A WORK-IN-PROGRESS PAPER - THE IMP-CONFERENCE 2015

Change, Stability and Ambidexterity in Business Networks

-In a Offshore Wind Farm Context

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ABSTRACT

The article sheds light on, how actors can cope with stability and change in business networks. By applying theoretical elements from the industrial network approach, and the organizational ambidexterity the phenomenon was studied in the context of operation and maintenance in offshore wind farms. We employed a qualitative research approach through a focus group interview and 20 semi-structured interviews. The findings revealed both activities and resources that can enhance the necessary development of stability. At the same time changes are necessary when striving for well performing wind farms. In order to achieve both stability and change knowledge sharing and collaboration play a crucial role in all the levels, i.e. in organizations, in relationship dyads and in the network.

Track: Contemporary Business Environment & Business Relationship Dynamics
Key Words: Stability, Change, Business Networks, Ambidexterity, Offshore Wind Farms

INTRODUCTION

The motivation for this paper arises from our observations in the Danish offshore wind turbine industry. It is a relatively young industry area that is trying to wind terrain as a renewable and more environmentally friendly way of producing electricity. However, the industry is constantly coping with the challenge of reducing the levelized cost of energy (LCOE), i.e. all the costs spent over the whole lifetime of the project. in order to make wind energy as a real alternative for electricity production. Therefore, there is a continuous focus on developing solutions that can increase the performance of the wind turbines. This pressure of reducing LCOE has resulted in offshore wind farms with longer distance to the coast in order to achieve better wind conditions. As a consequence, the companies continuously face new demands for technological product and process solutions. In pace with the continuous search for improved solutions an increasing number of industry actors are calling for more standardized solutions.

Firms are continuously attempting to cope with sustaining their existing practices, and at the same time developing new ideas to improve their business. In the innovation management literature this twofold view can be detected already in the seminal work of Schumpeter (1934) and his notion of radical and incremental innovation as well as creative destruction. Yet, the issue of stability and change is a core issue in the recent innovation literature as highlighted by Dodgson et al. (2014). Obviously, both change and stability are necessary for the development of the contemporary business environment and the related impact on the organisation. This co-existence of stability and change can also be detected in the industrial network literature (e.g. Axelsson and Easton, 1992; Halinen et al., 1999; Håkansson and Snehota, 1995). Hereby an interesting cross-fertilization of research on the theme of stability and change coexists.

Innovation literature highlights the notion of organizational innovation, which specifically deals with exploitation and exploration of knowledge. Exploitation of knowledge means to develop existing knowledge – creating stability and exploration means developing new knowledge creating change in the organisation (March, 1991, 2008). In the recent years a literature stream combining both has been developed into the concept of organisational ambidexterity (Tushman et al, 2010). However, in the industrial network literature ambidexterity is relatively unexplored. This study aims at filling that gap by shedding light on change and stability in a particular business network and by adding the ambidexterity view to it. Therefore, the following research question is posed: *How can actors cope with stability and change d in business networks through organizational ambidexterity?*

To answer this research question, we investigate a project network of companies delivering operation and maintenance (O&M) solutions to offshore wind farms. We employ a qualitative research approach to explore and illuminate the interplay between stability and change in this context. We contribute to the literature on industrial network dynamics by looking into it from the organisational ambidexterity angle. Moreover, managerially we contribute to the enhanced understanding of companies' challenges to cope with stability and change.

The paper is structured as follows. The next section provides the literature review on change and stability in business networks as well as in the organizational context. Thereafter, a methodology is presented followed by the preliminary findings.

CHANGE AND STABILITY IN BUSINESS NETWORKS

Business networks are composed of interrelated and interconnected relationships. The existing pattern of relationships is a result of experimenting with various combinations of actors, activities and resources (Håkansson and Snehota, 1995). As the different elements can be combined and developed in various ways, networks never become static structures, but are more likely to evolve on a continuous basis. Due to the interrelated and interconnected nature of networks, changes are always a matter of two or more actors working together or against others when aiming at stabilising or changing networks (Håkansson and Snehota, 1995). Thus,*"substantial changes are initiated and carried out in interaction between the companies"* (Havila and Salmi, 2000). Moreover, no firm alone is capable of maintaining or changing the structure of the network (Håkansson and Snehota, 1995).

Business networks are never in a true equilibrium, but evolve continuously (Håkansson and Snehota, 1995). The twofold view of change in networks has been labelled as incremental versus radical change (Halinen et al., 1999; Havila and Salmi, 2000). This challenges the more traditional view of network change in terms of gradual and incremental steps as network actors interact and adapt to each other. Accordingly, change can be considered radical when a relationship between two actors is broken or a new relationship is established (Halinen et al., 1999; Havila and Salmi, 2000). Thus, Halinen et al. (1999) suggest that part of the change always remains within a dyad (confined change), whereas some part of change may also affect other relationships and other actors in a network (connetcted change). This dichotomy of changes has been widely accepted in the academic literature later on (e.g. Abrahamsen et al., 2012; Degbey and Pelto, 2013)

The scheme of analysis (Figure 1) combines the elements of ARA (Actors – Resources – Activities) with company, relationship. The network levels can be used as a conceptual framework to analyse the effects of change in a relationship and/or to identify the factors affect the possibilities of development of a relationship (Håkansson and Snehota, 1995). Changes are carried out through the interaction between actors and can be initiated on three different levels: 1) By the firm itself, 2) by a relationship, or 3) by somebody in the network (Håkansson and Snehota, 1995). On a firm level, a person in the company may e.g. figure out a more efficient way of carrying out a certain activity. On a relationship level, two counterparts may be faced by a technical challenge that they have to act upon. Finally, changes among third parties in the network may affect the relationships of a firm and initiate need for adaptations, e.g. government regulations.

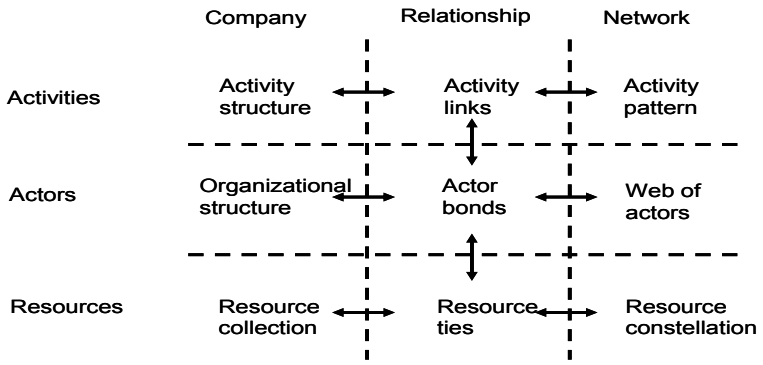

Figure 1: Scheme of analysis (Håkansson and Snehota, 1995; p. 45)

Any change (in any of the cells of the matrix) can affect the development of a certain relationship. As a matter of fact, one change can cause a number of reactions which might be both expected and unexpected for the party initiating the change. For example, changes in some activities among two actors might have effects on both the horizontal and vertical dimensions of the scheme. It can have a direct effect in terms of increased or decreased efficiency in the firm's activity structure. It might also have some direct effects on third parties who have to adapt to the new link with accompanying positive or negative effects on the activity pattern. The change may also have an indirect effect in terms of giving cause to further changes within the relationship (new ties or bonds). Moreover, it can give cause to adjustments in relationships to third parties (Håkansson and Snehota, 1995).

Sutton-Brady (2008) focuses on the variables that may contribute to the stability and reopens the discussions of time as a proxy variable for stability. In this context time provides the dynamic angle to the study of relationships in business networks (Kamp, 2004). However, instead of using time in years as an absolute measure of stability, relationships can be considered as stable when they show regular volumes of trade over time, typically following closely the client's turnover. In a similar way relationships are considered unstable, if variations are found over time in the value of trade (Proenca and de Castro, 2004). The dynamic aspect is seen as a core challenge for business relationships to enable radical innovation, however, also incremental innovation need change to occur. Each change in incremental innovation is on a smaller scale, but occur much more frequent and over time can sum up to considerable effects of continuous innovation (Dodgson, et al., 2014).

NETWORK CHANGE AND ORGANIZATIONAL DYNAMICS

The elements of the ARA-model are located within organizations and the connected dyadic business relations are embedded in a larger network of business relationships (actor bonds, resource ties and activity links) (Ford and Mouzas, 2010; Håkansson and Johanson, 1992; Håkansson and Snehota, 1995, 2006;Rundh, 2008; Veludo et al, 2004). The elements are not independent; there is interplay between the ARA elements located within organisations and the wider network of business relationships. This insight is dealt with in Lenney and Easton (2009) and they state: *"Actors carry out activities usually in combination with other actors. […] Through their activities actors transform and transfer resources in order to maintain and grow the more aggregated actor, for example, the organization of which they are a part. Actors are essentially human and can be individuals or collectivities such as groups, departments, organizations, or nets of organizations. […] Actors have control over some resources, access to others and work with other actors to create, combine, develop, exchange or destroy resources"*.

Networks of business relationships draw upon the organizational elements of actors, resources and activities to be shared to achieve innovation and performance on both radical innovation calling for exploration and incremental innovation calling for exploitation (March, 1991; 2008). The combination of organizing both exploration and exploitation is highlighted in the notion of 'ambidexterity' (Raisch et al, 2009; Tushman et al, 2010). Raisch et al. (2009) stress that ambidexterity contains contradictory elements of well-known organizational constructs. Firstly, 'integration and differentiation' highlights how much coordination i.e. exploration through relations to other organizations, and how much specialization i.e. exploitation in own organisation is needed (Lawrence and Lorsch, 1967; Raisch et al 2009). Secondly, 'individual and organizational levels' highlight the existence of

different levels in an organization and the impact this issue has on stability and change. The more levels the more stability (exploitation) in the Weberian approach and vice versa (Weber, 1947; Raisch et al. 2009). Thirdly, 'static and dynamic perspectives' highlight the difference between the notion of the organization working simultaneous with exploitation and the exploration (Weick, 1995; Scott and Davis, 2013; Raisch et al., 2009). Finally, 'internal and external processes' highlight the boundary of the organization separating internal and external e.g. knowledge exploitation and exploration (Barnard, 1938, 1968; Weick, 1995; Scott and Davis, 2013; Raisch et al, 2009). In relation to the business network literature, especially the last notion of internal and external processes to the organization is interesting, because it handles the organizations in an inter-organizational context rather than them being isolated entities. Moreover, the static and dynamic perspective gains relevance, also in relation the notion of the impact of time on business relations (Sutton-Brady, 2008). Furthermore, the individual and organizational levels can be attached to the scheme of analysis (Håkansson and Snehota, 1995) by considering the individuals as the building blocks in the organizational structure.Finally, the notion of integration and differentiation play a role in the relationship dyads in business networks. The combination of literature streams from business network relationships and organizational innovation through ambidexterity provides us with an avenue for further research as highlighted by Raisch et al. (2009, p. 693) on 'spanning multi levels of analyses' and hereby 'consider mediators and moderators that may affect the ambidexterity- performance relationship' within the context of business network relations.

To sum up, the conducted literature review reveals a close connection between business networks and the concept of organizational ambidexterity. Thus, based on the literature review, we suggest the following proposition:

Both stability and change in business networks can be coped with through organizational ambidexterity by combining

- ***Integration and differentiation of solutions***
- ***Individual- and organisational levels***
- ***Static- and dynamic perspectives***
- ***Internal- and external processes***

In the next section the methodology will be presented.

METHODOLOGY

The research is based on qualitative semi-structured interviews during the period of June 2014 - March 2015 with actors operating within operation and maintenance (O&M) activities (including service) in offshore wind farms. The overall unit of analysis was an offshore wind farm network, and due to the theoretical approach, also organizational and individual levels were included. In the beginning of the qualitative research a focus group interview was conducted with participants invited representing different roles in O&M activities in the studied context. The participants in the focus group interview revealed challenges and phenomena in a broad spectrum of offshore activities.

Eleven different companies working on offshore projects participated in the focus group interview and they were managers from various companies with different roles, e.g., a wind farm owner, a wind turbine producer, equipment suppliers, service providers on equipment and/or manpower. Five of the participants gave a short presentation on their view of the

O&M challenges for reduction of LCOE. Afterwards the participants discussed challenges mutually. The focus group interview was transcribed for analysed for identifying the challenges for the reduction of LCOE (Eisenhardt, 1989; Charmaz, 2006; Yin, 2009).

The initial findings indicted that there were certain company types that became relevant to interview, and in these terms we used a snowball sampling to select further interviewees (Miles and Huberman, 1994) such industry actors as service providers offering manpower/ equipment, components and service providers offering transportation/ maintenance solutions employing ships, helicopters and jack ups were crucial actors. Also, capital partners such as venture- and capital associations seemed to play a role in relation to the O&M in offshore wind farms and this type of actors were included when conduction further interviews.

Based on the findings from the focus group interview, an interview guide was developed. The aim of the guide was twofold. On one hand it aimed to provide overall strategic structured information on innovations to reduce LCOE in the offshore wind farms. On the other hand the themes in the interview guide aimed to disclose interviewees' own perceptions on, how reduce LCOE. The interview guide opened opportunities for the researchers to follow interesting new/ enhanced phenomena emerging through the interviews. The interview guide was send to the interviewees as a kind of agenda prior to the meeting.

20 semi-structured and open-ended interviews were conducted with actors carrying out O&M activities in offshore wind farms, including wind farm owners, wind turbine producers and small and medium sized enterprises (SMEs) operating as suppliers and service providers to O&M. We also interviewed industry organisations. These interviews were in-depth interviews related to the challenges and lessons learned for reduction of LCOE from activities related to different offshore farms.

The researchers aimed for rich information from the interviewees and therefore confidentiality was agreed upon with the participants in the interviews. This confidentiality was important to the majority of the interviewees and mentioned by several of them as essential for their answers during the interviews. Citations in our report are thus anonymous to the reader. All interviews were recorded and transcribed for thorough analyses. Our first analysis of data was conducted after 5 interviews where we discussed the preliminary findings. Based on this discussion, we made some adjustments to the interview guide. An anonymous overview is provided on the interviewees in Table 1 below.

Table 1 shows the different roles of the interviewees and the level and function in the organisation. It can be seen that the information from the interviews is based on six very different roles in the supply network. Rich information from different angles is thus present. Moreover different management levels are also present, however, all with connection to the O&M field in offshore wind farms. Therefore, we anticipate that we were able to grasp strategically important issues through the answers from the experienced managers within the O&M field.

Company role	Level/ function in the organisation	Number of companies interviewed
Offshore wind farm owner	Manager -Windmill park responsible	2
	Manager - O&M/ service responsible of windmill parks	5
Wind turbine producer	Manager - Wind turbine responsible	1
	Manager - O&M/ service responsible of windmill parks	2
Service providers, equipment / component suppliers	Manager – Service/ supply responsible	3
Service providers logistics	Manager – Service/ logistic responsible	3
Capital partners	Manager – Investment responsible	2
Industry associations	Manager	2
Total		20

Table 1 The anonymous overview of the interviewees

When analysing the interviews, a deductive approach was used to reveal the most interesting findings according to the literature review conducted to help to select the most interesting findings across rich and extensive research material (Charmaz 2006; Atherton and Elsmore, 2007). The researchers used a large room to display, sort and discuss the similarities and differences across the rich information from the various actors. The aim was to reveal the answers to the research question in relation to the literature review conducted.

In the next section we reveal the preliminary findings the study.

PRELIMINARY FINDINGS

Offshore wind farms produce electricity from the renewable source wind and the farms consist of a varying number (typically between 20 and 175) of wind turbines, and a transformer platform. The power is transmitted from the offshore platform to an existing onshore substation, to allow the power to be distributed through the power grid to end consumers.

Offshore wind farms are built through complex construction projects, and each wind farm is unique due to weather conditions, different sea fundaments and the wind farms' varying distance to the coast. Developing an offshore wind project is characterized by a varying number of actors involved and a large number of interfacing issues need to be resolved at all stages of the development process, i.e. from the initial idea to the time when the turbines are installed and in operation. An expected lifetime for an offshore wind farm is between 20-25 years.

Despite the renewable forms of energy production winning terrain, the offshore wind farms are under pressure to reduce the levelized cost of energy (LCOE) in order to consider offshore wind energy as a competitive alternative for the non-renewable energy sources. Hence, despite the general trend towards the 'greening' of the energy production, many

governments are hesitant when planning new farms. This means that in some occasions constructing the planned offshore wind farms have been postponed or even cancelled.

The description above indicates that actors involved in an offshore wind farm network are obliged to cope with constant changes. A fundamental challenge is the fact that as offshore wind farm is a unique construction project, it makes it difficult to collect and transfer knowledge from one wind farm to another. Moreover, as erecting offshore wind farms are both long lasting and discontinuous processes, each project is considered as new and starts always from the scratch. The following citations from interviewees illustrate this situation.

"It is difficult to transfer knowledge from one wind farm to another. They are simply too different (N7)".

"It's crazy that they seem to destroy everything after a project has been closed. Seriously, the same company was interested in our logistics solutions like in the previous project, but they did not have any documentation left.. So, they called us and asked for a copy". (N9)

"Every time you start a new project a new project organizations are established and new harbour facilities are built. And after the project has been closed, everything is dismissed". (N4)

The ever-changing context of wind farms combined with the constant pressure on constructing and running less costly farms makes the actors call for more standardized solutions and integrated processes, still well-knowing that constant adaptations are required. As a consequence, the companies in this relatively young industry continuously face new demands for technological product and process solutions. For example, by designing more powerful wind turbines the yield is expected to increase while reducing the number of wind turbines. This means that turbines up to 10-12 MW of efficiency replace wind turbines with a typical power of 2 -4 MW. Moreover, the demanding weather conditions result in a smaller scope of weather window meaning that the main O&M of the wind farms must take place during April and October. Additionally, the more remote distance means also that that it is crucial to design logistics solutions that in one hand can ensure a safe access to the turbines despite high waves, and on the other hand bring the employees to and from the site faster, either from the coast or from the accommodation ships or platforms. The following citations illustrate these challenges the actors coping with static and dynamic perspectives:

"Some wind turbine manufacturers are keen on designing ever-larger wind turbines, but they simply don't have time to test them properly. Why can't we just optimise the present 3,6 MW turbine that already is used in many farms". (N6)

"We are in this business in order to earn money, and we are definitely interested in bundling of activities in those wind farms that are not too far away from each other". (N11)

"There are three wind farms relatively close to each other, and in within some specific areas it is possible for us to bundle our activities, like environmental monitoring in the same geographical area. We have received accept for that from the authorities and can in that way save costs". (N7)

"Offshore vessels are expensive and therefore it is important that they can be used for different purposes and in an effective way. Therefore, we are interested in developing more scheduled logistics solutions" (N10)

"With the increasing distance to the wind farms it is important to think about different logistics solutions. Sometimes are small crew transport vessels enough, while at some other time we need more robust and faster vessels. Helicopter solution might also be interesting, especially for those wind farms that are located more than 100 km from the coast". (N13)

As capital partner we aim at bundling competencies and activities by acquiring different independent service providers. It is necessary for the industry in this way to create a more efficient O&M market" (N15)

In pace with that the offshore wind farms have gained an increasing importance in the companies has also resulted in growth in the number of employees and rapid changes in the respective project organizations. This means that while a large amount of knowledge is circulating among the companies and individuals, it may become challenging to collect and transfer knowledge. The following citations illustrate this situation.

"It has been difficult to find the balance between development and learning. The company size and the turnover have grown rapidly over the past 10 years. We have probably not been good enough in coping with this and there has also been a constant pressure to produce larger and cheaper wind turbines". (N1))

"I like the way things are here – the organization is not too big and I know, who to contact if I need to know something specific. In my previous job it could take a long time to find the right person to talk to, because the company was so big and persons changed jobs often". (N16)"

"Until for a year ago we have been privileged to have the most qualified employees. You know, those with an extensive experience and a good sector network – we know them by name. Therefore, we are very much aware of, who we want to have and who not". (N13)

"But the sector has a limited size and the same people circulate from one company to another. They are willing to change jobs, if they can get just one Danish Crown more in the other company. But it is too expensive for the sector.. It takes two years until an employee is qualified – after two years I can say that my technicians are on the level 4. (N4)

The citations above and earlier give an impression of that the actors in the offshore wind farm network constantly have to be prepared for change, even though they are calling for more stability. A way to cope with both stability and change could be done by establishing more long-lasting relationships with the other industry actors and by focusing more on the mutual knowledge exchange. In relation to this the interviews revealed some peculiar characteristics. For example, due to the prevailing EU regulations, there are restrictions for creating collaborations. Furthermore, many of the interviewed persons characterized the network being dominated by actors that are not willing to collaborate or do it with only carefully selected counterparts and in areas that are not too close to their core business. The following citations illustrate the state of internal and external processes

"Even if it would be beneficial for electricity producers to collaborate, they are not allowed to, you know it is a problem if their collaboration is too close". (N7)

"The industry is immature. By this I mean that we just do things without talking about with one another". (N4)

"There is no collaboration between the different logistics actors" (N8)

" Previously, we considered the wind turbines and the data of the as if they we ours. But, I think that we have been through a mental change and are beginning to accept that our customers own the wind turbines and therefore the data we monitor for them are theirs. But still, we have the right to use to data in order to optimize the turbines". (N1)

"There is a pretty good knowledge exchange between the offshore wind farm owners. We have known one another for a long time and trust each other ". (N18)

"Normally, during the period when the wind turbine manufacturer is responsible for the service we have this back-to-back –arrangement. They deliver 50% of the manpower and we as park owners deliver the remaining 50%. In that way we learn how to do service". (N4)

This section has shed light on the preliminary findings of the study. These findings are summarized in Table 2 in relation to the dimensions of ambidexterity.

The change and stability patterns observed are summarized in Table 2 below.

Dimensions of ambidexterity	Change and stability patterns observed	Impact on offshore wind farm networks
Integration and differentiation of solutions	• Offshore wind farm projects are islands	• Islands of business networks hamper the further stability and change
Individual and organizational levels	• Growing business – increasing organization size	• Changing organization structure and knowledge spill over limit hamper stability and change
Static and dynamic perspectives	• The offshore wind farm context is changing all the time • Political uncertainty • Bundling of activities and actors • Purpose-made solutions	• Many possibilities to cope with change and stability parallel
Internal and external processes	• Lack of collaboration • Collaboration only with trusted actors • Limited knowledge sharing	• Change and stability is hampered by limited collaboration and knowledge transfer

Table 2: Summary of the preliminary findings

CONCLUSIONS

In this paper we have shed light on, how actors can cope with stability and change in business networks. Applying theoretical elements from the industrial network approach, and the organizational ambidexterity we studied the phenomenon in the context of operation and maintenance in offshore wind farms. Based on the literature review the following proposition was created:

Both stability and change in business networks can be coped with through organizational ambidexterity by combining

- ***Integration and differentiation of solutions***
- ***Individual- and organisational levels***
- ***Static- and dynamic perspectives***
- ***Internal- and external processes***

This proposition was supported through the following findings. Offshore wind farms can be considered as islands, meaning that due to the unique location, combined with varying wind and soil conditions each wind farm will have its peculiarities. However, due to the pressure of reducing the LCOE in wind farms the actors are calling for stability in terms of more standardized solutions in the areas where it is possible. Therefore, there can be identified both activities and resources that can enhance this necessary development of stability. At the same time changes in the offshore wind farm network are necessary when striving for wind farms that are performing well. This is to a high extend the grounded thinking within the notion of ambidextrous organizations.

In order to achieve both stability and change knowledge sharing and relationship management play a crucial role in all the levels, i.e. organizations, relationship dyads and offshore wind farm network.

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