

TURBULENCE, SPEED AND SYNCHRONIZATION IN NETWORKS
A new perspective on time and internationalization

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ABSTRACT

Speed and networks are two concepts, which hold increasing central positions in how research explains and understands firm internationalization. So far, they have been kept apart, which resulted in speed lacking an anchorage in internationalization theory. This paper makes an attempt to merge them and to develop three concepts: network dynamics, network synchronization and network entry speed. We anchor the concepts in the network perspective and combined them in a model on internationalization. We define speed as the relation between the network position the firm has gained in a foreign market and the time that has elapsed from the first sales to the market and we argue that the higher network synchronization the higher the network entry speed. Finally, we mean that network synchronization is contingent on network dynamics, which is a concept capturing the extension, frequency and predictability of the changes taking place in the network.

KEY WORDS: Network, dynamics, relationship, speed, synchronization, position, time, internationalization, foreign market entry.

*If you want to go fast, go alone
If you want to go far, go with others
(African proverb)*

INTRODUCTION

Since Vernon's influential study (Vernon, 1966) on firm internationalization, time has been an implicit concept, which cannot be completely ignored. Nevertheless, a recent review demonstrates that there is a lack of process studies providing both process data and process theorizing (Welch and Paavilainen-Mäntymäki, 2013) internationalization and international business still pays little attention to the question "when" (Eden, 2009), that is, the temporal aspects of internationalization. Johanson and Vahlne (1977) described internationalization as a process taking place over time and from 1994 and onwards Oviatt and MacDougall (e.g. 1994, 2005) advanced the idea that many small- and medium sized enterprises begun to internationalize at a much younger age that the received theories had argue, and they did so at a high speed. The concept of speed nowadays holds a central position in explaining firm internationalization (Casillas and Acedo, 2013; Chetty, Johanson and Martin Martin, 2014; Prashantham and Young, 2011). Research on internationalization speed can be divided into several categories, where the first division is between speed *to* internationalization, that is, how early the firm begins to internationalize (Khavul, Pérez-Nordtvedt and Wood, 2010; Luo, Zhao, and Du, 2005; Pla-Barber and Escribá-Esteve, 2006), or speed of internationalization, that is, sustainable speed, which cover the process beyond the start of internationalization (Jiang, Beamish and Makino, 2014; Vermeulen and Barkema, 2002). Thus firm internationalizes is studied in a longer time-perspective. Speed *to* internationalization is extensively used to capture why born globals and international new ventures start to internationalize so soon after inception. Speed of internationalization, on the other hand, has attracted less attention from researchers, and the studies made have been on multinational companies (Wagner, 2004) and aimed to find the performance consequences of speed. A second division concerns what is internationalized. There is a division between speed spreading operations over several foreign markets (Hilmersson and Johanson, 2015), international sales growth (Morgan-Thomas and Jones, 2009; Zucchella, Palamara and Denicolai, 2007), establishment of legal units abroad (Lin, 2012; Musteen, Francis and Datta, 2010), or at what speed the firm enters a specific market (Coeurderoy and Murray, 2008). At the same time, arguments have been raised that these groups lack theoretical anchorage and are only based on empirical observation (Chetty, Johanson and Martin Martin, 2014), and this is a weakness that this paper aims to reduce. This concerns both the concept in itself but also the causes and outcomes of high or low speed. This paper aims to contribute to give the concept of speed of internationalization a clearer and tighter link to internationalization theory, and we build the argumentation the network perspective, which holds an increasingly strong position in our understanding of firm internationalization. There are several studies, which combine speed and network (e.g. Belso-Martinez, 2006; Freeman, Edwards and Schroder, 2006; Kiss, and Danis, 2008; Lee, Abosag and Kwak, 2012, Musteen, Francis and Datta, 2010), but they separate the concept of speed from network theory and they do not define the concepts.

In light of these gaps the purpose of this paper is twofold. First it aims to develop the concepts of network speed and network synchronization in order to increase our understanding of the temporal and dynamic characteristics of foreign market entry and internationalization in a network perspective and thereby anchoring the concept theoretically. Second, with the help of the concept, the paper advances a model for how to analyze understand the temporal aspects of internationalization into foreign market networks. In opposite to other studies, we argue that speed in a network perspective cannot be understood

without taking other actors, like customers and suppliers, into consideration. The relationships with these actors must be part of the definition of speed, and not only an antecedent or an outcome of networks. Moreover, it is not the speed of the competitors (Hohenthal, Johanson and Johanson, 2014), which is the most important aspect, but customers and suppliers, in order to understand the temporal dimensions of an entry in to a network. Consequently, we would argue that when a firm establish its business in a new network, the speed in relation to its existing and potential customers' and suppliers' operations is crucial. As the firm is not acting in isolation from its customers and suppliers, the temporal adaptation and coordination of the operations in these, has tendency to decrease the speed. Customers and suppliers are sometimes even viewed as constraining factors (Oviatt and McDougall, 2005). How fast a firm can enter the foreign market's network is contingent on how well it can coordinate and adapt to the customers and suppliers, with which the firm has a relationship. But as neither the entering firm nor the foreign market's network is perfect stable, the firm needs to synchronize its operations with the change in the network. Synchronization can be viewed as a temporal coordination or correspondence between two objects, which makes the network synchronization to an important factor for how fast the firm, can establish a position in the foreign market's network. In order to define the concepts and to get a clear picture of their nature, the paper is structured in the following way. With the help of a case illustration we make several observations reflecting temporal and dynamic characteristics of an entry in to a foreign market's network. These observations help to conceptualize network entry speed and network synchronization. As the process, speed and synchronization are in focus of this paper, we, after the case, begin by discussing time in relation to the network. The subsequent section presents the network perspective on markets, which is followed by a review on what we know about network and internationalization. After this, we discuss and define the concepts introduced to capture the temporal character of network entry: Speed and synchronization. In both cases, we make a general review of the concepts, based on the internationalization literature, before we put them in a network context. Finally, we combine them in a theoretical model and advance a general proposition. The paper ends with some concluding remarks, where we also highlight several promising research areas for the future.

Case illustration – DeLaval's entry into the Chinese market

DeLaval is designing, manufacturing and supplying equipment and systems to dairy farms for milk production and animal husbandry. DeLaval is known for technological advancements and quality products in milking system. Milking equipment and systems represent nearly half (48%) of the sales. DeLaval employs 4,077 people and is present in more than 100 markets. DeLaval has been active in the Asia Pacific region since entering New Zealand in 1884. DeLaval's next Asian venture came in the 1970s when it entered Japan.

DeLaval begins export

Although China currently the second largest dairy consumption market in the world, a totally different situation existed there thirty years ago. At the beginning of the 1980s, the industry was relatively small and immature. There were dairy processing factories in Inner Mongolia and Guangdong, and production of milk powder in Shanghai and Beijing since the 1950s, but overall dairy production was small. Poor economic conditions, lack of policy motivation, and the natural diet preferences of the Chinese people were the major factors limiting the development of the dairy industry. The Great Chinese Famine that occurred between 1958 and 1961 is believed to have caused in excess of 15 million deaths. Severe starvation during the Cultural Revolution had also restricted feed sources for cattle. Dairy production and related standards did not receive much attention from the government during this period. The first dairy standard was issued by the Ministry of Light Industry (MLI) in 1958. It took nearly

30 years before the Ministry of Agriculture (MOA) issued an updated version. Dairy products had never been an essential part of the traditional Han Chinese diet. A great proportion of Chinese are lactose intolerant, which leads to discomfort after consuming dairy products, particularly fresh milk. Dairy consumption was low up until the early 1990s. Chinese were consuming less milk in comparison to other Asian countries until the early 1990s. By the mid-1990s, consumption of milk began to grow in cities located in the coastal area as they experienced economic development, increased urbanisation and exposure to international influence. DeLaval received its first order from China in 1979, following the country's economic reform. The import order was placed by Shenzhen Guangming Huaqiao dairy farm for a pipeline milking system with 24 slots.

This is a short period and it was characterised by DeLaval developing one weak relationships with a customer.

Establishment of the sales subsidiary

A few more exports to China followed this initial order. Guangzhou City's dairy and Shanghai Bright's dairy farm, for example, also acquired DeLaval systems in the early 1980s. As a result, Alfa Laval group opened a sales office in Hong Kong in 1983 and a representative (Rep.) office was established in Beijing in 1985 to collect market information and assess market potential. As the Rep. office could not conduct business trading directly, the export operations were arranged through Hong Kong. During the early 1980s, exports to China represented an insignificant portion of DeLaval's total business. Based on these limited exports, developing further market activities in China was seen as challenging and little information was gathered about these customers.

The second period in the process implied a development of rather weak relationships with customers. In the same time, the number of relationships increased.

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Yet the consumption of milk in China was projected to grow in the following decade, and the market penetration rate for milking machines in China was extremely low, with less than 0.5% of dairy farms equipped with any type of milking machine. The government had also recently updated regulations on milk quality. While the abundance of cheap labour in China would suggest that full automation milking systems might not be of interest to local dairy farms at this point in time, a basic milking machine could attract some local customers keen on adapting to advanced technology. In 1986 DeLaval acquired a New Zealand milking equipment manufacturer named NuPulse. NuPulse was known for its simple milking systems and believed these might be a good fit for the Chinese dairy industry, given the industry's stage of development at that time. Therefore, although DeLaval had yet to see clear potential for its more sophisticated systems, it supported NuPulse's interest in searching for opportunities to expand in China. NuPulse's search for partners began in the northern part of China and also included discussions with Nanjing Light Machinery Manufacturer, but no agreements were reached. NuPulse refused to give up and after some negotiation work through the Guangzhou government, a JV was eventually formed together with Guangzhou's government-owned Wanbao group in 1989. Therefore, China became NuPulse's first foreign market, and at the same time, made Guangzhou the first location for DeLaval to be formally established in China. Wanbao-NuPulse was the first Sino-foreign JV involved in the trade of milking machines in China. The JV aimed to import NuPulse's machines while reducing the cost of its product to Chinese customers by localising certain components. Although a JV form of entry was not necessary for an agricultural machinery company, NuPulse felt the connection with a local government-owned company would help to pursue the potential with local state-owned dairy farms. Wanbao would focus on making contacts with local dairy

farms, and NuPulse would import machines from New Zealand, and try to localise certain components to reduce the cost. After the establishment of the JV, Wanbao-NuPulse received several new orders from dairy farms in Shanghai, Nanjing, and Hebei. NuPulse also assigned an expatriate manager in Guangzhou to oversee the operations. Promoting milking machines remained a challenge and sales of NuPulse's machines were small. Even though NuPulse's machines were relatively simple, they were still much more expensive than average dairy farms could afford. Dairy farms simply did not understand the benefit of machine milking, and had no incentive to pay for an expensive machine, as they had no difficulty finding low cost labour. Milk quality was also not a concern for dairy farms, the government, or the consumer at this stage. Fundamentally, the dairy industry was hardly an industry per se due to the low volume of activities, and the industry association was yet to form.

This period implies a slow and incremental expansion and DeLaval's networks characterized development of one strong relationship, while several weaker relationships also emerge.

The growth of the Chinese dairy industry

Until the late 1980s and beginning of the 1990s, China's dairy industry consisted largely of small state-owned dairy farms and processors. In 1989, the MOA initiated the "Shopping Basket" program to ensure perishable foods, such as milk, eggs and vegetables would be produced in sufficient quantities and become more available to the population so as to improve their diets. Provinces were encouraged to establish dairy farms, and new policies made land available to people for use in raising a few cows in their backyard. Many people rushed to capitalize on the offer and become backyard dairy farmers. As a result, the shopping basket program provided a stimulus to the industry. Both the number of dairy cows and the milk production increased in the 1990s, for instance the number of cows grew from 2,942,000 in 1992 to 4,420,000 in 1999 and the milk consumption per capita increased from 4,8 kg in 1992 to 7,8 kg in 1999. As the market developed, a few dairy conglomerates were formed and several foreign dairy processors entered the market. The dairy industry was finally beginning to take shape, and the Chinese Dairy Industry Association (CDIA), and the Dairy Association of China (DAC) were also formed in 1995 and 1999. DeLaval began to see the potential growth in the dairy industry based on its experience elsewhere in the world and made the decision to fully integrate NuPulse, and bought out its JV partner in 1995 and Wanbao-NuPulse and became a wholly-owned subsidiary. Through this move, DeLaval lost its ties with the Guangzhou government and the state-owned farm customers in that region. DeLaval moved the subsidiary from Guangzhou to Shanghai, which provided a better chance to access to the growing base of potential customers located in the Northeast of China. The dairy sector had been crowded in the Southeast coastal regions of China. Since the cold transportation chains were not established, dairy farms needed to be close to the cities to provide fresh, pasteurised milk. Due to land availability in southeast coastal areas, these urban farms were restricted in size and were facing difficulties with access to feed, issues of animal health, and pollution. Obtaining permission to expand dairy farming operations in these areas became difficult. Milk production migrated to the Northeast of China. DeLaval chose Shanghai to allow potential expansion in order to interact with local customers directly, and thereby learn their preferences, ways of doing business, and the elements of business considered to be important. The sales remained low after the relocation. By 1999, their net invoice was just over 1 million euros, and the number of employees had increased to 30 people. The milking machines DeLaval sold were imported directly from Europe, and the operation in China remained as a sales office. The growth began to show in DeLaval's sales. From 1999 onward, DeLaval's invoice volume grew nearly 50% every year, and reached 16 million euros in 2004. DeLaval also established a factory for hygiene products, and an assembly factory around 2004 and 2005 to provide better service to the customer. A regional sales office for East Asia was formed in Shanghai in 2002 to oversee sales activities in China, Korea, and Southeast Asia. Yet 90% of the business it handled was from China. DeLaval expanded its customer base and provided solutions ranging from the basic to the most advanced products in the market. The

local dairy farmers and dairy processors were inexperienced since the entire dairy industry was in its beginning stage. The delicate matter of ensuring a stable milk flow from producer to processor provided an incentive for DeLaval to work closely with TetraPak and various actors across the dairy supply chain. Through these closed collaborations, DeLaval participated in several large-scale projects in the north-eastern part of China. Most of the Chinese dairy farms and processors were also aware, from DeLaval's long-term presence in China, of its reputation for being a total solution provider. DeLaval remained the market leader with a 50% share of the market. DeLaval maintained its reputation by adopting a multi-layer customer feedback system to ensure customers were satisfied with the products and services received. The Chinese dairy farm customers ranged greatly in size. At one end of the spectrum there were the medium- to large-sized farms with more than 500 cows that needed high levels of automation. For these medium- to large-sized dairy operations, DeLaval enjoyed a leading position in the mid- to high-end segment of the market. DeLaval had been working with big players in several existing and new farm projects. With the policy encouragement and increasingly intense competition, dairy processors had more incentive to adopt advanced technology to ensure a stable supply of milk production, as well as to control milk quality and reduce labour costs. Large farms require higher automation for milking rather than relying on manual labour. In contrast, the lower-end segment was made up of small dairy farmers also known as backyard farmers with between two and five cows. These small backyard cow farmers relied either on manual milking, or simple machines produced by DeLaval's domestic competitors. In the early 2000s, nearly 70% of the milk production still came from these small dairy farms. Their facilities were basic, and these farmers had little animal husbandry knowledge. As a result, a large portion of these cows had diseases like Tuberculosis (TB) and the milk quality was not good. These farmers had no means by which to adopt modern technology on their farms; they either relied on hand milking or they had to bring their cows to local village milking centres (VMC). DeLaval faced a stronger competition in this segment as it was dominated by local milking machine companies with cheap and simple machines. There were approximately 50 regional players and they were competing on price. In 2005, DeLaval decided to develop a basic milking machine called the Mobile Bucket that specifically targeted the small dairy farmers. DeLaval re-engineered a basic, cost effective semi-automatic milking machine that could easily be carried around to milk cows. The Mobile Bucket was locally manufactured in order to be competitive on price. If small farmers could obtain government subsidies, this machine would be affordable. DeLaval began sourcing activities in 2003 in an attempt to reduce the cost of its product.

During this period the dairy industry grew and DeLaval developed several new relationships with customers. As the demand increased in the already existing many relationships became stronger. In the end of the period DeLaval's number of relationships had increased and it now had several weak and several strong. What is striking is also that DeLaval got in contact and developed indirect relationships with firms that it did not do business with that is, selling or buying.

De Laval began sourcing

Although DeLaval knew the labour costs were lower in China, moving goods in and out of China was not easy prior to China joining the WTO. Following the accession to the WTO in 2001, and deregulations in import and export, DeLaval began, in 2003, to conduct some sourcing trials from China through its Asian sourcing centre located in Hong Kong. Eventually, DeLaval's Asian sourcing centre moved to Shanghai in 2005, as the volume had increased and the supply function expanded to service global operations. The materials sourced in China continued to be mostly components made of stainless steel, rubber and plastic that required a lot of manual labour. Essential components such as cow teat cups made of stainless steel required a lot of polishing to ensure smooth contact with the animal's skin. The labour intensity of such components therefore made them much cheaper to produce in China than elsewhere. Due to small purchase volumes and the relatively low-tech nature of

these components, it was difficult for DeLaval to form stronger relationships with the suppliers of these components. Developing sourcing in China was not easy. DeLaval considered it a lengthy process involving a lot of planning but still no easy solution to control the quality. First of all, the communication between DeLaval and its suppliers remained a challenging issue. What was considered to be good quality might be perceived differently between DeLaval and its suppliers. Overall, the language, culture, and standards barriers represented the main obstacles for DeLaval to make communication effective. Language and cultural differences slowed down communications; many basic standards used by product designers in Europe were simply unknown to Chinese suppliers. As the components needed to fit into a larger system, quality control became crucial. DeLaval's sourcing teams had to make frequent communications with local suppliers to make sure the requirements were strictly followed so that all components would interface and function flawlessly. The purchasing manager in China reckoned that cost savings were the main motivator for sourcing in China. DeLaval also had to adapt to the local approach to communication in order to reach a price that could be agreed upon by both sides. Even though there were strong intentions from DeLaval to collaborate with the local suppliers, DeLaval's sourcing operations in China were not able to achieve product innovation due to the low level of product sophistication. Most of the items sourced were components; DeLaval showed these suppliers drawing and the suppliers did what DeLaval asked. As the assembly was based in Europe or the U.S., these suppliers had no knowledge of how these components were used. The supplier-customer collaboration was also difficult to form because of the less frequent purchases. Due to the long transportation time between China and the assembly factories, the stock level in the factories was usually high, making it difficult to make a regular purchase from their Chinese supplier and hard to establish healthy supplier-customer relationship.

The following years were characterized by DeLaval maintaining the relationships with customers, but also a big change happening, as DeLaval built up a supply network, which resulted in the number of relationships increasing, but also that the relationships with the suppliers were strong.

The melamine poisoning crisis

Despite the rise in milk consumption, the development of dairy farms in China took a downturn from late 2003 to 2005. DeLaval's sales volume in 2006 fell to a third of that in 2005. Factors on the supply side were against dairy farm operations. Global feed prices and local labour costs had risen several times, while local milk prices remained unchanged. Dairy farms were facing the threat of closure and many small farmers slaughtered and sold their cows into the market for meat. Since DeLaval's operations were closely connected to the development of the dairy industry, they suffered losses. A difficulty faced by dairy farms was the availability of cheap imported milk powder. After China joined the WTO in 2001, it opened up domestic markets for import of milk powder, and import tariffs were further reduced in 2004. The amount of milk powder imports skyrocketed between 2004 and 2005. The demand for domestic milk was down, and many dairy farms faced difficulty selling their milk. In conjunction with rising feed and labour costs, gross profits on dairy farms fell sharply and less than 25% of them achieved a profit in 2004. The resulting farm closures and downsizing saw liquid milk production drop nearly 35%. In addition, milk quality and safety issues that emerged during this period affected consumers' willingness to purchase domestically produced milk. For example, in 2003-2004 many infants in the Huyang region became seriously ill after consuming poor quality milk powder produced with inadequate nutrition. In 2005, Nestle's locally produced milk powder was found containing above-standard levels of Iodine. In the same year, Bright Dairy's plant in Zhengzhou was found repackaging expired milk and selling it back to the market. These safety incidents were an indication of problems both in the dairy industry and with quality supervision by regulatory agencies. Due to the expansion, many dairy processors did not invest in building their own

dairy farms but outsourced to VMCs for raw milk supply. Milk stations made money on commissions, and therefore were more concerned with the quantity rather than the quality of the milk passing through them. They also had little loyalty to the dairy processors; they would switch and sell to whichever processor offered the highest price even when they had signed contracts. These milk stations were not regulated; they were not participants in industry associations, and, prior to 2008, were in an administrative grey area. While a few of these milk stations were licensed and monitored by the dairy processors or local governments, most were not. There was no single governmental agency that took responsibility for their existence. The lack of control over milk stations also showed that the government was slow to respond to the fast growing dairy industry.

Insufficient quality control and inspection led to the melamine-poisoning crisis in late 2008. In August Sanlu Dairy became aware that traces of melamine were found in its raw milk. Melamine was an industrial chemical for making plastic and fertilizer. Milk collectors in milk stations added it to fake the richness of the protein content so that the milk would appear to be higher quality. Melamine can cause severe kidney damage and renal failure, particularly in infants with a diet consisting largely of milk. Sanlu acknowledged, in September, that melamine substance was found in their milk powder. This escalated to become a pan-industry epidemic as melamine was found in the products of 22 dairy processors and about 20% of the total milk powder products in the market and approximately 300,000 children in China suffered kidney failure, six of whom died. After the crisis, many stopped buying domestically produced milk products. DeLaval's sales were just showing signs of improvement after the losses of 2006, when the scandal cast another cloud of uncertainty over its business in 2009. Dairy processors stopped buying milk from dairy farms. By mid-2009, the downturn of the industry had approached an end, especially when the central government had implemented a series of attempts to clean up the mess and strengthen regulations and quality control. The government released large subsidies for dairy farm investments and the market bounced back. Projects that were paused due to the crisis came back on track with new investments. This demand strengthened DeLaval's position in the market, but the Mobile Bucket developed for small farmers became redundant, as manual milking was no longer of interests. DeLaval withdrew the Mobile Bucket from China, and to export to other emerging markets such as India, where it has attracted many customers. After the crisis, DeLaval increased ties with government and extended its involvement in multiple collaborations that had been previously initiated. DeLaval continued participating in industry associations and was a member of the China Dairy Association (CDA) board of directors. DeLaval interacted with actors outside the dairy industry, such as regulators, governmental agencies, and academic institutions. DeLaval and TetraPak initiated the China Dairy Forum (CDF) as a platform for industry and non-industry actors to exchange ideas. DeLaval could bring expertise and assist in the development of the industry. The CDF became a platform and brought together various actors to discuss issues relating to the industry. DeLaval hold the second forum in 2008, right after the melamine crisis. Furthermore, DeLaval also worked in collaboration with TetraPak, MOA, and Sanyuan Dairy to launch the second phase of the Sino-Swedish Dairy Centre (SSDC). The Chinese Agricultural University also joined SSDC to act as the counterpart from SLU and aimed to train 50 mega-farm managers and 500 professional dairy farmers with hands-on dairy farm management knowledge over a five-year period. In 2010, DeLaval moved its sales office from Shanghai to Beijing, as an estimated 50% of the milk production came from the northeast and northwest of the country; therefore Beijing offered a closer location to customers and key accounts.

Most striking during this period is that DeLaval develops relationships with non-business actors, which can be labeled institutional. Some of these actors were commercial firms, but the relationships did not contain any business. Moreover, the number of indirect

relationships increases in numbers, while several relationships with customers and suppliers became stronger.

CONCEPTUALIZATION OF THE EMPIRICAL OBSERVATIONS

The case spans over several decades and does demonstrate that during this process, time is an essential aspect, which has to take into consideration in order to understand the entry process. Moreover, it seems that DeLaval develops or maintains different types of relationships. The most obvious is the relationships with the customers, but there are also relationships with suppliers and relationships of an institutional nature. Besides the business and non-business dimension, several structural properties are evident. DeLaval has both direct and indirect relationships, but the relationships are varying strength and the number of relationships tends to change. I suggest that these different types of network features grasp the concept of network position. In addition, DeLaval acts and co-acts in the network process and tries to adapt to the turbulence and to the changes taking place, most time in the relationships with various actors in its network. This temporal adaptation and coordination can be called synchronization.

TIME

Time is one of the main components of the definition of the internationalization process, and it is not impossible to define speed and synchronization, without specifying what we mean with time. This leads to that there are two issues that have to be solved. The first is the question of what time unit that we should use. Most studies apply the time unit “years”, because most internationalization tends to take years. Internationalization is not only a process, but in most cases a long-term process taking years to accomplish. A recent study on speed uses “days”, as the time unit (Casillas and Moreno-Menéndez 2013). The time unit to use is closely related to the numerator, in this case the firm’s network position. On a micro level, a lot of things happen during the internationalization, including communication with customers and authorities, making decisions on products and prices, etc. The point is that there are events, people and decisions that are important for the process and that can be viewed and used as the numerator in cases where time units other than “years” would be more appropriate, but as this paper aims to contribute to internationalization process theory and as we see the process in a long-term perspective, we advocate “years” as the most appropriate time unit. The second issue relates to the start and end of the process studied. In the literature on speed, the start of the process is usually defined as the time of the firm’s inception (Coeurderoy and Murray 2008; Khavul, Pérez-Nordtvedt and Wood, 2010; Luo, Zhao and Du 2005; Pla-Barber and Escribá-Esteve 2006; Zucchella, Palamara and Denicolai 2007), and the process ends when internationalization begins (Chetty and Campbell-Hunt 2004; Knight and Cavusgil 1996; Madsen and Servais 1997). These studies represent the born global, where such a short-term perspective may be useful. In this tradition, internationalization and development of the firm are viewed as two integrated processes and what happens before inception can be viewed as part of the process (Hewerdine and Welch 2013). Managers bring their prior experience and networks to the firm, which influence the internationalization (Coviello 2006). In order to account for this, the start of the process needs to be specified as happening before inception of the firm. Traditional (e.g. Johanson and Vahlne 1977) approaches analyze the process, starting when the firm makes its first entry into a foreign market, and take into consideration what happens after internationalization has begun. This approach has also been applied in a few studies on speed of internationalization (e.g. Chetty, Johanson and Martin Martin, 2014; Vermeulen and Barkema, 2002). Although we recognize the importance of the entrepreneurs’ background, we take the inception of the firm as the starting point, but do not stop when the first foreign market is entered, nor shortly afterward.

In order to capture further development of what we mean are the main phases of internationalization and in order to be able to observe and compare we need a process view that continues long after the first foreign market entry.

BUSINESS NETWORKS

The network perspective views markets as systems of long-term relationships between customers and suppliers (Anderson, Håkansson and Johanson, 1994). In these relationships, firms adapt and modify their operations, which mean that mutuality and interdependence emerge. This means that what each specific firm does influences not only its customers and suppliers, but also the whole network, as the relationships in the network are connected (Blankenburg Holm, Eriksson and Johanson, 1999). In a dynamic perspective changes can not be seen in isolation and are not an internal phenomenon for the firm. In the network, various economic activities are organized so that specialization and division of labor emerge, which leads to that long-term relationships are developed. Thus, in a wider perspective business networks is a system of economic activities linked to each other. Change does not happen automatically, but requires interaction, communication and a mutual coordination, thus activities requiring at least two parties. Network as an economic system builds on the idea that firms produce and sell products and services to other firms, which, in turn, produce and sell their products to other firms. Exchange of products and services keeps the system together.

NETWORK TURBULENCE

The notion of network dynamics captures the extension and predictability of how the network changes. The networks dynamics can be regarded as a reconstruction of the relationships that make up the networks. This reconstruction can, in turn, be characterised as widespread dissolution of relationships, establishment of new relationships and extensive transformation of relationships. Transformation of the relationships is, in turn, a consequence of changing level of trust and commitment, but also that firms communicate and cooperate in new ways. For instance, when there is no foundation on which to build trust and reputations, firm may develop a short-term horizon, which can cause the dissolution of relationships, which contribute to the turbulence. Terminated relationships are a widespread characteristic of turbulence network. Collapse of existing networks can spread to other countries as the networks overlap national borders, as it can be difficult to isolate change to a specific relationship and in many cases not desirable. Change is also an outcome of firms developing new relationships, which happens when new firms are abolished or new technologies are developed. Besides changing relationships, establishment of new firms and development of new products and technologies contributes to the dynamic of the networks.

ENTRY INTO A BUSINESS NETWORK

The internationalization literature approaches networks in different ways, and the dominating perspective is to ignore the home market and third market. Both empirically and theoretically the foreign market's network is in focus. It means implicitly that different networks can be kept apart and analyzed, but also networks follow country borders. An opposite view is that it is the structure and characteristics of the home market's network, which drives internationalization, and has the highest explanatory value (Zhou, Wu and Luo, 2007). The foreign market's network is of limited interest. A third approach argues that networks do not follow country borders, but cross and overlap the borders (Johanson and Mattsson, 1988). In principle the whole world consist of one big network. We do here combine the first and third approach as we mean that research shows that the first steps into a new market is often a result of learning about an opportunity, either by pure luck and serendipity (Chetty and

Agndal, 2007; Harris and Wheeler, 2005; Vasilchenko and Morrish, 2011) or through the firm's already existing network (Johanson and Vahlne, 2009). The latter indicates that information flows through the network. The flow starts in the foreign market and the information reaches the firm in its domestic market. But the further expansion is also a result from knowledge gained while interacting with other business partners in the foreign market's network. A consequence of viewing the market as a network of relationships is that entering networks can mainly be done in three ways, where the first is when the foreign firm breaks already existing relationships and replace them by establishing new ones, replacing the old ones. A second way is to add new relationships to the already existing network, which is usually done by offering a new product or new ways of distributing an existing product. A third way is that the firm takes over an existing relationship in the network. The first and second ways mean that the firm's first relationship crosses the country border. The third becomes possible only if the firm merges or acquires a firm operating in the foreign market, which gives the entering firm a legal presence at the same time as it takes over the relationship. But as relationships are added or replaced in the network, the firm's knowledge to develop cross-border business relationships and to coordinate and utilize a set of inter-related cross-border relationships becomes critical. This means that entry into a foreign market's network is a process of finding, developing, maintaining and coordinating relationships. Irrespectively of how the firm enters and foreign market's network, there is a need to coordinate the activities between the firm and the surrounding network. Firstly, the product, which the customer buys, has to fit in terms of quality and time of delivery. In a wider perspective the system of activities performed by both the seller and the buyer, which are necessary for the transfer of ownership from the seller to the buyer, have to be coordinated in order to make the exchange possible. This requires joint planning and communication, but also that production, storage, transportation, etc. are coordinated between the buyer and the seller. Finally, the remaining activities, performed by the firm and necessary for the exchange, have to be coordinated. Achieving a position in the network and the stronger the position the more established the firm is in the network; a position in the foreign market's network is a manifestation of the firm's current status of entry.

SPEED

In order to capture the phenomenon of early and rapid internationalization, international business researchers turned to natural science and introduced words like speed, pace, rapid, accelerated, etc. Probably the most frequently used term is speed (e.g., Acedo and Jones, 2007; Oviatt and McDougall, 2005), which comes from physics where speed is an object's change of position or its movement. Speed integrates the time it takes to travel a specific distance. In the international business literature, speed is used in a metaphoric way, but seldom defined. To our knowledge, only Jones and Coviello (2005) define speed, which they see as the time it takes to accomplish a task or level of performance, which is a broad definition not related specifically to internationalization. In contrast to velocity, speed has no direction. The speed of an object is the magnitude of its velocity and, like velocity, speed is the distance divided by time. In order to calculate the velocity of an object's change of position one needs to know the object's direction; both magnitude and direction are required to define it. In internationalization, one could say that speed is 'three years to establish the first subsidiary' while velocity could be 'three years to establish the first subsidiary in the Indian market', which in the literature resembles scope of internationalization (Pla-Barber and Escribá-Esteve, 2006; Khavul, Pérez-Nordtvedt and Wood, 2010; Weerawardena, Mort, Liesch, and Knight, 2007) and captures which country markets the firm enters. Building on this distinction, our measure captures speed since it uses general internationalization measures regardless of the specific countries in which the firm has expanded.

A third, increasingly popular term, is acceleration (e.g., Shrader, Oviatt and McDougall, 2000; Pla-Barber and Escribá-Esteve, 2006; Weerawardena, Mort, Liesch, and Knight, 2007), which is the rate of change of velocity, that is, in an internationalization setting, how a firm's internationalization speed increases over time, thus, a firm's internationalization can during a specific period of time be characterized by a combination of low speed and high acceleration. Accelerated internationalization is often used in order to describe SME's early internationalization. Acceleration is not used, as an explicit concept empirically observed and measured, but as an overall term that describes a general change in the way firms internationalize (e.g., Pla-Barber and Escribá-Esteve, 2006). In the same way, rapid internationalization is often used as a synonym with speed (e.g., Freeman, Edwards and Schroder, 2006; Hurmerinta-Peltomaki, 2003), which to a large extent corresponds with physics. In relativity theory, rapidity is another way to measure motion compared to speed. Some studies use the word pace instead of speed (e.g., Vermeulen and Barkema, 2002). The word pace has the same meaning as rhythm, as it refers to the rate of the movement of an object. A good example of this is a pacemaker, which is a medical device used to control and regulate the rhythm of the beating of the heart. Not taken from physics, but from biology, is the term precocity, used by Zucchella, Palamara and Denicolai (2007). Precocity refers to species in which the young children are relatively mature and mobile from the moment of birth. Precocious animals usually leave the nest shortly after birth or hatching.

NETWORK ENTRY SPEED

When a firm enters a specific country market, it establishes a position in this market's network, and it goes from being an outsider to hold an insidership position (Johanson and Vahlne, 2009). Network speed can be defined as how fast a firm can gain a position in the foreign market's network (Johanson and Mattsson, 1988), which means that network speed is a relation between the position gained and the time it has taken to gain this position. As firm enters a foreign market's network it develops relationships with other actors and through the network the firm learns about new opportunities and thereby it can expand its networks and its business (Blankenburg Holm and Eriksson, 2000; Hohenthal, Johanson and Johanson, 2014; Johanson and Vahlne, 2006). The firm's position is stronger the more long-term and stronger its relationships it has. The strength of the relationships reflects the interdependence in terms of magnitude and symmetry, and the more interdependence in a relationship; the more costly it is to terminate it, as the interdependence is a result of mutual investment adaptation. This concerns modification of products, production, distribution, storing, brands, etc. Relationship-specific investments tend to lead to low transferability of the resources, and if the relationships are terminated to high sunk costs. Consequently, we mean that the strength of the firm's relationships is an important component of its network position. Most firms enter foreign markets by developing a relationship with an agent or a distributor and if the business grows, it considers establishing a sales office. Working with an agent or distributor usually lead to that the firm has one or only a few relationships in the foreign market, but once it run its own business, the number of relationships may increase as long as the business is growing. To some extent, with a strong network follow a large number of relationships. It is common that with a big number of relationships come an increased network complexity, where relationships become connected, and the firm tends to be locked-in the network. This leads to that we argue that the number of relationships in the foreign market is a second important component of the concept of network position.

The strength and number of relationships in the network capture the business and financial part of the relationships, but they miss an important dimension of network and that is the social element. The literature has identified that having or developing strong social and personal relationships with key individuals in both firms and other organizations, for

instance, various authorities, are instrumental for the entry (Björkman and Kock, 1995; Ellis, 2000, Zhou, Wu and Luo, 2007). As economic exchange is more less embedded in social relations, follow that the more the firm's relationships are characterized by a high degree of relational embeddedness the stronger the network position. Relational embeddedness is important and contributes to give the firm a strong position as it implies trust, joint problem solving and transfer of fine-grained information (Uzzi, 1997). Thereby, it is a platform for further growth and expansion as trust makes the information gained reliable and the partners willing to share it. Trust does also provide a solid platform from where the firm can make investment more attractive and less uncertain. Thereby, we view relational embeddedness as the third building block in the concept of network position. Since network speed is the relation between network position and time, follows two main questions to answer and that is which process is the most relevant unit of analysis. Most research on speed starts with the inception of the firm and ends when the first of internationalization or market entry is taken. This approach has a relative short-term approach and does not cover the main period of the process. The network perspective does usually have a long-term perspective, which makes this established approach less suitable and compatible with how business is done. Therefore, we suggest that one should start when the first step is taken into a foreign market's network, for instance, the first sales, or another explicit step into the foreign market's network. If this is the starting point, there has also to be an ending point of the process and in the same way as starting with firm inception, ending with the first step into the foreign market is misleading and does not reflect the network's perspective of capture the long-term development and dynamics of network entry. Moreover, as network entry speed is the relation between the network position gained and time we need to define what time unit is relevant and meaningful and as entry into a foreign market is long-term process it seems that the relevant unit is "years". However, we do recognize "months", "weeks" and "days" as relevant time units if the aim is to capture specific phases or decisions related to the entry. Based on this reasoning is that network entry speed is the relation between the network position the firm has gained at a specific point of time, manifested by the strength of the firm's relationships, the number of relationships and the degree of relational embeddedness, and the years it has taken to gained the position since the first sales to the market.

SYNCHRONIZATION

Coordination of the economic activities has so far mainly been treated as structural concept, but besides the structural coordination we argue that also temporal coordination is needed, especially when firms enter networks, as this requires time. We call this synchronization. The importance of temporal coordination in a network can be defined as the correspondence between the characteristics and behavior of the entering firm, on the one hand, and the foreign market's network. We are therefore two about two objects, the firm and the network, which are not perfect stable and static. Thus it is not only firm, which is changing over time, the network in the foreign market does also, more or less, change. This means that we need a concept capturing the changes and movement of two objects. The word synchronization has its roots in Greek, where "syn" means "same" and "chromos" is the word for time. Examples from everyday life is when the sound corresponds with the vision when watching a movie, a bus which leaves the bus stop when the trains has arrived or a military action, when several soldiers have to fulfill their various tasks in order to accomplish their assignment. Synchronization usually requires that people communicate how the activities should be conducted so that they coincide and are connected to each other. The history of the concept of synchronization began in the 17th century, when the famous Dutch scientist Christiaan Huygens observed synchronization of two pendulums, which he had developed shortly before:

"... It is quite worth noting that when we suspended two clocks so constructed from two hooks imbedded in the same wooden beam, the motions of each pendulum in opposite swings were so much in agreement that they never receded the least bit from each other and the sound of each was always heard simultaneously. Further, if this agreement was disturbed by some interference, it reestablished itself in a short time. For a long time I was amazed at this unexpected result, but after a careful examination finally found that the cause of this is due to the motion of the beam, even though this is hardly perceptible."

In this case, synchronization can be described as an adaptation to the rhythm between two objects that move independently of each other. Thus, if the interaction is weak; someone acts so that the pendulums are synchronized. Transferring this metaphor to markets and internationalization implies that firms adapt their activities so that they correspond in time to the changes taking place in the market and if one views the market as a network of exchange relationships; synchronization takes place between firms but also in setting of several firms being connected with each other through various relationships.

NETWORK SYNCHRONIZATION

Synchronization happens when two objects move together. Network synchronization is when the entering firm's strategy and behavior follow the same pace and rhythm as the network that the firm is entering. Achieving synchronization is more difficult and more costly if the network that the firm is entering is extensively changing and we would like to highlight three changes, with which it is especially important to achieve synchronization. In order to simplify, we use the term economic activities in order to capture what firms do in a business network. Activities are necessary in order to produce products and services, or a combination of them, which can be bought and sold in the market. We mean that mainly two types of synchronization of economic activities take place in the network. The first type of network synchronization concerns stable networks. Such networks require that in order to perform the running operations without disturbances, it is necessary that some activities are performed in sequences. A perfect example of this is when the bus leaves the bus station five minutes after the train has arrived at the railway station, which give the passengers from the train a decent chance to catch the bus. The need of closeness in time can be different, but the point is that the order of the activities in time is crucial for the value of the activities performed.

Temporal order

In some case the first activity is the prerequisite to perform the second activity, that is, if the first activity is not performed, it is not possible to perform the second activity. Consequently, one critical dimension of synchronization is the order of the activities. The value of the bus transportation of the passengers decreases if the train cannot come to the station first so that the passengers have time to change mode of transport. This type of activity requires that they are following each other as sequences. We can therefore label it *sequential synchronization*. A lot of activities are, of course, performed after each other in the on-going operations, but most of them do not require any mutual synchronization, for instance, we cannot eat mashed potatoes until the potatoes have been picked, but the need for synchronization is small. Therefore, we mean that sequential synchronization can be placed somewhere on a continuum from separated sequential synchronization to integrated sequential synchronization. When one thinks about synchronization we usually mean *simultaneous synchronization*. Thus, it is the core of the concept and original meaning. When Huygens observed the synchronization of the pendulums, they moved simultaneously. In a network context, for the on-going operations it is crucial that various activities are performed simultaneously. A good example of this is that

the value of and enjoyment of movie is much bigger if the picture and sound is synchronized, but also in this case, we can identify two types of synchronization, where the first refers to the need that the two objects or activities have to happen or to be located at the same place, while the second type does not have this requirement. A similar example, which is also taken from the movies' world are the thieves, policemen and detectives, who synchronize their watches in order to be able to act at the exactly same moment, but without contacts or communication.

Coverage

The point of departure is thus that every change of an economic activity more or less influences the rest of the network and that a temporal mutuality between firms and activities in the network prevail, which causes the need for synchronization. We can distinguish between a change of two activities and change of several activities. When several activities change, we can talk of *system synchronization*. It happens when change causes a need of synchronization changes of other activities in the network. From this follows that both the both efforts and the work to change and the results of the changes have to be synchronized. When only two activities change, performed by a customer and a supplier, they are not spread outside the relationships, and only they have to be synchronized. In this case, the change and synchronization is isolated to the dyadic relationship between two firms and has no effect on the surrounding network. Network synchronization therefore may capture from two firms to several firms, inter-linked through the network, and, at least, two activities performed by different firms. This may have both acceleration, and a deceleration effect on changes taking place and being spread in the networks. Concepts like just-in-time and lean production are manifestations of the synchronization between the buyer and the seller. We mean that synchronization is an adaptation of the rhythm of the activities performed by the firm and activities carried out by other firms in the network.

A MODEL OF SPEED AND SYNCHRONIZATION IN NETWORKS

So far we have mainly treated the foreign market's network as stable, where synchronization can be achieved by consistency between firms and their activities, something, which does not change. From research we know that networks are not always stable; they are changing and are dynamic in different ways. Products are technologies are developed in the network, firms enter and leave the network, relationships are established while other are terminated. As the relationships in the network are connected, a change of an economic activity is more or less embedded and connected to other activities, which are performed in other relationships in the network. Synchronization is usually easier to achieve when the network is stable, but the more frequently and extensively the network is changing the more crucial it is to synchronize. When firm enters foreign market network, we argue that when the dynamics mainly is a result of transformation of relationships in the network, it is especially important to achieve simultaneous synchronization and system synchronization. If the network dynamics, on the other hand, is a result of establishment of new relationships or termination of existing relationships, is more important to achieve sequential and dyadic synchronization. Altogether, a more dynamic network does also require on-going and perennial synchronization, while in a stable network it may be enough to synchronize once and then stick to this. In this case synchronization resembles coordination. Moreover, we mean that the more extensive, non-predictable and frequent the changes taking place in the network, the more system synchronization is needed, while when the dynamics consist of predictable and non-extensive change, it is more likely that the synchronization is characterized by either sequential or simultaneous synchronization. In light of this, we postulate that:

Proposition 1: The more turbulent the network the bigger need to synchronize the activities in the network.

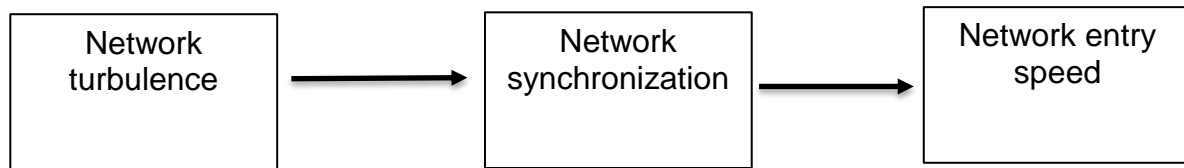


Figure 1. A model of network synchronization and network speed

An entry into a foreign market network is a process, taking place over time and consequently there is a need for the firm to bring fit about the activities it performs in relation to customers and suppliers in the network. The fit concerns both sequential synchronization and simultaneous as well as dyadic synchronization of the changing activities in the direct relationships with customers and suppliers and system synchronization. We argue that it is only when such synchronization exist that the firm can develop several strong relationships and the quicker the synchronization is achieved the higher speed of the firm's into a foreign market network.

Proposition 2: The higher the network synchronization during the market entry process, the higher the network entry speed.

As this paper put forward three new concepts in order to grasp the dynamic of entry into a foreign market network. There is a obvious knowledge gap, but the are no studies confirming their relevance and importance of the these concepts. The next step therefore seems to be to conduct several case studies especially focusing on these concepts

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