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BUSINESS MODEL INNOVATION FOR INTERNATIONALIZATION: THE CASE OF THE CHINESE WIND TURBINE MANUFACTURER ENVISION

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Abstract

Envision Energy is an emerging energy solution provider from China which entered the wind power market in 2007. Envision became the 3th biggest turbine manufacturer in China and the 9th largest in the world in 2015. Thus, the purpose of our research is to explore the underlying factors to Envision's successful business model for internationalization. This qualitative research is based on interviews with key personnel at Envision. Our analysis has identified four major elements of their business model for internationalization that are crucial in the success of Envision. Those four are grouped on two major clusters:
Upfront elements representing the face of the Envision to market and customers:

1. Market positioning by the clear positioning of Envision on the market areas left open by the lack of understanding of the market logic by competitors.

2. **Customer orientation** by clear focus on identified customer needs and desire for quality products also here left aside by competitors.

Backend elements representing the value creation and value deliverance elements:
3. Human resources as the key element through interaction with customers, creating bond and relations with customers and delivering promised values to customers and delivering.

4. Supply chain by the capacity of Envision to utilize the entire supply chain to create and deliver high quality products synchronized with Envision's offerings to customers and customer's expectations.

Our research shows that Envision represents a new kind of high-tech Chinese company which works systematically to develop new business models that can enable high growth and high level of internationalization that goes beyond the capacity of technology, products as tradition goes.

***Keywords**:* Internationalization, Business Model, Business Model Innovation, Wind Power, Wind Turbine Manufacturer, China.

1.Introduction

During United Nations (U.N.) Climate Change Conference in Paris COP 21 in (Conference of parties) late 2015, more than 150 presidents and prime ministers gathered to reach an agreement on how the environmental issues from emission from fossil fuels should be addressed. A breakthrough was reached, for the first time in history and all parties agreed upon a regular report on their emissions and implementation efforts and undergo international review. In general, COP 21 was a international politics success and as the French President François Hollande summed it up (Center for Climate and Energy Solutions, 2015):

"In Paris, there have been many revolutions over the centuries. Today it is the most beautiful and the most peaceful revolution that has just been accomplished – a revolution for climate change."

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United political forces have the power to make a change on global scales through emission and energy policy tools, putting pressure on the industry and energy sector to innovate and compete with more efficient technology and procedures.
Wind power is one of the world fastest growing energy sources in the world and has, since 1990, roughly been doubling in capacity every four years.

Now, wind power is leading the transition away from fossil fuels into a more sustainable energy supply (Global Wind Energy Council, 2015). Wind power has become the least-costly option for new power generating capacity in an increasing number of markets (IEA, 2015).

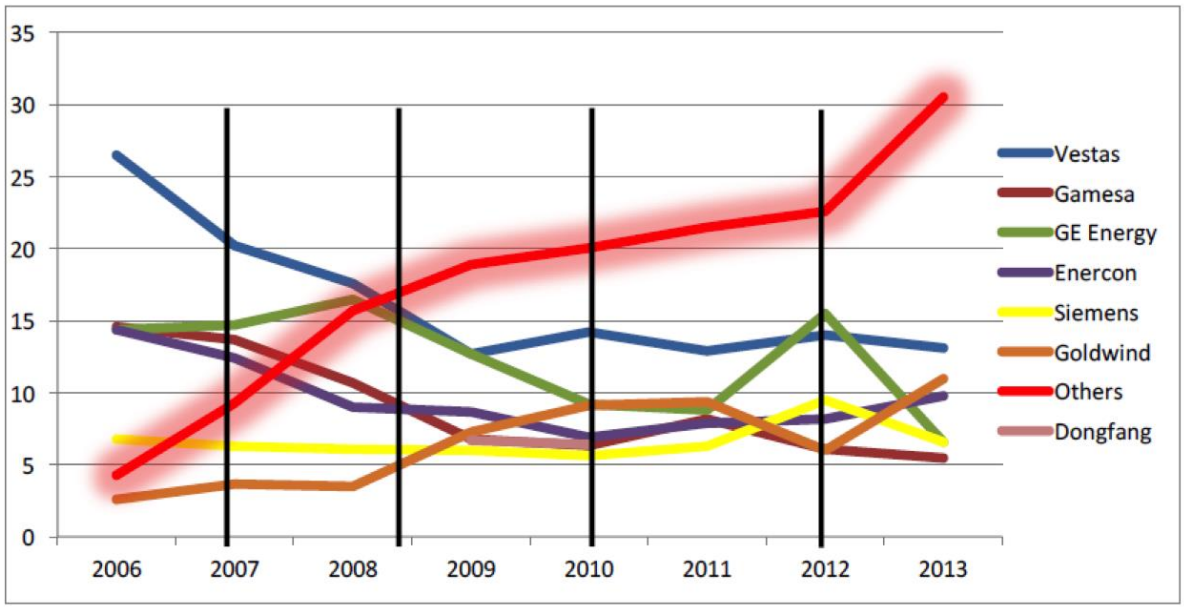

Figure 1: Market shares of the top 7 players and others in the global wind energy industry. (Pataci et al., 2015)

In this booming period, the global dynamics of the wind power industry is changing. Despite the rapid growth in terms of installed capacity, the seven most established wind power manufacturers are losing market shares to new entrants that has mostly been formed in emerging economies (Pataci et al., 2015).

With the increased competition, companies now need to rethink and innovate their business models in order to compete in the rapidly changing environment (Campell et al., 2014). From figure 1, it is clear that the western wind power companies as Vestas, Enercon, GE Energy and Gamesa has lost substantial market shares to competitors represented under “Others”, which host all operational wind energy companies not mentioned in the graph by name. The graph raises questions as to why and how is this happening and why at such rapid a speed? Due to the fierce competition old wind turbine manufacturers such as Nordic Windpower and WinWind has left the industry, those who are still operational have been innovating their business models, i.e. value proposition, value creation, value delivery, and value capture in order to sustain their competitive advantage (Pataci et al., 2015).

Business models are a way to explain how an enterprise works. It describes who the customer is and what the customer values are and what the value proposition are for the enterprise (Magretta, 2002). A business model contains various components, what particular components depend on what type of business model is adopted (Zott, Amit & Massa, 2011). Innovating a business model can help an organization to gain a competitive advantage by including the entire enterprises way of conducting business and not just changes in product and processes. Since the market constantly changes, companies should strive to actively search and consider improvements to their business models (Teece, 2010).

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The main challengers for wind turbine manufacturer coming from China is that many of their wind turbines are based on imported technology, systems and components, from the west, few are developed in China and controlled by the Chinese wind turbine manufacturer. They also lack of the international reputation and global experience. They are also less internationally competitive in terms of proven safety, quality, and reliability and after sales services. Wind farm developers in the international space therefore might have concerns about the turbine performance, durability, warranties, services and recourses if something goes wrong.

In an attempt to take the technology development forward, the Chinese government and the China Development Bank offers financial aid to those manufactures how expand internationally, another finical advantage is the lower wind turbine price, which is usually 20-30% less than the western manufactures (Zhang, 2012). However, in the international wind power industry, the comparatively lower prices are not enough to be competing with experienced and technologically leading western wind turbine manufacturers. There has to be a suitable business model enabling Chinese companies combine wind turbine technology with services under the umbrella of suitable business model for internationalization of Chinese wind turbine manufacturer. Envision Energy is an emerging energy solution provider from China which entered the wind power market in 2007. Envision became the 3th biggest turbine manufacture in China, and the 9th largest in the world in 2015. This rapid growth in general, domestically in China and internationally has gain our attention. In 2015, the Chinese wind turbine manufacturer "Goldwind Science & Technology" become the largest wind power manufacturer in the world, by passing western companies such as General Electric, Siemens, Gamesa and the former largest in the world, Vestas, and also Chinese companies such as Donfang and previously largest Chinese company, Sinovel.

Chinese companies are now becoming stronger, more competitive and focusing on innovation and international competition. When it comes to internationalization, Goldwind is more precocious to enter the old and highly competitive European wind power market. They have become the largest wind turbine manufacturer due to their growth on the domestic market, and to limited level on their international operations. Envision has very quickly established themselves as a leading Chinese wind power manufacturer domestically and rapidly internalizing their R&D and operations worldwide. In order to understand the future path of new Chinese companies, this is a successful journey needs to be explored as Envision is seen as a new kind of Chinese high-tech company which was successfully established in China and internationally.

Thus, the purpose of our research is to explore the underlying factors to Envision's successful business model for internationalization.

2. Literature review

Schumpeter already stated in 1934 that there are five kinds of innovations: (1) new products, (2) new methods of production, (3) new sources of supply, (4) exploitation of new markets, and (5) new ways to organize business. However, product and process innovation alone no longer offer the sustainable competitive advantage it once did, due to the rapid technology imitation of competitors (McGrath, 2011). New information and communication technologies has revealed new tools to compete with, enabling companies to rearrange their value creation activities in more effective manner (Matzler et al., 2013). The product and process innovation is time-consuming and expensive, many organizations therefore, try to actively adopt business model innovation but in reality few know what they are actually doing (Osterwalder,Pigneur&Tucci, 2005; Amit & Zott, 2012).

The origin of the term "business model" can be traced back to 1950's, but was not adapted by the broad audience until 1990, together with the internet era (Osterwalder, Pigneur & Tucci, Clarafying Business Models: Orgins, Present and furture of the concept, 2005). In between

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that period, is technology firms, such as Dell, Xerox and Intel that lead the development and innovation of business models forward (Gibson & Jetter, 2014).

"A system that solves the problem of identifying who is (or are) the customer(s), engaging with their needs, delivering satisfaction and monetizing the value" (Baden-Fuller & Haefliger, 2013, p. 419).

A business model describes the design or architecture of an organization's way to create and deliver value to their customer and convert payment for that delivered value to profit (Teece, 2010). The resemblance was found in an academic literature review of business model definitions between 1975 and 2009 by (Zott, Amit & Massa, 2011) which aimed to provide researchers with the most up to date literature review (see table 1).

Table 1: Selection of business model definitions (Zott, Amit&Massa, 2011 p. 1024).

Author(s)	**Definition**
Timmers (1998, p. 2)	"An architecture of the product, service and information flow, including a description of the various business actors and their roles: a description of the potential benefits for the various business actors: a description of the sources of revenue"
Amit and Zott (2001, p. 511): Zott and Amit (2010, p. 216)	"The content, structure and governance of transactions designed so as to create value through the exploitation of business opportunities [...] a system of interdependent activities that transcends the focal firm and spans its boundaries"
Chesbrough and Rosenbloom (2002, p. 529)	"The heuristic logic that connects technical potential with the realization of economic value"
Magretta (2002, p. 4)	"Stories that can explain how enterprises work. A good business model answers Peter Drucker's age-old questions: Who is the customer? And what does the customer value? It also answers the fundamental questions every manager must ask: How do we make money in this business? What is the underlying economic logic that explains how we can deliver value to customers at an appropriate cost?"
Morris, Schindehutte and Allen(2005, p. 727)	"Concise representation of how an interrelated set of decision variables in the areas of venture strategy, architecture, and economics are addressed to create sustainable competitive advantage in defined markets"
Johnson, Christensen andKagermann (2008, p. 57)	"Consist of four interlocking elements that, taken together, create and deliver value"
Casadesus-Masanell andRicart (2010, p. 195)	"A business model is ... a reflection of the firm's key resources, and key processes"
Teece (2010, p. 179)	"A business model articulates the logic, the data and other evidence that support a value proposition for the customer, and a viable structure of revenues and costs for the enterprise delivering the value"

Timmers (1998) and Casadesus-Masanell and Ricart (2010) choose to focus on enterprise's internal and external operation when defining a business model while others focus more on the interdependent activities that enables enterprises to create and deliver value to the customer while generating profit.

ISBN: 9780 9943 65613

"Business model refers to the logic of the firm, the way it operates and how it creates value for its stakeholders" and "Strategy refers to the choice of business model through which the firm will compete in the marketplace (Casadesus-Masanell & Ricart, 2010, p. 196).

The goal with a business model is to create value that customers want to pay for and which the enterprise can make a profit from, and the profit lies in how the enterprise handles their internal and external activities. The interdependence between the elements is key to the outcome of a business model, thus, a business model should describe the logic of the holistic system which enables a enterprise to make a profit.

Business model innovation has been receiving increased attention by corporate practice and academic literature in recent years in order to adapt to the rapid changing business environment (Casadesus-Masanell & Zhu, 2013; Gibson & Jetter, 2014; Speith, Schneckenberg & Ricart, 2014). The research on business model innovation is concentrating on changes in the business model and its components and the search for new logics within the existing organization to capture and create value for customers, suppliers and partners (Casadesus-Masanell & Zhu, 2013; Lambert & Davidson, 2013).

Chesbrough (2010) argues that business model innovation often tends to increase when the current business model shows signs of weakness with dropping revenue. Another pattern was found by (Waldner et al., 2015) which state, *"we find most business model innovation to occur in the emegent life cycle stage"*, which suggests that firms are experimenting with different configurations of their business model until it becomes stable and is exploited over time (p. 24-25).

3.Methodology

A single-case study design was chosen to explore and investigate the single organization of our interest, the Chinese Envision. This case explores the case company through a qualitative perspective embedded in the context of an ongoing large wind power research project. Single case study design is a common research strategy in social sciences (Yin, 2015). According to Saunders et al. (2009), case studies suit research that aim to gain a rich understanding of a context and the content. In conducting a single case study, we combined primary data and secondary data. Primary data is collected through interviews while secondary data is data that has already been collected for our other projects including wind power companies in Europe and in China and also Envision. A semi-structured interview was used to provide insight in Envisions business model for internationalization.

The primary data was collected through a 90 minute recorded semi-structured interview with the head of business development for Europe, Africa and Middle East (located in Denmark).The primary data was transcribed and was used to present a detailed description of the company and its operations in empirical findings with quotes. Secondary data was collected to put the primary data in perspective. The collected secondary data was presented to build up and understanding of the current wind energy industry and it dynamics.

The data analysis was performed by utilizing the business model canvas and its nine building blocks (Osterwalder & Pigneur, 2009). Both primary and secondary data was clustered in the relevant building block in the canvas to help identifying the underlying factors to Envision's successful business model for internationalization.

4.Analysis

The collection of data about Envision was following the model of Business Model Canvas (Osterwalder & Pigneur, 2009). During the analysis process, the nine building blocks were scrutinized into four components. From the analysis of the empirical findings, four factors

ISBN: 9780 9943 65613

(market position, human resources, supply chain & customer orientation) has been identified as crucial to explore and analyze Envisions business model (see figure 2).

Market Position

In late 2000s, the Chinese market started to flourish and domestic and international manufactures realized the big market opportunity in China, and many suppliers wanted in. The Chinese manufacturers could offer a price that the international players could not match, but offered quality products that still could not be produced by the Chinese manufactures.

This created customer segments with different wants and need, some wanted cheap from the domestic Chinese manufactures and others wanted quality from international manufactures. What Envision did was to combine the want from the two segments and offer a more qualitative product then their Chinese

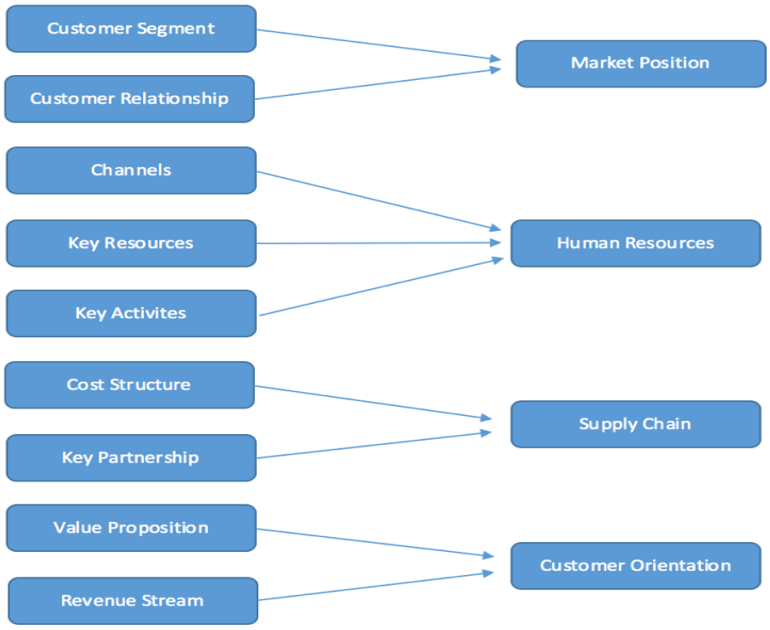

Figure 2: Four factors used when analyzing Envisions business model

competitors and a cheaper product than their international competitions. This created a new *customer segment* that attracted customers who wanted more quality from the cheap, and customers from the quality segment who wanted more value for their money. By operating in their own *customer segment,* they could tend to their customers wants and needs, with domestic market knowledge and international technical capabilities. "What envision has managed to do, is to move the client to move along the buying motivation forwards a more quality product that works." They managed to create innovative quality products that lived up to international standards, but with a cost structure that still attracted their customers in the Chinese market. This shows that Envision knew who their more direct *customers segment* was, but also that they prepared themselves to reach the international *customers segment* when time was right (Osterwalder & Pigneur, 2009; Baden-Fuller & Haefliger, 2013). Their domestic origin and market knowledge has also been crucial in order to move the Chinese customers towards more expensive quality product, and been key in the establishment of a well function *customer relationships*.

"We have been very strong and been able to respond in the market in China, we are now building an organization to be as strong to respond on the international market. [….]. Vestas and others hit the barrier of entry into china because they didn't have product fit. [….]. We

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have seen some key learning of what they (Goldwind) have tried to do, because it is a distinct different market place then china and they have made some fundamental errors"

Through communication in the native tongue and high technical experience, Envision could build trust and a repetition of being a quality provider. As the market trends towards more reliable products, Envision grew and managed to build a customer loyalty and nurture their *customer relationships*.

"Rapidly the China customers stated to recognized that they didn't want cheap products that didn't fulfill their design criteria and what they were looking for. They want a quality product like anyone else because they need to generate electricity on an hourly basis, so they need it to work"

Human resources

The vision to revolutionize and transform the energy industry has been the driving force for Envisions business model, which holds many unique components. A main factor for their business model is that the founder of Envision Mr. Zhang Lei with his extensive international experience, recognized that he needed good talented people as he formed the organization. The human resources at Envision is the key for the whole organization and the competitive advantage they have managed to create. The sourcing of these human resources enabled Envision as an organization to gather special expertise about the global wind power technology, markets and ways of business. It also gave access to each individual's network with institutes, suppliers and customers, which has made Envision's business model possible. The sourcing of international industry experts from competitors is in many ways unorthodox and unique for a Chinese wind turbine manufacture.

Envision established themselves in the third stage of turbine innovation in China, which was characterized by cooperative innovation, collaborative design and joint venture. Driven by the desire to revolutionize the industry, Zhang Lei recognized that he needed to attract sharp minds in the industry domestically and internationally and let them work together (Grisen et al., 2010).

"But in fact that envision started in 2007 and the key to our success since 2007 is that Zhang Lei, recognized that he needed good talented people from the industry to take forward the technology that was as least on pile with the international standards."

The decision to bring in these *key resources* was the start for Envision's rapid growth and development. By bringing in specialists from different rivals, Envision bought the know-how of several technical solutions and have, from there, managed to combine the knowledge to a turbine solution which has been the base for further development. The turbine solution did not originate from imitation as many other Chinese turbine solutions did, that went through the 2nd stage of Chinese wind turbine innovation. It is more related to stage 3 of cooperative innovation with collaborative design. By investing in human recourses and leapfrog stage 1 and 2, Envision did something unique, which allowed them to start the stage indigenous innovation and develop wind turbines of international standards close after their market entry.

"[….] rather than go through that long process of learning, his mindset was that I want quality leading product and I want it to be to the international standards."

The *human key resources* are the foundation for the company's *key activities*, which is technical innovation for a lower cost of energy and ultimately, a more sustainable energy supply. The technical capabilities in the company have resulted in a new turbine solution that ensures maximum power generation and service life with the "smart turbine". More compact turbine solutions for easier and cheaper transportation and assembly. The two bladed partial pitch off-shore design that reduces extreme loads with 30 % and require less material in the

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foundation, tower and turbine. Combined with their open interface overlay software system that fit any renewable energy source for easy monitoring and optimizing of the energy assets. It is no doubt that innovation is the *key activity* of Envision and that they will continue to challenge the current norm in the industry.

"And what is the key game changer in the industry is that our software can fit any assets, any renewable asset, not just wind assets, so wind, solar, hydro, bio mass and the software is developed so it can be overlaid on any assets including our competitors in the industry."

The purpose of Envision is clear, to revolutionize the energy sector through technical innovation for a sustainable future, and with that purpose, the opportunity to attract industry specialist appeared. These specialists are now working together with a shared goal of revolutionizing the energy industry. Thus, it can be seen that individuals are drawn into innovative organizations that offer opportunities to contribute to a purpose. This, together with the opportunity to grow, exciting assignments and interesting careers has allowed Envision to attract their *key resources* and engage in the company's *key activities* (Ready, Hill & Thomas, 2014). The experienced and well known industry specialist came to Envision with another valuable asset. Their industry network with suppliers, institutes, customers, distributors and governments. The network gave the company access to *channels* that allowed them to rapidly build an organization with a desirable supply chain and customer reach.

Supply Chain

In a market were most customer wanted cheap products, Envision with their high quality approach and proven technology had to find solution to streamline their *cost structure*. By leverage, the fact that they were operating in a cost-driven market they could take cost-saving actions in their supply chain that did not interfere with their quality and value-driven approach. The use of domestic suppliers and contractors played a big role when competing with international manufactures in china, and thanks to the competitive advantage these *key partnerships* gave, they managed to gain market shares.

"Second initiative is changing the model in China, bringing in a high quality product, but still leverage in the supply chain in china to maintain a cost base that the customers would still purchase in China. But recognize it as quality product because it proven technology."

The use of proven technology and international world leading suppliers is the core in Envisions turbines. By establishing *key partnerships* with Winergy, Siemens, ABB, SKF, LM and other quality providers, Envision reduces the risk of turbine failure and in the same time keep up to date with the latest technology, since big companies often rely on being innovative and push the technology boundaries forward. Other benefits of using world leading quality suppliers is that they can meet a change in supply demand and rate their customer satisfaction high.

"So that's the other part of our success, so high quality, proven technology, proven supply chain, and that accelerator envision in terms of the success in China."

Which means quick response time when technical issues emerge. In any producing or generating industry technical failure means a loose of revenue and need to be dealt with immediately.

Customer Orientation

The best technical solution does not necessary mean the best overall solution. The lifetime and the ability to service and maintain the turbine is also of high importance. There is no doubt that all manufactures in the industry know this, question is how to offer a *value proposition* that meet the customer demand and in the same time make a sufficient profit. Envision seem to work the customer demand from all angles with innovative turbines designs that maximize the electricity output with a supporting software that prolong the lifetime and

ISBN: 9780 9943 65613

optimize the asset efficiency. By having a dialog and being more customer oriented of what the customer really wants, Envision will strengthen their *customer relationships,* but also increase their *value proposition*.

"So I can sit in front of customers and say. What menu do you want to eat from? And we can have a dialog around what do you actually want, and most of these customers are agitated that they are never get to buy from the menu they want."

Added value also raises the customer's willingness to pay. In the wind industry, the hardware piece is the largest *revenue stream,* but as the importance of the optimization and life cycle increases due to limitations in turbine size. The software, service and maintenance will play a larger role in the industry as *revenue stream*. Envisions decision to build an energy internet with their overlay software gives them a competitive advantage. Customers that own wind turbines from different manufactures, using plural software systems to monitor their assets can improve and boost their operations by switching to Envisions software. The barrier for customers who have tried to keep their operations simple by staying loyal to few brands disappear with the software and puts pressure on the competitors to keep their customers. The software sales will in the same time allow Envision to build *customer relations* with new potential customers to their hardware.

"[….] knowing Envision without actually buying any hardware. They got our software on their assets so it seems that we are solution provider. Which helps us again build this level of trust, for the guys that are risk adverse.

The four themes together captured the most vital elements in Envision's business model and gives an understanding of their young, but well planned organization. Envision have chosen to place themselves in the market where no one else has, they have as the first Chinese wind power company chosen to requite in the know-how, emphasized on quality suppliers instead of cheaper domestic ones, and put the customer and the cost of energy in focus as a part of their value proposition in ways the vertically integrated competitors cannot.

Conclusions

As a new kind of Chinese international company, already from its inception the leading team of Envision was designed with international background and experiences of international business in wind power. The mindset of Envision was from the inception setup to become fully international company, not necessarily only in wind power forever. Wind power is only the foundation for establishing Envision. China was a rapidly growing wind power market that needed more wind turbines of high quality and China provided necessary financial platform for establishing and developing Envision.

Nowadays, Envision avoids external communications because they are a Chinese company. One reason is that they try to avoid to be mixed with low price and low quality technology and products. Envisions identity is an "international actor" in high tech energy solution provider. Envision is moving from wind turbine manufacturing to grasping the entire area of software solutions for energy control and integration systems, wind power, solar power etc.
Our analysis shows that the underlying factors to the success of Envision business model was:
Upfront elements representing the face of the Envision to market and customers

1. **Market positioning** by the clear positioning of Envision on the market areas left open by the lack of understanding of the market logic by competitors.
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creating bond and relations with customers and delivering promised values to customers. and delivering

4. **Supply chain** by the capacity of Envision to utilize the entire supply chain to create and deliver high quality products synchronized with Envision offerings to customers and customer's expectations.

Envision have developed a business model enabling them to be wind turbine developer, manufacturer and also fully international software and energy system integrator. Envision has expanded key functions from China, one R&D center in California, USA and one in Denmark, one of the two countries of origin of the European wind power technology. Thus, Envision creates a foot print as global high tech energy solution provider, with roots in wind power. The China based operation is only a limited part of their global international operations.

In China, Envision were sheltered from international competition and operating in a fast growing market with little regard towards quality. With the aim to grow and become a global energy solution provider, they develop a business model that filed a void in the domestic market by emphasizing on quality and innovative solutions. With the industry knowledge and network of suppliers, the international human resources working in the hearts technology and competence centrums played an important role in the key activity of qualitative product development. With the combined knowledge the human resources could put together available technology and then system integrate it into new turbine design, using well known and reliable suppliers. Emphasizing on quality, Envision became one of the largest players in the Chinese market and in the same time erased the biggest barrier of entry into the international market.

By focusing on quality and technical innovation, Envision differ from other Chinese turbine manufacturers and can overcome the preconception of the China hypotheses and brand themselves as an international quality energy solution provider. Chinese companies that have not put the same effort into quality cannot compete with quality, they should therefore stick to what they know and try to compete with price and good enough quality. The industry has matured and today's good enough was considered high quality not a long time ago. As the maturity of the three bladed wind turbine design keeps reaching its peak, a more balanced quality standard will emerge between the western and Chinese companies, giving the Chinese companies a competitive advantage on price.

All Chinese manufactures will however, face difficulties when establishing themselves outside China, and especially in western countries which still think Chinese products are linked to cheap and bad quality products. The Chinese hypotheses are a big barrier of entry by which the Chinese manufacturers should find ways to overcome.

Probably, in the future, we will see more of this kind of Chinese globally operating companies.

ISBN: 9780 9943 65613

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