.

A IBM, uma das maiores empresas multinacionais de tecnologia e consultoria, encontra-se actualmente a introduzir um novo produto: uma solução de gestão energética para edifícios. De forma a assegurar o sucesso deste novo produto, a IBM tem de decidir qual a estratégia de entrada no mercado que deve adoptar. Uma das possibilidades é desenvolver uma aliança estratégica com outra empresa, possivelmente a Schneider Electric.

O tópico de alianças estratégicas será o foco deste estudo de caso. A decisão estratégica sobre se a IBM deve ou não formar uma parceria irá requerer a análise das suas principais implicações, potenciais vantages e desafios práticos.

O estudo encontra-se divido em três secções: a primeira apresenta o caso em si, introduzindo as personagens principais, as empresas e o contexto empresarial. A estrutura do problema e a decisão a tomar são apresentados em conjunto com informação detalhada sobre o mercado e concorrentes actuais.

A segunda parte contém uma revisão de literatura, na qual são apresentados a teoria e ferramentas de análise relevantes..

A nota de ensino dá orientações detalhadas aos professores sobre como aplicar o caso de estudo no contexto da sala de aula.

Acknowledgments

First, I would like to express my gratitude to my mentor Helder Carreira for his valuable insights. I would like to thank him not only for providing me expert knowledge on this project but also for his guiding advice and support at all times.

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Furthermore, I am grateful to my parents for their unrestricted support.
I would like to thank my family that has truly made me understand the value of education.
Especially my grandpa who has inspired me to embrace the value of learning.

Lastly and very importantly, I appreciate my friends support that has kept my motivation and spirits high throughout.

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This case study is based on real business situations but contains some fictional elements that differ from reality.

Names of characters have been changed.

I CASE STUDY

Roberto Santos entered the IBM offices in Lisbon. This day he had come especially early and the building was unfamiliar quiet, only a few people had already come to work. He passed security and entered the elevator heading up to his new office room which he had received due to his good performance on his latest project.

1. IBM

Founded over 100 years ago, today IBM (International Business Machines) is by revenue the world's largest providers of information technology and B2B solutions. IBM products include hardware and software. Revenue is coming also increasingly from a range of consulting and outsourcing services.

In 2012 IBM had revenues of 104.5 billion U.S. dollars and currently employs approximately 430,000 employees in over 170 countries. (For further details see Exhibit 1). In worldwide established teams and in cooperation with about 100,000 business partners, IBM supports businesses of all sizes with projects across national borders while developing individual and flexible solutions. With its core competencies IBM is competitively positioned in the market and defines itself as a globally integrated company with a long-term and sustainable growth model.

Furthermore, IBM is seen as one of the strongest brands in the world. With a customer focus and their sales value IBM combines its industry and solution expertise, whereby the business units are organized regionally and by sector. The customer benefits from specialized teams with extensive industry knowledge and an integrated local relationship.

In the high performance computing server market, IBM holds a 29% market share in the first quarter of 2012 and has been market leader by revenue. Also in IT outsourcing IBM is market leader and strives to enhance its market share of 10.9%.[1] Furthermore, IBM is also the overall leader in middleware software based on total worldwide revenue for 2011 with a growth rate of 12.4% .[1]

In recent years, IBM has been able to successfully shift its revenue generation to new markets and towards more high value business. As such, services segment contributed to 41% and software contributed to 45% of the overall profit by the end of 2012. This boosted profitability on a continuous basis.[2] (See Exhibit 2)

[1] (Marketline, 2013)
[2] (IBM Annual report 2012)

In addition IBM has put a focus on high growth markets worldwide. (See Exhibit 3). Growth is changing to emerging nations and core clients are expanding operations into these markets. For this reason IBM has started to tap into these opportunities to keep hold of existing and potential clients.[1]

Furthermore, in order to diversify its portfolio and enter into new markets IBM has pursued acquisitions and global partnerships.[2] Since 2000, the company spent over $75 billion towards acquiring more than 130 companies. (See Exhibit 4). This strategy enabled IBM to drive strong growth in focus areas and to gain a broader network to strengthen its business offerings.[1]

2. Smarter Buildings

Last year Roberto Santos had taken on the new project "IBM Smarter buildings" for Portugal which is an energy management solution that aims to reduce energy consumption in buildings. Through collecting energy use information and analyzing this data, recommendations can be given on how to reduce costs for energy. This is achieved through better management of physical and digital infrastructures. The three selling characteristic for the new product focus on reliability, cost effectiveness and sustainability. Roberto was now the product manager for Smarter Buildings in Portugal and had the task to develop the strategic concept for this new product.

Smarter Buildings: Energy Management Information System

To make cities overall more efficient IBM has created new solution offerings under the name "Smarter Cities". These include combined IT and service packages for different areas such as public safety, healthcare, education and buildings among others. (See Exhibit 5). Looking at revenues, the growth of these Smarter Cities solutions increased 25% from 2011 to 2012. (See Exhibit 6).
Especially the topic of buildings and energy management is an interesting area. Air-conditioning, lighting, water, elevators, power and cooling for technology: In 2025 buildings will use up more energy than any other category of 'consumer' and are therefore a crucial cost factor. Worldwide, buildings consume 42% of all electricity—more than any other asset. In the US they account for even 70 % of energy consumption.[3] By 2025, buildings will be the largest emitters of greenhouse gases. To address the growing market of energy management IBM has created a new product: "smarter buildings". The concept of smarter buildings is to provide a solution to better manage facility energy and reduce operating costs by combining software with consulting services. The software tool analyzes the main reasons for energy consumption and then different ways for more efficiency are identified.

Also, the trend towards more consciousness for environmental impacts has increased and companies are searching for ways to reduce the harm and the release of emission gases. Awareness for these issues has been rising and consumers increasingly prefer companies that operate in an environmental friendly way.

[3] (IBM, 2013)

3. The Energy Market in Portugal

Roberto Santos entered the 3rd floor. Usually there were many co-workers hushing around and the sound of talks would fill the air, but he found himself almost alone on the 5th floor, only the secretary was already there. Luisa Azevedo greeted him: “Sir, it is indeed a big day today. I rescheduled your meeting with your boss Alexandro Nilto for 2pm so you will have some time to prepare yourself after lunch. He expects that you present him the Smarter Building case. The meeting of the board for the final decision is already next week. Nilto wants to hear your suggestions and a market overview with current trends.”

General developments in the energy market

With the solution of “Smarter Buildings” IBM is introducing into markets all over the world. The entrance into the Portuguese Market poses a special case and is interesting to explore in detail.
In the last few years Portugal's energy market has been in a major restructuring process. The long-term market liberalization was accelerated by the economic crisis and the strict measures imposed by the troika. The partly state-owned electricity company EDP the energy infrastructure holder REN were sold. Additionally, the last state regulated energy prices were eliminated in 2012 and 2013.
Currently, the new Portuguese government under Prime Minister Passos Coelho puts great emphasis on the environment, the climate and energy policies. It is mandatory for the government to adhere to existing EU agreements that define international standards objectives for energy efficiency. One of the main ones is the ENE 2020 that sets specific energy savings objectives. Coelho has proclaimed to not only fulfill these goals but to even achieve a higher result and surpass them.

Portugal not only follows international standards, but government also implements programs to support and promote energy savings. In 2008 the previous government under Jose Sócrates had adopted the national Energy Strategy "Plano Nacional de Acção Energetica de Eficiencia (PNAEE)[4]".
It provides general policy objectives such as security of supply, price stability, increased competition, increased quality of services and a reduction in energy dependence. Additionally to this it also focuses on investments in renewable energy and energy efficiency measures. A central component is the promotion of energy efficiency, especially in the key areas of transport, buildings, industry and public administration. The aim is to reduce the total energy consumption by 20 percent until 2020. Moreover, the aim is to create 121,000 new jobs in the areas of renewable energy and energy efficiency.

The Energy Services Regulatory Authority (Entidade Reguladora dos Serviços Energéticos) promotes to increase efficiency in energy consumption through various activities. The aim is to not only raise awareness but encourage an active participation towards efficient energy consumption in terms of sustainability. With the program of PPEC5 financial incentives are awarded for measures that improve

[4] (PNAEE, 2012)
[5] (Entidade Reguladora dos Serviços Energéticos, 2010)

efficiency in electricity use by suppliers, network operators and companies. High amounts of financial aid are given to companies to support them with implementation of energy saving methods. (See Exhibit 7).

Energy production and consumption

Due to a lack of local fossil resources Portugal's energy sector is characterized by a strong external dependence on primary energy sources. In 2011 77.1% of total primary energy was imported in the form of crude oil, gas, coal and partly electricity. In the same year the net import balance of energy products in Portugal amounted to around 7.1 billion Euros, which is an increase in expenditure of about 27.7 percent over the previous year 2010 (EUR 5.5 billion). Two factors were responsible for this increase: The general cost rise for energy products in the international markets of about 30 percent and the depreciation of the euro against the dollar of about 5 percent.[6]

In 2011, about 22,675 kt RÖE primary energy was consumed in Portugal.[7] The fossil fuels had a share of 76.1 percent of the total primary energy supply, oil prices had a share of 45.8 percent, natural gas of 19.7 percent and coal of about 10.6 percent. Exhibit 8 shows the structure of primary energy supply between 2005 and 2011. It is important to note that overall energy consumption has decreased over the years due to more efficient use but there is still high potential to decrease it further. A breakdown by sector from 2010 shows that 36.6% is used by to the transport sector, followed by the industry with 29.6%, households with 16.6% and services sector with 11.4 percent.

Price development

Also gas prices has been rising by 30 % from beginning of 2010 of 7.62 € / GJ to 10.59 €/GJ (Gigajoule). These prices still lay below the European average price levels but are mainly due to state support. In the past the state has set fixed prices to offset the price fluctuations for energy in the international markets. However, due to the liberalization of the energy market prices have risen and will rise in the future.

4. Market for Energy Management Information Systems

Santos entered his office, turned on the lights and sat down. "So far this project has been on a good track" he thought. "We have defined the market and are soon launching this solution. I think it is a great project with a good value proposition for customers. Especially in the future we will invest in research for the technology and potential savings for customers will even increase."

Santos poured himself a strong coffee while thinking he will need a few more coffees today. "But now the project has taken a more complicated turn and I really have to find a good decision. This market is very

[6] (DGEG, Portugiesische Energierechnung , 2012)
[7] (DGEG, Portugiesische Energierechnung 2011, 2012)

strict in terms of legal requirements and the solutions we will offer need specific certificates. I should also have another look at the market data."

General Market Environment

The smart building industry has been developing fast over the past years. Especially technological development has made it easier to manage energy. These advances have considerably broadened the energy topic, engaging both facility managers and CEOs. The effects of the global economic downturn can still be still felt throughout the building and construction industries. Research has continuously made an effort to uncover new opportunities to improve energy usage in existing buildings. The significant market potential for energy efficiency has hardly been explored today and there is high potential.

Smart buildings use a wide range of technologic solutions that improve energy efficiency and are still continuing to evolve fast. Especially the trend of environmental consciousness of consumers started to increase demand for energy friendly production and operations methods. Companies are starting to raise their budgets to reduce the environmental impact and are constantly looking for new ways and technologies to do so.

However, the challenge that integrators have today is how to put these systems together to maximize profitability and offer better product than competitors. The value proposition for many of these technologies has been demonstrated and a growing number of building owners are starting to adopt them with positive results.

But for many the effort and purchase price of these systems is still too high compared to the relative low savings to be gained from it. Financial savings can only be achieved in a long-term perspective. However, in the future the technology will continue to develop and thus potential savings can be increased and the initial cost decreased. Specialists project that demand for smart building technologies will continue to grow and markets will evolve fast.[8]

Global Market Volume

IBM's product 'smarter buildings' can be classified into the market of energy management information systems (EMIS). The global market for EMIS equipment and services is estimated at $60 billion in 2010 and is expected to reach a value of nearly $70 billion by 2015 at a compound annual growth rate (CAGR) of 3%.[9] There are estimations that the U.S. market for EMIS equipment and services will exceed $32 billion in 2010. This is largely as a result of federal funding under the 2009 economic stimulus bill. [10]
The total value of the EMIS market outside of the U.S. is estimated at $28 billion in 2010 and should reach $41 billion in 2015. The European market has a projected 2010-2015 compound annual growth rate

[8] (Gohn, 2012)
[9, 10, 11] (BCC Research, 2010)

(CAGR) of 6.4% and Asia-Pacific 9.1%, while other countries as a group are projected to grow at a CAGR of 8.7% over the next 5 years. [11]

5. Competition in the market

Santos thought: “These figures look all good, but my major concern is that the market for energy saving software solutions is highly competitive. IBM is not a leading player in the energy sector itself. Further, we are currently in the time of economic downturn and still, expectations of customers are steadily rising. We have to see how to deliver quality solutions at an affordable price.”

It knocked on the door and his colleague Henrique Barcellos entered. They were both working together on the Smarter Buildings project. Barcellos greeted: “Good morning, Santos. I have looked at the competitors for the Smarter Building project as you had asked me to.”

He put some papers down in front of him and explained: “The most direct competitors for the product Smart Buildings by IBM are mainly IT companies that offer energy management and optimization software for buildings. The market is fairly fragmented and biggest competitors in the industry include Johnson Controls, Honeywell and General Electric.

Direct global competitors

Johnson Controls

Johnson Controls delivers products, services and solutions that have the goal to increase energy efficiency and lower operating costs in buildings. The company has more than one million customers in 150 countries, but mainly in America. Their competitive advantage lies in access to distribution channels through their product portfolio and economies of scale as they are involved in more than 500 renewable energy projects.

Siemens AG

Europe’s biggest multinational engineering and electronics conglomerate is also involved in the building management systems with automation solutions. Siemens AG offers a diverse range of automation systems (e.g. Desigo, Synco) individualized for customers and all types of buildings, sizes and usage levels.

Honeywell

An important competitor who is industry-leader in providing energy services in North America, Honeywell first introduced the concept of guaranteed savings in 1984. To date, they have completed nearly 5,000 Energy Savings Performance Contracts accounting for about $3.5 billion in savings at government facilities and industry buildings among others.

General Electric

General Electric has invested more than $4 billion in Energy Management capabilities, with 14 strategic acquisitions and joint ventures that enable GE to increase its offerings to the utility, industrial, renewables, oil & gas, marine, data center, metals and mining industries. Competitive advantages include technological expertise and economies of scale due to their firm size. [12]

Other competitors

Besides these 4 major global competitors, there are also some smaller direct local competitors in Portugal such as Homeenergy (part of Martifer) and Knowatt (Envi Technology). However, the global players pose a higher threat of competition.

Also there is a rise in the number of competitors from foreign-based firms. Especially the trend towards IT outsourcing to emerging markets such as India and China has been rising. The competition from these offshore players could potentially pose the biggest threat, especially in the IT outsourcing space.

Other competitors that are not direct, but should be taken into account are energy providers. These companies are interested to sell as much energy as possible and would oppose eventually the use of energy saving solutions. These include energy companies on production and distribution side, mainly EDP who is dominating this market.

6. Challenges in the market

All of a sudden Barcellos made serious face and said:

“I also have some worrying things I found out. There are a few IT companies that actually tried to enter the market of energy management software for buildings and exited within 12 to 24 months. And we are not talking here about some small players, but giants like Microsoft, Google and Cisco Systems. Namely, Microsoft entered with its product Microsoft Hohm, Google with PowerMeter and Cisco Systems with Mediator.”

Product failures: Cisco Systems, Google PowerMeter, Microsoft Hohm

[12] (Electrics, 2013)

All three companies offer software solutions as their core business. They extended their product range into this new unfamiliar market of energy efficiency software for buildings where they all encountered similar problems and challenges.

Cisco Systems serves as an example to explore this further. Cisco Systems is the "worldwide leader in networking that transforms how people connect, communicate and collaborate". Ciscos Mediator is similar to IBM's smart Buildings where Cisco's uses it's networking skills to connect software networks that are being used to heat, cool and operate big commercial buildings.

Cisco provides "powerful technology based solutions that integrate and elevate building systems to global IT standards. Cisco's vision is to open up the traditional building automation systems (BAS) by using the interoperability of its technology." Customers include Netapp and Accenture[13] where Cisco installed mediator infrastructure and meters that allowed collecting and accessing data inside facilities. Then this data was analyzed by Cisco's software to give recommendations on how to optimize each facility and take corrective actions in order to reduce energy and maintenance costs.

After two years of entry Cisco announced in August 2011 that it will exit the building management software services and also the home energy management market.[14]

Expert opinions

Barcellos said: "I thought we need to look at these challenges further and I have asked for opinions from some business experts. I have to get back to some work but I will leave you the mails with the responses. When you find time, have a look at them."

Katie Fehrenbacher at GigaOm summarised the challenges that Cisco encountered as following:

> *"As Google and Microsoft found in their forays into energy management, Cisco's market expectations went unmet. The market has been slow to develop, utilities have proven hard customers to develop, and consumers have been all but indifferent to the hype around home energy management software."* [15]

Marcus Torchia, an analyst at Denver, CO-based IDC Energy Insights:

> *"Home energy management is a crowded space with lots of solutions in the market place. Traction is limited as utilities have not fully figured out how to tackle the in-home technology frontier to enable increased consumer participation in energy management.*

[13] (SULLIVAN, 2008)
[14] (Systems, 2013)
[15] (Fehrenbacher K. , 2011)

Cisco management is under Wall Street pressure to trim 'fat' and boost profitability in the face of a prolonged weak macro-economic environment and slow growing enterprise networking equipment market. The utility sales cycle is long and Cisco needs results yesterday." [16]

Another challenge in the market is the very high investment that still yields relative low long term savings compared to the effort and price of purchase. Also the problem of software piracy could be a potential threat, especially from emerging countries.

Felix Lopez, from Service at Pacific Gas and Electric Company explains that:

"The real issue is the people running these systems need better "human to machine" interfaces, and the ability converts data into knowledge that enables them to make quick decisions. There are still a lot of legacy systems out there in need of upgrades but at a reasonable cost."[17]

7. Possibility of Partnership

Santos finished reading the new information and thought to himself:

"These are all challenges that will be crucial for our success. With the time pressure from my boss I need to come up with a final strategy for the new product. There are already significant competitors that are well known. They have established sales and distribution channels and also stronger long-term customer relations. IBM is an expert in software and services, but not too familiar with energy. We might be missing the expertise to enter in this unfamiliar market."

Santos was disturbed in his thoughts by the ring of the office phone. It was again Henrique Barcellos: "Listen, something has crossed my mind: What about we enter the market in a partnership? There are many possibilities, but I have thought about Schneider Electric. IBM always had a good business relationship with Schneider Electronics in America and they had cooperated on many projects."

Santos: "That is interesting, but it would take a long time to go into negotiations with them."

Henrique Barcellos:"Not necessarily, in 2011 IBM and Schneider Electric had signed a global alliance agreement for smarter buildings. IBM has been noted as the prime contractor. This means that all projects developed from this partnership would be sold and marketed as IBM. Since we are the dominant player with revenues of $106 billion in 2011 against $24 billion of Schneider we have the negotiation power. Actually I already arranged to meet for lunch with Carlotta Ferreira from Schneider. 1pm at the Rooster Club. You should come, they have the best pancakes in Lisbon."

Santos: "Thank you, Barcellos. I still have my doubts but this sounds like an interesting possibility. I will join for the lunch with Schneider."

[16] (Torchia, 2011)
[17] (Aston, 2011)

8. Schneider Electric

Santos went down with his colleague to the restaurant where Ferreira was already waiting for them. Over lunch Ferreira told them more about Schneider Electric.

Schneider Electric is a global specialist in energy management with operations in over 100 countries. The company offers integrated solutions across various market segments. These include leadership positions in energy and infrastructure, industrial processes, building automation and data centers. Schneider electric has further broad presence and experience in residential applications such as buildings. Their business focus lies on making energy safe, reliable, and efficient. Currently, the company employs over 100,000 people and has sales of more than $22 billion in 2009.[18]

Ferreira explained to them that Schneider Electric was interested to extend the global alliance that IBM has with them into a local one. This would allow IBM, the global leader in information systems to join forces with Schneider Electric, an international specialist in energy management.

Further Ferreira explained that partnerships are on the rise in the energy building industry since the sector is highly fragmented. On the equipment side only a handful of leaders, including Schneider Electric, have large and multinational presence but most of the market is divided up among thousands of smaller companies with a relatively narrow focus on region or technology. However, this vendor-specific market control is starting to break down, as the demands of energy efficiency and energy management require considerable integration. Also, nowadays the key is to enter the market fast and capitalize on the first mover advantage. If a buyer would theoretically want to switch to another supplier, there will be immense additional costs and efforts: significant costs in terms of time and human resources. Since the software solution is a major investment and very individual to the company it will be almost impossible for other competitors to deliver compliant software or services to the existing product.

9. Partnership?

After the lunch Santos arrived back in his office and explored more closely the possibility of a partnership. It was true what Ferreira had said: As demand for smart buildings grows, so does demand for end-to-end solutions for energy efficiency. This need for end-to-end services will push players to create alliances that connect gaps in service offerings and opportunities to mutually reinforce one another, rather than compete against each other. Also that the IBM headquarters in New York has signed a global alliance with Schneider Electronic made the process of partnering with Schneider much easier and faster. He liked the idea of a partnership but was not convinced yet. In 30 minutes he already had to meet his boss and suggest this new possibility to him.

[18] (Electric, 2013)

10. Time for decisions

Santos went to the meeting room to see his boss Alexandre Nilto already sitting down with a coffee. He was concentrated on reading some papers in front of him.

“I know you have been working hard on the project of Smart Buildings. Let us talk about future decisions. We need to make some strategic decisions on how we will enter the market and where we will continue with this project.”

Santos sat down and took out the notes he had prepared. He explained:

“Let me summarize what I have found out and thought about so far. In the past, vendors often designed products in a way that they would not be compatible with other products and thus not work with competitor’s products to ensure an exclusive long-term market for replacements and upgrades. This has changed. Currently companies are moving away from proprietary products and communication protocols and converging on a few industry favorites that will guarantee them a leading spot. Leaders in the energy management for buildings might have different views on which business models is the best energy efficiency services, but most seem to go in the same direction: There are significant advantages to enter a partnership. This is having a dramatic effect on the way companies design and market their products; we need to think closely about this possibility to partner with Schneider in order to stay competitive.”

Nilto: “I am not convinced yet. Do you really think the partnership will create added benefit? I have to sit down to have another look at this and understand what are the advantages and disadvantages. So, what are we going to do? We only have until next week to decide. I have to give the board our final decision.”

II Exhibits

Exhibit 1: IBM External revenue and gross margin results 2012 + 2011

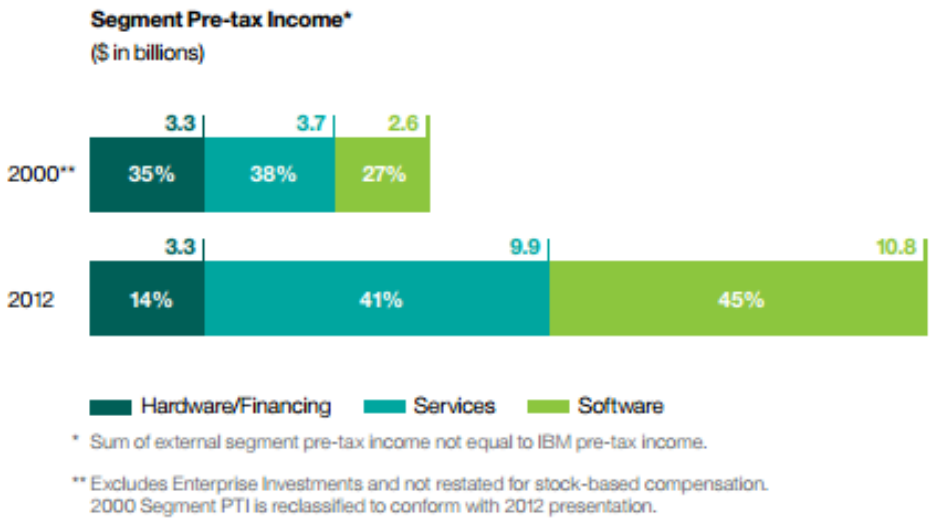
($ in millions)

For the year ended December 31:	2012	2011	Yr.-to-Yr. Percent/ Margin Change	Yr.-to-Yr. Percent Change Adjusted for Currency
Revenue				
Global Technology Services	$ 40,236	$ 40,879	(1.6)%	1.3%
Gross margin	36.6%	35.0%	1.6 pts.	
Global Business Services	18,566	19,284	(3.7)%	(1.6)%
Gross margin	30.0%	28.8%	1.2 pts.	
Software	25,448	24,944	2.0%	4.3%
Gross margin	88.7%	88.5%	0.2 pts.	
Systems and Technology	17,667	18,985	(6.9)%	(5.9)%
Gross margin	39.1%	39.8%	(0.7) pts.	
Global Financing	2,013	2,102	(4.2)%	(1.2)%
Gross margin	46.5%	49.8%	(3.3) pts.	
Other	577	722	(20.1)%	(18.7)%
Gross margin	(71.6)%	(54.5)%	(17.1) pts.	
Total consolidated revenue	$104,507	$106,916	(2.3)%	0.0%
Total consolidated gross profit	$ 50,298	$ 50,138	0.3%	
Total consolidated gross margin	48.1%	46.9%	1.2 pts.	
Non-operating adjustments				
Amortization of acquired intangible assets	375	340	10.3%	
Acquisition-related charges	1	1	13.1	
Retirement-related costs/(income)	264	2	NM	
Operating (non-GAAP) gross profit	$ 50,938	$ 50,481	0.9%	
Operating (non-GAAP) gross margin	48.7%	47.2%	1.5 pts.	

NM—Not meaningful

Source: Annual Report IBM 2012

Exhibit 2: IBM Income by sector



Source: Annual Report IBM 2012

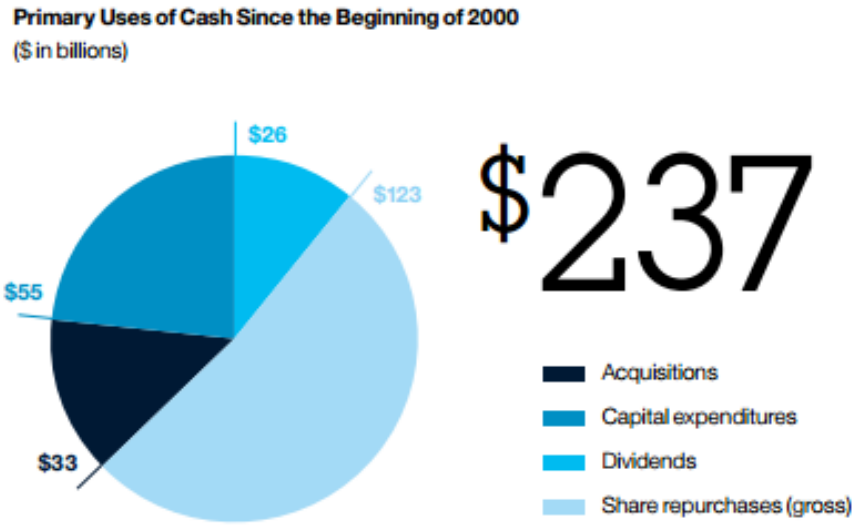
Exhibit 3: Geographic Revenue

($ in millions)

For the year ended December 31:	2012	2011	Yr.-to-Yr. Percent Change	Yr.-to-Yr. Percent Change Adjusted for Currency
Total revenue	$104,507	$106,916	(2.3)%	0.0%
Geographies	$102,268	$104,170	(1.8)%	0.5%
Americas	44,556	44,944	(0.9)	0.0
Europe/Middle East/Africa	31,775	33,952	(6.4)	(1.0)
Asia Pacific	25,937	25,273	2.6	3.3
Major markets			(3.5)%	(1.3)%
Growth markets			4.2%	6.9%
BRIC countries			7.4%	12.2%

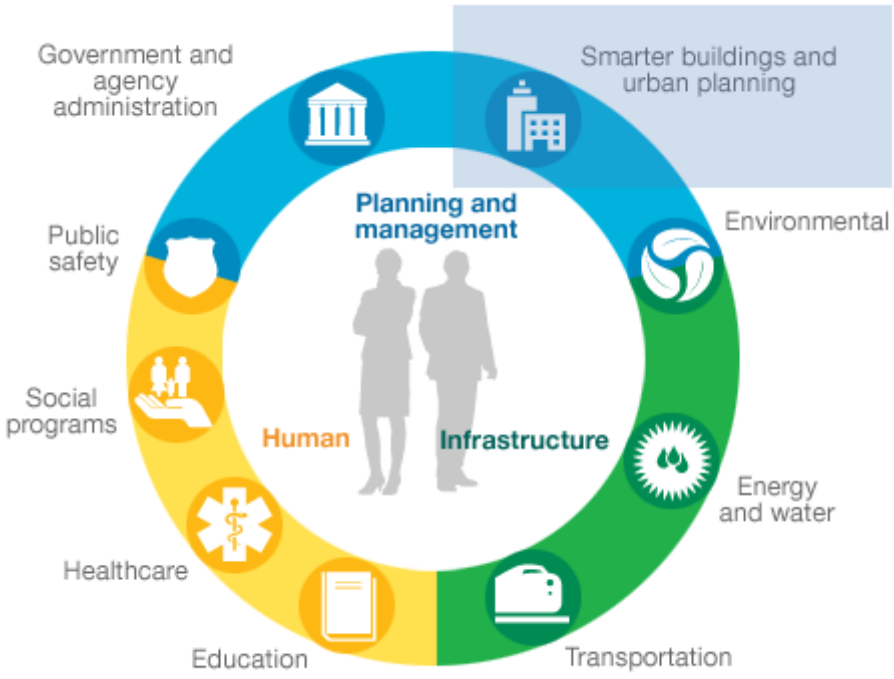
Source: Annual Report IBM 2012

Exhibit 4: Strategic Acquisition since 2000



Source: Annual Report IBM 2012

Exhibit 5: Overview Areas of Smarter Planet



Source: IBM

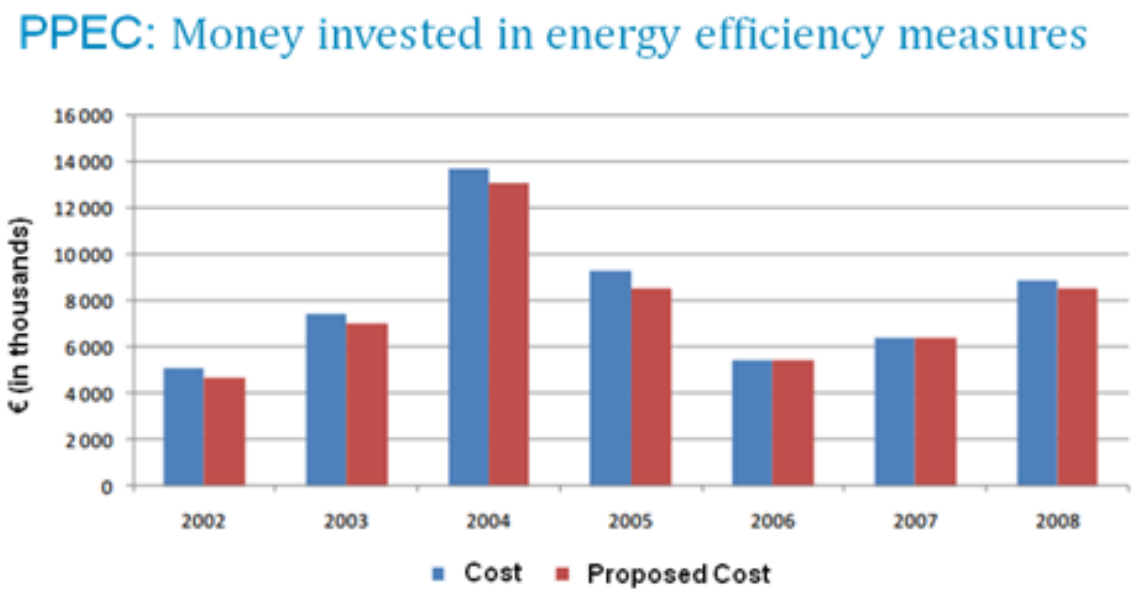
Exhibit 6: Revenue Increase for IBM Growth Initiatives in 2012

For the year ended December 31:	2012
Smarter Planet	25%
Business Analytics	13%
Cloud	80%
Growth Markets	7%*

* at constant currency

Source: Annual Report IBM 2012

Exhibit 7: Money invested in energy efficiency measures by PPEC



Source: Entidade Reguladora dos Serviços Energéticos

Exhibit 8: Structure of primary energy consumption divided by energy type

Primary energy source	2005	2006	2007	2008	2009	2010	2011
Oil	15.877	14.305	13.337	12.365	11.533	11.245	10.381
Natural gas	3.761	3.595	3.821	4.157	4.233	4.507	4.475
Coal	3.349	3.310	2.883	2.526	2.858	1.657	2.406
Electricity	1.186	1.713	1.909	1.953	1.867	2.472	2.113
Biomass	2.862	2.982	3.096	3.113	3.309	2.889	3.155
Other	52	66	74	101	121	132	145
Overall	27.087	25.971	25.120	24.215	23.921	22.902	22.675

Source: International Energy Agency

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Literature Review

IBM

III LITERATURE REVIEW

1. PEST Analysis

The broader, the macro environment for a specific company can be analyzed by using the PESTEL framework. This consists of 4 different but interconnected areas of interest: political, economical, socio-cultural and technological. Looking at each briefly in detail the political and legal asses the political and legal frameworks for the market, the economical context includes the changes of goods, services, currency and information, the socio-cultural involves values, ethics and traditions of the specific society, the technological is about technological development and innovation and the environmental describes environmental concerns and trends that have an impact for the company. The PESTEL framework allows to monitor and asses the contextual environment in order to identify trends in the industry and the impact they have or can have on the company's operations and success (Henry 2008, p.51).[19]

2. Industry Life Cycle

Another interesting tool to look is the stage the structure and Industry Life Cycle that helps to understand the concentration[20]. One of the first works on the industry life cycle has been done by Vernon (1966).[21] Based on specific characteristics industries can be characterized in 4 stages: emergent, fragmented, concentrated and declining.

3. Buyer's Analysis

In order to determine a strategy the buyer's analysis poses an important framework to understand the needs of consumers. This is critical as clients should play an important key part for the company's strategy. There are seven generic issues that are important for the buyer's analysis:

Who (nature of the buyers), what (products and services bought), to whom (nature of the users), when (buying occasion), where (buying local), why (buying reason), how (buying method).

This framework aids to assess the buyers and identify different segments that can then be targeted at. Further it helps to identify issues that a company should focus on to create superior value to customers.[22]

[19] (Henry, 2008)
[20] (Jovanovic, 1994)
[21] (Vernon, 1966)
[22] (Freire, 1997)

4. Porter's 5 forces

The attractiveness and level of competitors can be assessed with the help of 5 forces: the threat of new entry, bargaining power of customers, bargaining power of suppliers, threat of substitute products or services and rivalry among existing competitors. The lower the degree of these forces is, the higher is the expected profitability according to Porter (2008)[23]. It is important to note that Grundy (2006)[24] has suggested that some of the framework that could be added to Porter's 5 forces is the growth drivers and PEST factors. Another popular framework for strategic assessment is the SWOT analysis that talks about the company's strengths, weaknesses, opportunities and threats[25].
Detailed explanations to the applied frameworks can be found in leading strategy books such as:

- *Johnson G., Whittington R. and Scholes K.(2011). Exploring Strategy (9ed.) Prentice Hall: Essex.*
- *Rothaermel, F. (2012). Strategic Management: Concepts, McGrawHill*

5. Definition Strategic Alliances

It is important to start with the definition of the central concept of this work, "Strategic Alliance" since the origin of words and alliance strategy highlight their importance in development and form.

Etymologically, the words alliance and strategy have its roots in the military science and politics. The term "alliance" has its origins in the French word "alliance" and means "(to) unite", "united", or "mate". The French word "alliance" in turn comes from the Latin word "alligare" which can be translated as "combine" or "unite".[26] The term alliance has been used for a long time in international law and represents an alliance between two or more States.

The word "strategy" comes from the Greek and means "art of a general" and "Generalship" [10]. It also includes the "office or command of a general". It is suggested that the term was reinterpreted in the 19th Century by Carl von Clausewitz, a Prussian general and military theorist, for Military purposes. Thus Clausewitz emphasized the political nature of war and military strategy.

Before the term "strategic alliance" can be considered in the management literature, it is useful to rephrase the concept. Thus it can be said that a "strategic alliance" is a long-term trading plan with a specific goal. It attempts to reach this goal with one or more allies. One's own goals and the goals of the partner are not necessarily congruent. Nevertheless, the resources that are made available by an alliance are useful in order to achieve the respective target and the attainment of the objective.

[23] (Porter, 1980)
[24] (Grund, 2006)
[25] (Ansoff, 1987)
[26] (Dictionary, 2013)

6. Strategic Alliances in the Management Literature

The term of the strategic alliances does not hold a uniform interpretation in theory and practice. A reason for this is that different disciplines deal with the phenomenon of cooperation and thus the semantic content differs. Even within individual disciplines there is no consent for one prevailing definition and are defined differently depending on the author..

Several empirical studies and theoretical management literature suggest that companies, especially in uncertain market situations, often tend to form strategic alliances. In the past, several papers have dealt with the phenomenon of strategic alliances.

One of the first to define alliances was Bidlingmaier (1967)[27] who called it "inter-firm cooperation" that are present whenever two or more undertakings perform certain tasks due to voluntary contractual arrangements jointly with the expectation to achieve a better result than alone.

In Competitive Strategy 1986 Michael E. Porter[10] already addressed global company collaborations as "coalitions". In the opinions of many authors there is still no clear definition and the meaning of the word can differ greatly between the authors. But when looking at similarities within these different definitions we can see a trend towards some similarities. There is widespread agreement that cooperating companies in both legal and economic terms should be independent. However, some authors restrict this statement and say that certain business divisions can decrease this independence partially in favor for better coordinated behavior. Views also differ on the topic of whether the partnership must be based on a contractual agreement between both parties. The majority of authors do not see a contractual agreement as an overriding criterion.

7. Advantages of Strategic Alliances

Hammes (1994)[28] summarizes that in particular the globalization of markets, the rapid technological progress, the rapidly rising of fixed cost and the increasing importance of time makes alliances to a central topic in strategic management.

According to Porter and Fuller (1986)[29] strategic alliances have both advantages as well as disadvantages. Among the benefits they include economies of scale, learning effects, access to technology and the knowledge of the cooperation partner, risk reduction and impact on the competitive structure.

Summarizing the advantages from the literature we can find the following:

- Increase operational efficiency and sustainability through partnerships of proven solutions

[27] (Bidlingmaier, 1967)
[28] (Hammes, 1994)
[29] (Porter M. E., 1986)

- Leverage existing skills, technologies & capabilities across multiple to achieve synergies
- Collaborating on different customer projects across various industries
- Focusing on standardization and complementing processes
- Joint marketing efforts of two companies for one project

When companies want to quickly gain a new area of expertise or access to new technology or markets, they usually have two options: buy a smaller company with those assets or form a strategic alliance with another company that would benefit equally from the partnership. These agreements often have a limited scope and function, such as trading access to an expertise or technology that complements each others. Whipple (2006)[30] also states that in strategic alliances the factor of supply chain is particularly important. Firms are looking for ways to achieve competitive advantage by engaging into complementing supply chain arrangements.

According to Mohr and Spekman (1994)[13] companies usually engage in partnerships, seeking to maintain or create a source of competitive advantages. The authors define a partnership as a strategic relationship developed between two independent entities that share a set of common characteristics including common goals, mutual benefits and recognized interdependence. The benefits from partnerships might come from many variables, for instance the access to new technologies from each party, economies of scale, access to knowhow and complementary skills or even from sharing risks.

Especially high-technology firms have a high rate of forming strategic alliances because the environment in the technology industry is highly crowded and constant innovation is needed as Stuart (1998)[31] found out.

8. Problems and Risks of Strategic Alliances

Yet, despite the benefits, Harrigan (1988) [32] says a large percentage of these partnerships don't succeed as expected. The reasons behind the failure of partnerships are many times connected to lack of communication between both parts, loss of autonomy or an increase in complexity.

To avoid unsuccessful partnerships, Mohr and Spekman (1994)[33], tried to enumerate a set of factors for a successful partnership. They defined three major factors that lead to a successful partnership: partner characteristics, communication and involvement. The first one of partner characteristics means commitment, coordination, interdependence and trust. The authors say that if firms follow integrate these principles they are more likely to succeed rather than others. Another risk is communication

[30] (Whipple & Frankel, 2000)
[31] (Stuart, 1998)
[32] (Harrigan, 1988)
[33] (Mohr, 1994)

problems. This can be broken down into communication quality and information sharing. When used properly, it allows companies to be more effective. Also in his work Jablin et al. (1987)[34] agree that communication problems are at the core of the success of a partnership. At last there is the involvement, which refers to the extent that both partners are able to plan and define common goals.

Finally the authors mentioned a set of conflict resolution techniques. For Mohr and Spekman (1994), partnerships using these techniques are more likely to be successful. All the three dimensions mentioned by the authors lead both partners to satisfaction and to be more successful in achieving set goals.

Das and Teng (2001)[35] explain that in strategic alliances trust and control are closely linked with risk. In their work they examine the relation between trust, control and risk to give recommendation on reducing the risk factor. Hence, to understand how partner firms can effectively reduce and manage this risk, we need to examine the inter-relationships between trust, control, and risk. One of the main conclusions is to apply trust-building techniques and mechanisms for control in order to keep risk minimal in strategic alliances.

9. Strategic Alliances and Environmental products

In the case of IBM'S Smarter Building it makes sense to point out that Strategic Alliances are especially interesting when dealing with environmental solutions and products. When creating communicating in the case of environmental friendly products the credibility factor plays a special role: Consumer's environmental awareness is increasing and so is the "lack of credibility; consumer cynicism and consumer confusion over claims as Mendelson et al. (1995)[36] explains. One way to overcome these problems are strategic alliances that can also bring other advantages such as "increased consumer reliability in green products and their claims; increased access to environmental information; increased access to new markets; publicity and reduced public criticism; and education of consumers about key environmental issues relating to a firm's product".

[34] (Jablin, 1987)
[35] (Das, 2001)
[36] (Mendleson, 1995)


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Teaching Note
IBM
Smarter Cities

IV TEACHING NOTE

1. Introduction

The teaching note serves as a bridge to connect the theory from the literature review with the case study itself. By proposing questions for student discussion with answers it provides a teaching framework for use inside the classroom.

It is important to note that these are sample answers that are subject to individual interpretations and other approaches are possible. Since themes and frameworks are not static and can evolve over time this also gives room for alternative views.

2. Synopsis

The global IT and services company IBM was founded in 1911. With presence in over 170 countries IBM is constantly looking for new ways to grow and attractive markets to enter. The company's strategic plan for growth is based on three factors: Acquisition, shift to high growth markets and introducing new solutions to the market.

Under the umbrella of a new project of Smarter Cities, IBM wanted to introduce the energy management solution for buildings "Smarter Buildings" into the Portuguese market. The main question regards the best way of entering this unfamiliar market that is competitive with many constraints.

Nevertheless, IBM continued to study the market in order to seek for opportunities. Was the Portuguese market for energy management solutions attractive enough? Was it a good option to enter the market? If so, which would be the best strategy? Was it sensible to enter with a partnership?

3. Teaching objectives

This work provides a teaching case where students can explore various issues. Some of these can be related to strategy, the business environment and partnerships. The case study addresses multiple topics that students have learned in their course and allows them to apply this knowledge to a real scenario where they have to develop recommendations. This particular case is focused on a dynamic technological industry that poses an interesting field to students.

Students should analyze external environment from a macro and micro perspective and apply strategic frameworks. Key issues should be identified by using Pest analysis, the model of Porter's 5 forces and SWOT analysis. Information and data provided in the case should help students to solve the study questions.

Students should familiarize and analyze the concepts of partnerships and finally chose the best entry strategy based on analysis. By understanding advantages and implications of partnerships student will be able to give a profound recommendation on an entry mode.

4. Use of the case

The case is based on a real business scenario to illustrate a particular decision making process for a strategic decision. There are a number of approaches in which this case study can be used. Although the company IBM is a global player, the dilemma is concerned about the Portuguese market. This case study can be used in strategy courses such as Strategy and Strategic Management, both at undergraduate and graduate level.

5. Suggested assignment questions

To help students analyze the case and uncover key points of the case, the following assignment questions have been prepared. By applying strategic frameworks students should be able to uncover main issues and give a well based answer.

1) ***How would you describe the company's evolution and strategy?***

2) ***How would you describe the market for energy management software for buildings in Portugal? What are opportunities and threats for IBM?***

3) ***Would you consider this as an attractive market?***

4) ***What aspects are important to create superior value to customers in the market of energy management solutions for buildings? How do IBM's strengths and weaknesses relate to this?***

5) ***What are the possible modes of entry? What are the advantages and disadvantages of those strategies?***

6) ***How could IBM benefit from a strategic alliance? Should IBM pursue this strategy?***

6. Analysis and discussion

1) How would you describe the company's evolution and strategy?

One way of answering this question is to look at the strategic transformation by moving from an IT company towards more high growth market such as services. IBM was founded in 1911 and the revenue model was completely based on manufacturing computers. Over the years it evolved more and more towards the service sector with IT services and consulting services.

Also, IBM recently followed different strategies for market growth and to penetrate the market. Through acquisitions IBM gained entry into adjacent markets and created additional value for existing products and services. Further, IBM entered into new unfamiliar markets which allowed extending its market share into other business areas.

2) How would you describe the market for energy management software for buildings in Portugal? What are opportunities and threats for IBM?

To answer this question student can apply different frameworks. The PEST analysis is useful in order to identify main factors in the macro environment. Following this, students can discuss opportunities and threats based on the concluded analysis

PEST

Political/ Legal

When looking at the macro environment for energy management software systems, the political and legal aspects are one of the key issues. One point to note is that we can see a substantial support from the side of the government that gives financial help to companies who want to engage in saving energy. The exhibit 6 shows that the money spent by the government for energy efficiency measures has been rising since 2006 and is a substantial governmental incentive.

Also, there are many economical policies that have an influence on the demand. One of the most important is the binding EU agreements as referred to in the case study. This agreement states that companies have the mandatory obligation to engage in energy saving methods within their business activities. Further, there is a Regulatory Authority for Energy Services that promotes efficiency in energy consumption. The political engagement and support for energy efficiency increases demand for energy saving products. These incentives further raise awareness and stipulate demand.

Concerning the legal side there are some restricting factors such as strict legal requirements that need to be approved. This has a negative impact since products need higher investment to fulfill these and to undergo legal procedures. This requires additional resources in terms of special expertise and higher investment for product research and development.

Economical

When it comes to economical factors the potential financial savings are an important issue. Since the energy management solution has the main goal of decreasing energy consumption it also reduces costs. Especially in today's dynamic environment it is important to achieve competitive advantage. Companies have a high interest to save production and manufacturing costs to stay competitive on a national and international level.

Also buildings are often outdated and systems are not used to an optimum. These needs have shaped demand for making operations more efficient and energy management solutions can improve physical space constrains. This results in rising demand for these solutions.

Also the high market concentration of energy providers means that energy consumers do not have a high bargaining power and need to find other means to keep costs low.

Overall, this has a positive effect on the market for the energy management software as demand is rising due to short and long-term financial savings. Also the concentration on the side of energy production leads consumers to look for new and different ways to reduce energy costs. The potential to save energy is therefore a better possibility to reduce these costs and demand for means to reduce energy consumption rises.

Socio-cultural

In the socio-cultural context a few trends influence demand for the solution. Regarding social values we can see a rise in environment consciousness and a trend towards reducing emission gases because of global warming. Especially to be more attractive for their consumers companies are more and more using green marketing to project their firm policy and production processes as environmental friendly. One way companies do this is by using benchmarks, such as the environmental footprint that shows how much impact on the environment their business processes have. Since consumers have a rising interest in this, companies invest more resources to reduce their impact on the environment. Due to this trend there is a rising demand for products and solutions that will help companies become more environmental friendly.

Technological

Since the solution offered is highly technological, research and development will lead to increased effectiveness in the future. As technology changes fast, there is a need for constant investment to improve results. This is positive for potential buyers since long-term savings will increase with technological advance.

To summarize, the following table provides a graphical overview:

Context	Trend	Impact	
		-	+
Political & Legal	-Environmental Law -Economical policies: Binding EU agreements for energy saving goals -Obligation for companies to engage in energy saving methods -Energy Services Regulatory Authority promotes efficiency in energy consumption called PPEC37 -Political financial aid -Strict legal requirements -Need for legal certifications	-Negative impact since products need higher R&D investment -Need for special expertise in energy sector & certified products	-Higher demand for energy saving products -Beneficial financial aid from government -Raise awareness
Economical	-Companies have interest to save cost and be more competitive (national + international) -Energy providers have high market concentration		- Rising demand due to financial savings
Social-Cultral	-Social values: Rising environment consciousness -Social trend towards reducing emission gases -Green Marketing -Benchmarking on environmental footprint		-Higher interest in product -Especially for companies to be more attractive for consumers
Technological	-Technology incentives: R&D can increase effectiveness -Fast technological change: Need for constant investment		-Cost savings can increase in future

[37] (Entidade Reguladora dos Serviços Energéticos, 2009)

Opportunities

Growth markets

Rapid urbanization results in growing demand for building critical infrastructure, developing strategic industries and responding to massive demographic shifts, which provides IBM with great opportunities. According to the industry estimates, the market for energy management software is growing. Therefore, IBM's initiatives in these emerging markets together with strong growth rates are great growth opportunities for the smarter buildings. By continuing to expand globally the can become more integrated. Economies of scale and the vast amount spent on research and development should give them an advantage over their rivals.

Strategic Acquisitions

As mentioned before, IBM is pursuing a number of strategies acquisitions which can be continued to buy software and service firms that can innovate new solutions. Further, they can use Pricewaterhouse Coopers to continue expanding the consulting services aspect of the business.

Threats

Challenging market environment

IBM has to enter a highly competitive market partnered with rising costs, aging technology infrastructure and growing gaps between service expectations and affordable deliveries. This can also be seen to as an opportunity for establishing partnerships in order to combine resources to create better value for the consumer.

Energy management for buildings is a difficult market that is highly regulated and requires a long process to go through certification. Another point is that there is a lack of consumer interest in spending such high amounts of time and money when there is relative low savings return.[38.]

Competition from other companies

Although rapid adoption of this energy management software does provide IBM with opportunities, the market has a potential to attract company's hardware products and its strength of hardware and software services integration. IBM faces the risk of losing some customers over time that will switch to applications built on alternate platforms. This will have an impact on the demand for IBM's high-end systems.

Also the competition from offshore companies from emerging countries is a possible threat. Due to low labor costs and growing investments into new technologies these can become a serious competitor in the medium and long term.

[38] (Fehrenbacher, 2011)

3) Would you consider this as an attractive market?

To answer this question, students should first apply the framework of the buyer's analysis to identify the profile of customers. Afterwards the industry's lifecycle helps to understand the stage of the industry. Then Porter's Five Forces is used to assess the attractiveness of the competitive environment.

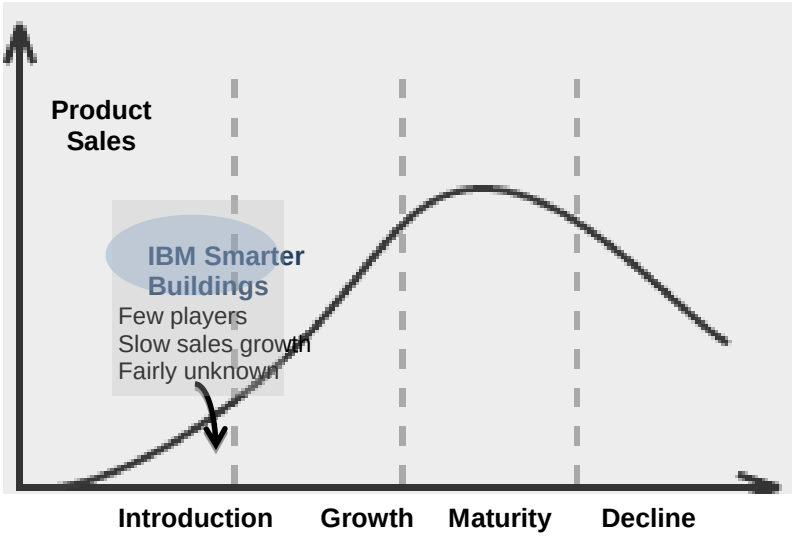
In order to understand a company's current situation to derive the short- and long-term strategy it is also important to understand the micro environment, the immediate environment that consist of buyers, suppliers, competitors and the general community.

Buyers Analysis

At first it is important to pay special attention to clients since they are the fundament for any strategy. By defining clients and their corresponding segment is the base for understanding the critical business areas.

Who (nature of buyers)	• Companies: potentially all sectors, especially energy intensive industry • Public sector: potentially all, trial: hospitals in Portugal • Universities • Usually top-management final decision because of high price • (Home-owners): not targeted, but possibility
What (products/ services bought)	• Energy management software solution to minimise energy usage • Software and service: Physical meter readers and consulting service
To Whom (nature of the consumer)	• For own company
When (buying occasion)	• Usually one time purchase due to very long-term investment • Special occasion: Because of high price it is high involvement product • Usually not stand-alone but in conjoint E.g. General overhaul of buildings or electricity use, implementation of reforms for environmental sustainability
Where (buying local)	• At the own or seller firm through sales person • The market for high-end energy devices for buildings is more tied to new home sales, contractors selling renovations and tying devices to solar systems (basically home energy device as an upgrade to a more expensive system).
Why (buying reason)	• To reduce energy consumption, save costs and minimise impact on environment
How (buying method)	• Long buying proccess with profound research on both seller & buyer due to complexity of product and need to adapt the solution individual to client needs

Structure and Industry Life Cycle



The industry life cycle of IBM's smarter Buildings can be placed into the introduction phase since the product and technology are quite new to the market and slowly evolving. The market volume is not high yet and is slowly growing. Usually, the product awareness among potential consumers is not high. This stage poses high potential for market entry and it is advantage that there are only few firms operating in this sector yet. This means that competition is not fierce. Thus the market is not penetrated yet and poses great opportunities.

However, IBM's product can also be seen as close to the growth phase where the product becomes more known and consumers are beginning to buy it. Sales volume increases, there are profits to be made so more competitors will enter the market since demand is exceeding supply.

Industry Attractiveness: Porter's Five forces Model

Threat of new Entrants

In order to offer such a software solution there must be a certain level of **economies of scale** due to vast costs on the R&D, relevant support products and services, manufacturing and the distribution. Especially important here are the technology and labor resources that are connected to an immense international network of know-how.

To achieve comparable resources a very **high initial investment** would be needed which is almost impossible for a new or smaller market player. If a company has already a vast network of information and data that is needed to analyses and give recommendations on energy usage.

Since this is a niche product there is a need for qualified expert staff that can be a **scarce resource**. In information technology it is important to have expert knowledge which is very difficult for a new entrant to achieve in a short time.

Brand equity is important when making a high investment. If a company has a good brand value it means that they will be trusted by clients and stands for very high quality and expert standards.

In any technology and software solution **patents and licenses** play an important role. Advanced software is always difficult to imitate for a new entrant and especially in the software industry it is important to have certain patents to protect intellectual knowledge.

However, also important is the aspect of **close customer relations**. Since the decision to aquire this product is taken by top management due to high investment, it is important to have relations to workers who are responsible to bring such a buying proposal or who take the decision of such. As energy providers and maintenance is done by long-term service contracts, it can be diffiult to gain access to the potential buyers.

Another area that should be taken into account is **buyer's switching costs**. However, this concept will only play a role in the future when the number of customers for such a product will rise. Once the customers have purchased energy management software there are extremely high switching costs for buyers. If a company purchases such a energy saving solution it makes an immense investment not only because of the high price of the software product itself, but also with all its associated costs. Integrated software is not only about the purchase price, but also the implementation cost such as internal information distribution and staff training.

Therefore it is of high importance to use the first mover advantage. Acquiring new customers will be far easier than persuade competitor's clients to switch. To conclude from all the factors the threat of new entrants can be seen as low.

Threat of substitutes

There are not very intensive threats of substitutes. However, the primary need for the customer is to save consumption of energy. There can be 2 main reasons for this: To reduce costs or to reduce the impact on the environment. Thus a company could for example switch to more environmental friendly energy such as purchasing solar energy. As such we can consider this as broad substitutes since they could potentially attract a proportion of potential clients.
Since there are no direct substitutes in terms of products in the same product category the threat of substitutes is low.

Bargaining Power of suppliers

Input needed is twofold: physical hard and software and skilled labor. Since the industry is shifting more towards services and software solutions, software and hardware manufacturers become secondary and the value add is made by skilled workers. Specialized skills can be singular and exclusive when they are not

already part of the workforce and external labor is needed. Also there is a high number and price competition between manufacturers so this also results in a low bargaining power of suppliers.

Bargaining Power of Customers

There are two sides to this:

On the one side the bargaining power of customers is high since the product is not strategically important for the client, it is not a necessity. The effort and cost could intimidate him to make such a major investment and makes the customer price sensitive. However, if the customer does want to purchase this management software then there is a reduction in bargaining power of customers because the product is highly differentiated and with such an investment decision customers want to ensure high quality.

Competitive rivalry between existing players

Since there are not many players in this market and barriers for entry are high due to immense fixed cost of Research and Development it can be considered that rivalry is comparably medium to low. Also there is high differentiation in quality and complexity of the products and as such there is not that much pressure on prices from the side of competitors. Thus competitive rivalry can be seen as moderately low.

Conclusion: Attractiveness

All five forces that have been analyzed are either low or medium-low. From the Porter's 5 forces analysis and also taking into account that the product life cycle for this software is at the emerging stage, the current market has a high attractiveness

4) What aspects are important to create superior value to customers in the market of energy management solutions for buildings? How do IBM's strengths and weaknesses relate to this?

Industry Strategic Factors

Since the strategy chosen by a company is a set of actions and decisions taken in order to create superior value for consumers [39] it is here important to look at the industry success factors. Here it helps to take into account the buyer's analysis previously performed. Then students can study IBM's strengths and weaknesses. Finally, matching these up to the industry strategic factors gives a picture of the strategic fit of IBM and how well IBM is performing to deliver high value to customers in this industry.

Firstly, students can identify the following Industry strategic factors that companies need to pursue in the market of energy management software. Assigned percentages to every factor determine the weighted importance. In order to help students the professor can use a visual aid by drawing the following table and assigning eight percentages according to student's discussion.

[39] (Cardeal, 2011)

The following numbers provided can be subjective and differ in student's analysis.

INDUSTRY STRATEGIC FACTORS	WEIGHT
Solution Capability (Product & Service)	**50%**
Smarter Buildings Consulting Proprietary Solutions Integration capabilities	
Business Model	**25%**
Partnership & Outsourcing Continuous innovation	
Brand Equity	**25%**
Marketing & Advertising Customer service excellence	

Treshold factors

There also exist other factors that have to be taken into account but are not as crucial as the industry strategic factors. These include the price of the product. Here the manufacturing and bargaining power of suppliers plays a role. Also whether there are low costs of production design due to economies of scale. Another threshold factor is the performance, mainly the scalability and delivered quality.

Strengths

IT and Consulting Expertise

IBM has a high degree of expertise in IT with a strong network of data capabilities for analysis. The workforce is composed of a global network of leading IT experts and also the high budget for Research & Development allows latest standards of technology. In terms of human resources IBM has an employee base of well over 350,000 with employees operating in over 170 countries, which gives expertise and talent base to find solutions and grow as a globally integrated enterprise.

Brand value

IBM has one of the world's highest brand value and has been constantly ranked as one of the most profitable and sustainable brands.

Research and development capacity

IBM has strong research and development capacity. With this IBM achieves a good financial performance because of it focuses its core competences on high value businesses and high growth markets. Since IBM is operating in high value sectors like software and services offer flexible margins and returning annual revenues and cash flows. Also with high investment in research and development they stay on top of the technological progress.

Scale of Economies

IBM is the biggest software provider by revenue which creates enormous scales of economies in terms of labor, supply chain, etc. It introduced the smarter planet initiative on a very large scale worldwide and across various industries. This creates a high number for data collection and important synergies across the projects. The Smart Service-Oriented Architecture approach to managing business processes at all levels makes companies much more efficient.

Acquisitions and Partnerships

Also strategic acquisitions and a global network of partnerships make part of IBM's strategy and highly add to its value and global network. These contributed to offer more value to customers and differentiate their products.

Market leader

As stated in the case study IBM holds a significant amount of market share as stated in the case study in each of the industry's they compete in: Global IT Services, Software and Hardware.

Weaknesses

Enormous company size and operating cost

IBM's giant size can make it slower to react to customer's needs and as well as to the industry's fluctuations. Changes in organization charts, or business process such as changing a culture and the way employees adapt to new ways of working takes years. This cultural transformation can be a radical challenge for management. With a high size come also high operating expenses.

High Competition

Smaller players can offer solutions without the need for expensive customizations at competitive price. A big player such as with an extensive market share you need to keep it and search for new growth opportunities.

Missing expertise in the energy sector

IBM has extensive expertise in the technical aspect of energy management software, but not in the energy sector itself. This missing know-how could be a hindering element in order to offer the best value to customers.

Strategic fit IBM

When asked about how IBM's strengths and weaknesses relate students should perform the analysis for the strategic fit. The strategic fit refers to the relation between the industry strategic factors and the company's strengths and weaknesses. Both these frameworks have been required by previous questions, so students should match the results up to find the strategic fit of IBM. An example answer to this can be seen below. Depending on the variables chosen by students before, a right answer can differ from the following matrix.

STRENGTHS AND WEAKNESSES	INDUSTRY STRATEGIC FACTORS		
	Solution Capability	Business Model	Brand Equity
Strengths			
IT and Consulting Expertise	4	4	4
Brand value			5
Research and development capacity	4	3	3
Scale of Economies	4		
Weaknesses			
Enormous company size & operating cost	-2	-2	
High Competition	-3	-3	
Missing expertise in the energy sector	-4	-3	-2
Average score	4	-1	10

Scale: -1 to -5 for Weaknesses; 1-5 for Strengths (from very negative to very positive)
Source: Nuno Cardeal

Resulting from this analysis IBM has a good strategic fit since the strengths and weaknesses of IBM overall contribute greatly to the industrial strategic factors that are relevant for this particular market. Especially in the brand equity IBM scores highly, but can still improve in the business model for the particular project of Smarter Buildings.

5) What are the possible modes of entry? What are the advantages and disadvantages of those strategies?

Entry strategy for IBM's Smarter Buildings in Portugal

Here students should discuss the different market entry possibilities that arise based on the case study. The following alternatives can be mentioned: Internal development, partnerships or acquisition. Within these fall strategic alliances, joint venture, management contracts and franchise agreements. From the case it becomes apparent that the last two are not suitable for IBM as they will not create any value the company. The opposite could happen: Internal expertise is at the core of IBM's business value. With management contracts and franchises IBM would have to share its internal know how which could result in high risks of exposing their competitive advantage to other companies.

Acquisition could be an option but IBM's core business is not related to the energy production sector and would only complement the project of smarter buildings. Since Smarter Buildings are only being introduced into the market it could be too risky to invest a high financial amount for buying an energy company. Therefore, investment would outnumber the gained benefit of acquiring an energy producer.

Better options would be:

Internal development

If IBM enters the market on its own then this has advantages and disadvantages.

On the one hand the advantages include full control of its activities and benefits in terms of profit as they take 100% of the profits.

On the other hand, the risk factor would be high as the energy market is a new and unfamiliar market, IBM does not have the experience to foresee business challenges and also not immediate access to potential clients. It would need to invest immense resources of time and sales personnel to establish relations to clients and loose time to take advantage of its current technological state. If this process takes too long the technology might be outdated and new resources would need to be invest to upgrade the product to the newest developments.

Strategic Alliances

A strategic alliance is a legal agreement between two or more companies to share access to their technology, trademarks or other assets. A strategic alliance does not create a new company.
As illustrated in the case IBM has the possibility to form a strategic alliance with the energy producer Schneider Electric. This is another possible alternative to enter the market. IBM has the expertise in software solution but is missing the industrial know-how of the energy market. Since IBM already has a global alliance and went through the process of signing contracts and developing the legal conditions of this partnership, it would be a fast process to extend this alliance locally.

Advantages include the synergies between the two companies through the complementing combination of resources, expertise and distribution channels. It allows having a more effective allocation of human and financial resources. Another important point is the added value of putting two strong brand names together in the case of IBM and Schneider.

Especially advantages in distribution are crucial. Together with Schneider IBM has more access to potential customers with already established sales channels and client relationship. Both companies have global distribution capabilities that they can combine.

However, also drawbacks may occur. Conflicts due to disagreements between the parties can be expected. These would require extra resources to align corporate strategies, integrate joint marketing activities and the joint development of the software product.

Joint venture

One type of strategic alliance would be a joint venture where the partnering companies start and invest in a new company that's jointly owned by both of the parent companies. This allows companies with complementary skills to benefit from one another's strengths. Strategic alliances are usually undertaken to allow each firm to pursue a new market, product or strategy that they can't manage on their own. Joint ventures are often used to shield the parent companies from the risk of a new venture failing; if the new product flops, the joint venture can go bankrupt without harming the parent company except to the extent of its investment.
However, IBM and also Schneider Electric already have a strong brand name and spend vast amounts on marketing to contribute to its positive image. Creating a new company would require immense new investment of marketing efforts to achieve a similar brand status. Since the new product is also related to the core business of both companies there is no need to create a new company to prevent damage or misperception to the image of the parent company.

6) How could IBM benefit from a strategic alliance? Should IBM pursue this strategy?

In this question students should refer back to the analysis of industry strategic factors to understand which aspects are important. By looking at what factors will benefit from a strategic alliance allows to see the potential benefits that this partnership will bring to make IBM more competitive and provide additional value to clients.

Since the distribution and access to potential customers is key in this industry, Schneider Electric would be a valuable partner. As a global electricity provider who has been in the market since 1863, Schneider has long lasting established client relationships in the energy sector. Also bringing an expert in energy on board will allow a faster access and communication with potential clients.

Concerning skills and capabilities, IBM already has Global Business Services to bring together business and operational requirements. Also, due to the vast size of IBM they have a wide pool of skilled employees to. However, even having knowledge in business and analytics research, IBM is not an expert in the field of energy management yet. In order to faster acquire an expert status in this sector without spending vast amounts and time on research they can benefit from partnering up with Schneider Electric. This way, they would complement their analytical resources with the expert knowledge in energy of Schneider.

Also the technology factor goes in the same direction. IBM already possesses strong skills in the information and technology market. Being also a leader in software management and optimization IBM is able to develop the solution to a highest technological level. However, using Schneider's expertise and year long experience in the energy sector would highly benefit to add superior value to the solution and thus create higher value to its clients.

These partnership arrangements demonstrate that the highly fragmented building industry is finding novel opportunities to pair technologies in mutually beneficial ways to deliver a competitive product.

To join forces also means to develop a combined product taking advantage of the experience and software of two companies. The possible synergy effects between Schneider and IBM are critical and could create great opportunities to achieve a competitive advantage. Combining two powerful solutions from two separate companies can open up new opportunities that are impossible to achieve individually.

Therefore, entering into a strategic alliance with Schneider Electric will benefit in all the three main industry strategic factors and will clearly help IBM to launch a more competitive solution and offer higher value than competitors.

To conclude, a strategic alliance between IBM and Schneider would be the best entry mode strategy due to a higher strategic fit in all three industry strategic factors. First, the solution capability will be increased with combined expertise in both relevant sectors of IT and energy. It will offer higher value to customers with the additional knowledge of an energy specialist. Therefore the alliance also benefits the business model to allow a better product by combining the knowledge of both software and electricity expert".

This further creates higher brand equity with joined efforts in marketing and advertising for a differentiated product to achieve higher competitive advantage. As stated before practical challenges can arise that should be anticipated and managed accordingly.

V CONCLUSION

1. General

Developing this work made it possible for me to improve my knowledge about the two companies IBM and Schneider Electric and about the market of energy management software for buildings. Learning about market challenges and main trends within the industry was a valuable research project.

This particular market sparked my interest as it allowed me to perform a deep analysis into a competitive and emerging industry where market entry has to take into account certain challenges. Especially focusing the case study on a large player such as IBM was interesting.

The case study approach allowed reaching further with the creation of a teaching note to be used for classroom discussion. Applying theoretical knowledge of strategy frameworks to a real life scenario was a valuable experience in this work.

All efforts have been made to create an exhaustive literature review of the main theoretical topics applied in the teaching note. These helped as tools to analyze the particular challenges the project of smarter buildings is facing. The main question of the case study was whether IBM should enter into a strategic alliance. This has been dealt with in depth and a conclusion has been derived that entering in a strategic alliance will be a wise strategic decision. Reasons for this have been discussed in depth.

2. Limitations

To start with, choosing one particular topic and narrowing it down was a challenge before the writing for the thesis started. As IBM is an immense multinational company they are many topics I could have worked on and found interesting to pursue. Also narrowing down the scope of the work was important to be able to cover it in full depth. After having defined the specific topic some challenges started to arouse when conducting the literature review. Strategic alliances are a fairly new topic in the strategic management literature but still differ highly in their content. Thus it was not easy to summarize altogether the different academic and expert view points.

The teaching note provides only exemplary questions and can be extended with more topics. However, to keep the needed teaching time realistic and feasible, discussions tp be included have been choose by most relevance.

The main limitation in this case study is the time constraint which required careful time management and planning. Research has been realistically adequate for meeting the case study objectives. Furthermore, because of the case study approach the focus is specific and generalizations to other areas are limited. However, the study uses a tried and tested research strategy that appeals rather to relatability than generalizability. Also, the aim was to focus particularly on the chosen organizations of IBM and Schneider Electric and the individual's perceptions of the business dilemma and opinions for solutions.

3. Reflection on the Research Process

Given the nature of the research and its proposed aims and objectives, the methodological approach of qualitative analysis proved beneficial for investigation. Fortunately, contact at IBM provided very in-depth information. In retrospect, the overall research process can be seen as a rewarding learning process.

The research examined various relevant areas within strategic management with a focus on partnerships. In hindsight, an even more detailed focus on a specific area could have been beneficial to gain more in-depth understanding. However, this study has thus been valuable in identifying various aspects that future studies could explore in more detail.

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