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Rhoda Ahoba-Sam

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Why do academics engage locally? Insights from the University of Stavanger

Rhoda Ahoba-Sam

ABSTRACT

The role of individual actors in knowledge-exchange collaborations has been accorded much importance. Through their involvement with industry, innovation is especially enacted in their regions. Motivations for academic engagement have been fairly researched but academics' motivations for local collaborations remain to be properly understood. The aim of this paper is therefore, to explore the motivations of academics for regional engagement. This exploration is done by drawing on empirical data collected through interviews with 16 academics in the Engineering Faculty of the University of Stavanger (UiS), Norway. It is evident that in addition to personal motivations to collaborate, academics are driven to engage locally by certain incentives that may be embedded in regionally 'non-constructed' advantages. In general, the presence of regional advantages that are relevant for advancing the academic's research provide the motivation to engage locally.

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INTRODUCTION

In the development of a knowledge-based economy, the important role of universities as actors in knowledge creation and dissemination has been identified (Arbo & Benneworth, 2007; Charles, 2006; Lambooy, 2004). This role of universities, delivered particularly through the production of human capital, fosters innovation and creativity (Florida, 1995). Outside traditional teaching and research, universities contribute to the competitiveness of their communities through the pursuance of so-called third-mission roles such as industry engagement (Ankrah & Al-Tabbaa, 2015; Breznitz & Feldman, 2012). Universities also form various partnerships including those with other universities to facilitate the transfer of knowledge, technology and to share in new teaching trends. These actions and contributions of universities are somewhat expected and even required to contribute towards regional economic development (Arbo & Benneworth, 2007).

CONTACT

(Corresponding author) rahobasam@lincoln.ac.uk
Lincoln International Business School, University of Lincoln, Lincoln, UK.

The ability to contribute to a knowledge-based economy depends largely on individuals in the university (Coe & Bunnell, 2003; Henry & Pinch, 2000). This is because knowledge is often tacit and embodied in the capacity of individuals. The presence of individual academics who are believed to embody knowledge, coupled with their participation in regional processes, is therefore required for the transfer of university-held knowledge. This is more so owing to the 'sticky' nature of knowledge; of being difficult to transfer; and requiring the deliberate efforts of knowledgeable individuals to be transferred (Agrawal, 2001; Coe & Bunnell, 2003; Lawson & Lorenz, 1999; Nonaka, 1994; Pataraia, Margaryan, Falconer, & Littlejohn, 2014; Ramos-Vielba, Fernández-Esquinas, & Espinosa-De-Los-Monteros, 2010).

Engaging locally has its advantages. It has been reported that co-location enables closer relationships for the transfer of specific knowledge in a way that distant actors cannot easily match (Chertow & Miyata, 2011; Porter, 1998). Geographical proximity is estimated to foster interactive learning that may have a potential to promote innovation, especially if these interactions are formed with the right people (Boschma, 2005; Giuliani & Bell, 2005). Among others, face-to-face meetings for regionally proximate collaborators are easily convened, which is positive for innovation. However, to the extent that co-location does not automatically imply collaboration (Chertow & Miyata, 2011), deciphering the motivations for local collaborations is important.

In recent years, the majority of research on university–industry linkages (UILs) have focused on the role of organizations and institutions (Thune, Reymert, Gulbrandsen, & Olaf Aamodt, 2016). Others have explored the variety of interaction channels that academics employ (D'este & Patel, 2007) and their motivations for such collaborations (Franco & Haase, 2015). Furthermore, the impact of academic engagement on regional development has also been dealt with (Uyarra, 2010). While the motivations of firms to engage locally has also been identified (Fitjar & Gjelsvik, 2018), the motivation of individual academics to engage locally is still lacking. Even though the motivations for academic engagement is fairly studied (D'este & Perkmann, 2011; Franco & Haase, 2015), to the best of our knowledge they have rarely been linked to the regional context and its effect on the individual's motivations.

Studying the underlying motivations of individuals in UILs is important for unearthing further potential benefits of such collaborations (Ankrah & Al-Tabbaa, 2015; Norn, 2016). Isolating motivations specific for local engagement is useful for identifying region-specific potentials of UILs. More specifically this study explores the motivations of academics to engage with local industry and how the regional context could influence such motivations. This investigation was done through 16 interviews with academics of the Engineering Faculty of the University of Stavanger (UiS) in the Rogaland region of Norway. The UiS presented an interesting case for the study seeing that its establishment is complementary to the discovery of oil in the region – two events that contributed to the transformation of Rogaland into the economically important region it is today.

LITERATURE REVIEW

The desire to differentiate and stay relevant in the face of global competition has become more prominent (Porter, 1998). Countries, for example, are striving to be leaders in a particular sector to set themselves apart (Arbo & Benneworth, 2007; Porter, 1998). With the present trends of technological advancement, there has been increasing pressure mounted on research institutions to contribute to the development of their local economies (Arbo & Benneworth, 2007). There is a realization that competitiveness lies in the development of a knowledge-based economy, especially as delivered through their regions (Charles, 2006; Porter, 1998). Knowledge institutions have thus been entrusted with a regional mission. The expectations required of these institutions are therefore not only limited to education and research but also to contribute actively

to the development of their economic, social and cultural surroundings (Arbo & Benneworth, 2007). To be competitive, therefore, the need for active contribution of knowledge institutions to regional development is emphasized.

Universities in particular have been acknowledged as important to the regional development process (Goddard & Chatterton, 1999; Shaw & Allison, 1999; Vorley & Nelles, 2009). Universities face pressure from policy-makers to act as economic engines (Christopherson & Clark, 2010), to combine global research excellence with a contribution to the development of the knowledge-based economy in their host cities (Charles, 2011). For example, universities face pressure from regional and local authorities to offer social, cultural, political and environmental-based support as well as to support regional spin-off companies (Benneworth, Charles, & Madanipour, 2010). The expectations of universities is therefore extended to include regional economic contributions.

Even though universities were primarily set up for the purposes of teaching and research, actively delivering on a third role in support of regional economic growth is eminent (Benner & Sandström, 2000; Breznitz & Feldman, 2012; Gunasekara, 2006; Vorley & Nelles, 2009). Universities have increasingly become more centrally involved in the innovation processes of their regions, and have essentially introduced the market into the heart of academia (Vorley & Nelles, 2009). This phenomenon is inevitable for universities while pursuing a third mission (Etzkowitz & Leydesdorff, 1998).

The pursuance of third-mission roles by universities lends well with the notion of 'construction of regional advantage' as posited by Cooke and Leydesdorff (2006). They explain that in the development of a knowledge-based economy there exist certain constructed and comparative advantages. While infrastructure and the value from knowledge relationships are cited as examples of constructed advantages, they suggest resource endowments as an example of a comparative advantage. This idea projects that knowledge-based regional development draws upon the interfacing developments in various sectors such as economy and governance. Value, usually in the form of knowledge transfer, is seen as a constructed advantage. Accordingly, the interactions between knowledge institutions (science), the market and government in what is described as the triple-helix model results in knowledge exchange. On the other hand, non-constructed or comparative advantages, such as tradable initial resource endowments, have also been seen to contribute to the attractiveness of certain regions (Cooke & Leydesdorff, 2006). To this end, both constructed and non-constructed advantages serve as a source of regional competitiveness.

Importance of UILs at the regional level

The responses of universities to regional pressure are varied and unique with respect to their specific context. This has resulted in a need for an overall capacity to respond flexibly and selectively to change (Clark, 1998). According to Charles (2016), the particular developmental needs of rural areas, in view of their struggles with economies of scale and scope, imply that the demands placed on rural campuses also have a specific character. Universities in different national and regional contexts need to adopt different combinations (Charles, 2006). There is therefore no standard recipe that can be recommended for an appropriate role for universities in their specific and individual regional innovation systems.

One way universities respond to the call to deliver on a third mission is through UILs. UILs are bidirectional collaborations between the university and industry entities (Ankrah & Al-Tabbaa, 2015; Plewa et al., 2013). These linkages benefit from networks, both local and international, and through which innovative small businesses have access to global information and knowledge networks (Sternberg, 2000). UILs are important for knowledge transfer as well as knowledge creation. This importance is emphasized at the regional level where such knowledge

exchanges enhance innovativeness and economic competitiveness (Ankrah & Al-Tabbaa, 2015) of a given region.

UILs are not without challenges. Difficulty in aligning university and industry interests and lack of openness have been identified as a major challenge (Norn, 2016; Plewa et al., 2013). Further, even though inter-university agencies, local authorities and professional associations enable UILs, bureaucracy, legal framework and a lack of organizational support hinder these interactions (Franco & Haase, 2015). Time is also of the essence to allow trust to build between collaborating partners (Pittz & Intindola, 2015; Plewa et al., 2013). Overall, UILs face challenges in the quest to contribute to regional competitiveness which calls for leveraging on the benefits of such partnerships.

Universities are an important source of new knowledge. Firms can take advantage of this by connecting to the open science community, for example (Agrawal, 2001). It is considered as a competitive advantage for a firm to be embedded within its local community (Taylor & Asheim, 2001). Cooperation in innovation between manufacturing firms, service firms and research institutions, for instance, is important with respect to business success and economic performance (Sternberg, 2000). Regional development companies have recognized the economic importance of universities and have been observed to invest in them to promote high-technology, innovation-led development (Charles, 2011). In this way, UILs are seen to promote regional development.

In the case of universities, the forms of knowledge demanded are undoubtedly shifting from traditional disciplinary lines to new problem-focused themes. There is combination of new centres and departments' expertise that better map onto employers' needs (Benneworth et al., 2010). Senior management of organizations have also been observed to modify the positioning and core behaviours of their institutions to align better with regional needs (Gunasekara, 2006). This suggests that the norms of an institution may have to be modified for successful partnerships to be formed.

There are differences in the degree to which firms are capable of effectively using university research to their benefit. These differences vary systematically with the degree to which firms are connected to the university (Agrawal, 2001; Laursen, Reichstein, & Salter, 2011; Norn, 2016). This refers to the firms' absorptive capacity, and is defined as a firm's ability to recognize the value of new information, assimilate it and apply it to commercial ends (Agrawal, 2001). It has been suggested that absorptive capacity enhances the speed, frequency and magnitude of innovation, which in turn may produce knowledge that becomes a part of a firm's future absorptive capacity (Fosfuri & Tribó, 2008). An absorptive capacity that is open to new ideas is essential for interactive learning.

While geographical proximity facilitates interactive learning, learning cannot be solely attributed to it. According to Boschma (2005), the transfer of knowledge across large distances requires other forms of proximity to be effective, namely cognitive, organizational, social and institutional. For example, cognitive proximity, which refers to closeness in the intellectual base of partners, is required for the communication, understanding and processing of new knowledge. It is implied that proximity solves a coordination problem and that geographical proximity should be studied alongside other forms of proximity.

Motivations for academic engagement

Ideally, knowledge should not be constrained to geographical boundaries. It should be fluid and not bounded. However, from the examples we have from places such as Silicon Valley, knowledge is regional. (Saxenian, 1994) A good reason for this occurrence is because it is held tacitly by skilled individuals who remain in certain regions (Almeida & Kogut, 1999). Deliberate action is therefore required to drive innovation. This is because knowledge is often tacit and embodied in the capacities of individuals rather than being easily codified (Benneworth et al., 2010; Lawson & Lorenz, 1999; Nonaka, 1994). While studying knowledge communities, for example, it

proved useful to track knowledge by embodying it as a 'thinking, breathing body' such as the engineer (Henry & Pinch, 2000). Without a regional capacity to absorb technological innovations and support new firms, university innovations will be developed and commercialized by firms outside the region or not at all. Furthermore, without the commitment to the development of a broadly skilled workforce, the region's innovative capacity remains largely unchanged (Christopherson & Clark, 2010). This calls for the building of capacity to drive innovation.

Academic engagement, defined as knowledge-related collaboration by academic researchers with non-academic organizations (Perkmann et al., 2013), is a multilevel concept. This assumes a variety of interaction channels that may be individual or institutional (D'este & Patel, 2007) and pursued for the purpose of furthering their research rather than commercializing their knowledge (D'este & Perkmann, 2011). Academic engagement is also not restricted to interactions with industry alone. For instance, academic scientists engage with either industry or government agencies depending on the type of partner agency and the academic's motivation (Ramos-Vielba, Sánchez-Barrioluengo, & Woolley, 2016). Perkmann et al. (2013) believe that academic engagement is closely aligned with traditional academic research activities. It is pursued by academics to access resources to support their research agendas. Further, the phenomenon tends to be driven by individuals and teams with little central support on the institutional level, and is strongly associated with affiliation to engineering and applied sciences. They propose that analysis of academic engagement should therefore be done on individual researchers because the decision to engage is taken on an individual level (Perkmann et al., 2013).

Pataraia et al. (2014) emphasize that academics' learning is not restricted to formalized structures and informal relationships are also significant in shaping their professional practice. Personal learning networks provided new insights and stimulated self-reflection regarding teaching practices, whereas advice networks facilitated the practicalities of teaching. Informal learning and serendipitous acquisition of different types of knowledge and advice related to teaching were evident, suggesting that personal learning networks support incidental learning.

Tartari, Perkmann, and Salter (2014) examined the influence of peers on academics and found that peer effects are stronger for early-career individuals and weaker for star scientists, suggesting the incidence of social comparison. This implies that an academic who is 'accomplished' in his area of expertise is less likely to be influenced by peer pressure.

To this end, the importance of UILs in a globalizing world, and the motivations and disincentives of academics to engage in them, have been explained. Of further interest, however, is the question of why academics engage locally. Apart from their personal and institutional incentives (Perkmann et al., 2013) to do so, are there further regional drivers that make them engage locally? This study thus places value in the exploration of academics' motivations from a regional perspective.

METHODOLOGY AND CASE STUDY OVERVIEW

Empirical data were obtained through semi-structured interviews with selected engaged academics. A qualitative approach was employed, which is beneficial over a quantitative approach for obtaining in-depth insight (Yin, 1984). Whilst most studies on researchers' motivations are quantitative, qualitative approaches are projected to be more beneficial in understanding UILs. This is especially so as each UIL is considerably unique (Plewa et al., 2013).

A focus was placed on engineering and applied sciences, as these have been shown to be more strongly correlated to academic engagement (Perkmann et al., 2013). The interviewed academics were specifically from the Centre for Risk Management and Societal Safety (SEROS), and the following departments of the UiS Engineering Faculty: Electrical Engineering and Computer Science, Energy and Petroleum Engineering, Mathematics and Physics, and Energy Resources. Furthermore, the UiS, having co-evolved with the economy of its region, provided an interesting context for this study (see box on Case Context).

Case context: *The University of Stavanger and the Rogaland region*

The University of Stavanger (UiS), Stavanger is located in the Rogaland region of Norway. Stavanger, and Rogaland by extension, is famous for the Oil and Gas Industry. Accordingly, the establishment of UiS has its roots in the discovery of oil in the 1960's.

Ideas for establishing this university were birthed much earlier than the date of its actual establishment would suggest. But already having big universities in Oslo, Trondheim, Tromsø and Bergen, the government of Norway kicked against having an additional university in the country. The argument was that Norway was too small a country to have that many universities.

However, it is claimed that the discovery of oil in the off-shore reserves deepened the claim for a university in the region which was finally endorsed by the government. In this way, the establishment of UiS is complementary to the discovery of oil, and together these events have transformed a once largely rural region into one of the economically important regions in Norway.

(This brief account is partly based on an interview with an administrative staff of the Engineering Faculty of UiS in charge of External Relations conducted on 13/02/2018)

In all, 16 academics were interviewed between March and May 2018. All interviews averaged 45 min and were recorded with the permission of interviewees. Of the total number, one academic was interviewed for not being externally engaged and served as a control. His selection was based on snowballing from earlier interviews. Five of the interviewees were women. All interviewees were of postdoctorate level and ranged in age between 35 and 65 years. Overall, the questions asked were focused on understanding the following: who the academics engaged with, the geography of their collaborators (regional or extra-regional) and why the decision to pursue those linkages, particularly the local ones. The data collected was transcribed to organize all interviews into a similar form, and subsequently coded (Yin, 1984), which ultimately led to the emergence of common themes and patterns for discussion. Coding was essentially done in three steps; first, the key words emerging from all the interviews were isolated; next they were grouped under similar themes for each transcript; and finally classified with similar themes across all the interviews.

The selection of the engaged academics was based on two criteria: (1) at the time of the study, the individual academics chosen were engaged in an ongoing regional project involving industry partners; and (2) the academics were involved in projects that were perceived to have a certain potential impact to their regions based on a list of externally engaged academics obtained from the UiS's administration. This list was subsequently pruned down to the academics who had the highest numbers of individual external engagements. While the number of engagements of the academics may not fully justify the quality of the external engagements, most relevant for the given study is the presence of engagement and not the degree of engagement. The selection criterion was therefore essentially applied in order to narrow down the number of respondents to a relevant number of academics who could be both available and conveniently interviewed for the study. Industry contacts of these academics were also interviewed on their experience in collaborating with the local university, but the data presented here will focus on academics' responses only.

The inclusion of a non-engaged academic in the interviews and supporting information obtained from the university and firms' websites helped with data triangulation. The semi-structured nature of interviews was useful for obtaining in-depth understanding of the case (Hammarberg, Kirkman, & De Lacey, 2016; Wilson, 2014; Yin, 2002). All interviewees are anonymized.

ACADEMICS' MOTIVATIONS TO ENGAGE LOCALLY

Despite individual differences of interviewees and their chosen areas of research specialty, similar themes emerged regarding their motivations to engage locally and the perceived effect of the institutional and regional context on their motivations. In the first instance, given that there is no formal requirement from the UiS for academics to collaborate, the academics interviewed expressed mainly personal motivations for collaborating. As explained by one academic scientist, 'I think the university is not interested in who we collaborate with or if we actually do' (Interviewee 3). Further, there was also no claim across the interviews to suggest that the university had an influence on the motivation to collaborate, signifying that personal characteristics outweighed the organizational influence for academic engagement.

While the motivations of the academic scientists to collaborate with local industry were mainly personal, certain regional advantages appeared to drive the motivations further. Particularly, academics whose research fields were more related to the oil and gas industry, the biggest industry in Stavanger, seemed to be more driven to engage locally. For example, an academic interviewed from the Department of Mathematics and Physics, though locally engaged, expressed that their 'research areas were not directly applicable to the local industry' (Interviewee 12), and this reportedly hindered local engagement. On the other hand, a non-engaged academic from the Department of Energy and Petroleum Engineering, and whose research was directly relevant to the local oil industry, had resorted to 'purely teaching' and explained that 'he was not a people-person, liked to get things done on his own and didn't believe in the values of industry' (Interviewee 16). These suggested that while a mix of the relevant local industries was a driver for local collaborations, a personal drive is also required.

The data presented in the following sections expand on individual motivations as being central for local collaborations, which are further driven by regional incentives.

Personal motivations to engage locally

The academics interviewed explained that applying acquired knowledge to solve problems in industry was a reason for engaging locally rather than for assessing new knowledge. As elaborated by one of the engaged academics: 'In the region you are often solving a problem for people, you have a project to find something … for the international, maybe even national you collaborate in an area where you both can contribute … so you are more of researching together' (Interviewee 6).

Accordingly, an interesting trend observed while probing the geography of collaboration partners of interviewees showed that regional collaboration partners tended to be from industry whereas extra-regional partners tended to be mostly from academia. For acquiring knowledge, it appeared that the academics were inclined to access extra-regional colleagues, but would mainly engage with local industry to apply their research know-how in problem-solving efforts.

In an attempt to explain the reason for having more local collaborators from industry than from academia, one academic scientist explained:

> well in this region there is only one university and me … so if we are talking from the research point of view, I mean in the Rogaland area … it's just us for the Petroleum geology academic staff. The rest is service companies and Industry.
>
> (Interviewee 3)

By this, the academics suggested that having specific research interests to be significantly different from those of other academics within the UiS left them little option than to explore collaborations outside the university. These external collaborations tended to be mainly with regional industries or with other academic scientists outside the regions for the interviewed academics.

Individual academics were also understood to collaborate locally primarily based on their personal interests and aspirations within their given fields. Their collaborations were inspired by their career trajectory and the prospect of advancing their research. For the purpose of advancing their personal careers, for example, academics tended to collaborate with partners who could offer the required support. In explaining a financial motivation for collaborating with local industry, an academic explained that 'it (industry) is perhaps where the finance is. Because they are financing research you are drawn towards industry, and it is interesting because then you can solve problems for the industry' (Interviewee 1). Further, it was explained that while the source of funds could also be extra-regional, the local industry is particularly targeted because funds are easier to obtain from local industries rather than national and international funds (Interviewee 3).

An added advantage for engaging locally for some of these academic scientists was the opportunity to offer some industrial experience to their students either at bachelor's or master's level. It was explicitly explained by interviewees that local industrial collaborations provided access to in-kind resources, such as laboratory equipment, to enrich students' experience. This was highlighted as follows:

> I remember being a student myself, it is inspiring for the students to work with real cases, to solve problems that is beneficial for the companies. It is also exciting for the companies. I got used to it myself as a student and it is normal for me as a Professor to do the same for my students.
>
> (Interviewee 4)

Academics also collaborated locally based on their subject area specialism. On collaborating with local industry, for instance, it was explained by one interviewee that since 'they [industry] were working within those fields that were interesting and that could bring competence to my research' (Interviewee 1), he was drawn to collaborate with those industries. The evidence here also suggested that academics are self-critical. In exploring desirable qualities of competence in prospective partners, they seemed to explore similar qualities in themselves to justify their inclusion in a partnership. To this end, the academics looked for synergy within their subject area to be able to contribute meaningfully to their collaborations. The academics understudied collaborated not only for what they stood to gain but also for what they could offer industry. According to the unengaged academic scientist included in this study, it is a deterrent to collaboration when industry makes academics feel that they (academics) have nothing to offer industry, as highlighted as follows: 'I have tried it many years ago but the response was very negative. It is like I am asking for something and I do not have anything to give in return' (Interviewee 16).

Prior industry experience was observed to drive UILs as suggested by some of the engaged academics in the study. It was suggested by the academics that industry experience seemed to have equipped them with the skills required to work with industry and to manage the different culture of work encountered while working with industry. For instance, one interviewee explained that 'I worked with the industry before and so I picked up some points … . So that is really the motivation that my plans are based on … . Of course we like to have industry to be involved because it adds to the quality' (Interviewee 2).

Academics were also understood to collaborate based on trust that has been established over the years, success experienced and the ability to get along with persons previously collaborated with. The academics' perception of success for this study were marked by the publication of a joint paper, obtaining the funding pursued and achieving the goals of a project embarked on. It was explained that experiencing success with certain collaborators heightened the prospect of collaborating again with those partners. While these factors of trust, success and getting along are dependent on past encounters, it appeared that there were sometimes no prior relations leading up to the collaboration. Collaborations could also be purely birthed out of mere interest in a given industry and approaching them for the required assistance. These collaborations resulting

from a necessity could be viewed as complementary to the academic's existing pool of collaborators and essential for widening the academic's network.

Trust was also explained by some of the interviewees to be partly developed based on having a similar culture, and living closer to people, *in the same region*, for example, that made it relatively easy to understand and get to know each other better. As particularly buttressed in one of the interviews:

> Well you know the research environment varies so much so it doesn't mean that in Norway I find Norwegians and it doesn't mean that abroad I find persons from the other countries … let's say that when it is regional like Stavanger, it is easier because you can actually meet people in person and you can have the same challenge when it comes to administration for example, that's easier to understand sometimes or you hit a wall together at least.
>
> (Interviewee 14)

Beyond personal motivations: regional incentives

The interviewed academics with research interests of relevance to the oil and gas industry (UiS) appeared to have relatively more opportunity for applying their research outputs locally. Hence, they were further encouraged to collaborate locally as compared with those from other specialties whose research fields are not the popularity of the region. This view was supported in all interviews as, for example: 'if the industries of interest to me were not present in the region, I would probably not have as many local collaborations as I do' (Interviewee 15). Though quite intuitive, it was interesting to find that the presence of these local industries drives academic collaborations. This is more so especially as the industry mix of the Rogaland region was also observed to be related to the resource endowments of the region – a hub of oil companies and related firms in a region endowed with oil and gas.

The provision of a place where academics could apply their research further was observed to influence academics' mobility to the region. This was re-iterated in the interviews as exemplified in the following: 'I collaborate within Stavanger because many of the oil industries are positioned within Stavanger' (Interviewee 4). This implied that certain academics decided to move to the university (UiS) because their 'expertise could be used in those region' (Interviewee 10). In so doing, the region was seen to offer validation of the importance of the research fields of these engaged academics by providing an opportunity to be directly involved in solving industry problems in companies within their research area.

Additionally, the regional relevance provided appeared to shape the academics' area of further research specialization to solve industry challenges in the region. This point is explicitly suggested

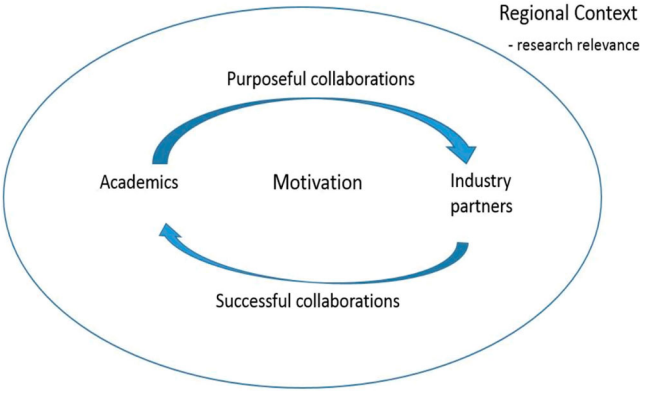

Figure 1. Motivation cycle for local academic engagement.

in an example of an engineer with no chemistry background, but who shifted his specialty to a chemistry approach to address a gap in industry:

> if you think about what a reservoir consists of, … it consists of minerals and mineral surfaces … a lot of different organic components, even polar organic components that can have surface reactivity, that is chemistry! And classical engineering, they don't look at chemistry at all! So they have only a physical approach to the problem. So we are trying to know and twist a little bit on that. We are trying to use the chemistry approach to understand 'wetting' and wettability of curation processes in porous media.
>
> (Interviewee 8)

Based on the data collected, the motivation of academics to engage locally is understood to assume a non-linear form where the initial personal drive of an academic is further spurred on by other factors present in the regions (Figure 1). As evidenced in this study, for example, the engagement would typically begin as purposeful collaborations encouraged by the personal drive of the academic scientists. Purposeful collaborations here imply being focused on obtaining financial support, applying their knowledge in solving an industry need, etc. The success of these collaborations with industry, measured on the basis of achieving the specific set goals for collaboration, would also serve as a drive to explore more avenues for further collaboration. In the region, it is also argued from the evidence collected that the success of these collaborations is enhanced due to proximity (both cognitive and geographical) where trust was claimed to be developed more easily within the region between collaborating partners. The region, Rogaland in this case, provided the related advantages and opportunities within which academics' research work received relevance and applicability. Together, personal and regionally embedded factors were evident as driving local engagement for the academics interviewed.

DISCUSSION AND CONCLUSIONS

Regional actors, including individual academics, fulfil their regional duties not as single performers (Stuck, Broekel, & Revilla Diez, 2016) but rather in conjunction with other actors towards fulfilling a certain purpose. The interactions that occur between academics and their industry partners are of great importance to regional innovation, given that these interactions form the platform for 'knowledgeable' individuals to interact (Henry & Pinch, 2000). These collaborations form the foundation of regionally based networks that offer local, innovative small businesses access to global information and knowledge networks (Sternberg, 2000). While academic engagement is not restricted to only the local, this study set out to explore the motivations for academics to engage locally. This is essential given the key role academics play in knowledge exchange partnerships.

Previous studies have focused largely on what academics stand to gain from their prospective partners as a source of motivation for collaborating (Perkmann et al., 2013; Norn, 2016). For instance, as also observed in this study, access to funding and in-kind-resources for their research activities are examples of such gains. It is interesting to report that the motivations of academics are also inward looking. That is, the question of what they (academics) can also offer to their collaborators is also an important motivation. It is therefore argued that the fact that the academic has something to offer in a partnership is an important motivation to collaborate. This also serves as a good incentive that makes academics value the competences in others.

This study underlines the fact that while the motivations to collaborate is based on clear-cut criteria such as trust and the ability to work together (Hossain & Fazio, 2009; Pataraia, Margaryan, Falconer, & Littlejohn, 2015), there is a constant assessment made before the choice of a partner. What is taken into consideration at each time is based on the specific context that elicits the need to collaborate. It was evident that the motivations of an academic to collaborate are also a

function of his past, present and future aspirations. First, the imprint of the academic's past on his decision to engage with industry is reflected in his prior industry knowledge. The fact that an academic had worked in industry before academia seems to spur him to engage with industry having gained an understanding of how industry works. Also, the fact that their personal inclination (not applicable for the non-engaged academic interviewed) was to apply research influenced their interest in engaging with industry. Second, the present, as reflected in the research field of the academic, seemed to drive his engagement with industry, especially when this is deemed as a means to advance their research agenda. Third, the academic's future aspirations as regarding his personal and professional advancement spurs him to engage with industry (with an emphasis on leaving a legacy for the next generation through linking students to local industry).

According to Perkmann et al. (2013), the characteristics of engagement is constituted of the individual, institutional and organizational factors, making academic engagement rightly described as a multilevel phenomenon. It appears from our findings that motivation to engage is also a multilevel phenomenon occurring at complementary levels to academic engagement, which for this study have been consistent with the individual and regional levels. Others have shown quantitatively that compared with individual factors, the institutional factors exert a lower influence to the academics motivations (D'este & Patel, 2007; Ramos-Vielba et al., 2016; Thune et al., 2016). It is argued based on the data that while the individual's institution provides some context, no evidence suggests that the institutional context was critical for engagement. Thune et al. (2016) reported a similar finding. This lack of evidence is also consistent with the finding by Perkmann et al. (2013) that academic engagement is pursued by academics with little institutional support. It appears then that little or a lack of institutional support probably drives academics to seek support from elsewhere. Further work is suggested to confirm this assertion.

UILs serve as platforms where individuals and teams from academic and industrial contexts work together on specific projects to produce common outputs (Perkmann & Walsh, 2007). From the above definition, it is consistent that academics are driven towards collaborations in order to achieve a common purpose, as highlighted from the problem-solving focus of collaborations reviewed in this study. The motivations to engage in these collaborations have also been explained to be in line with the research interests of the collaborating partners. This is further enacted among partners who are able to work well together, with the success of previous collaborations serving as a basis from which to explore further collaborations in future.

Because solving industry problems is an important motivation for academic engagement, the regional context is important for local collaborations. While these interactions occur within the region, certain regional advantages serve as drivers for further collaboration. From the perspective of academics, local engagements may provide access to more culturally alike individuals who facilitate projects. This is important for understanding each other and indulging in projects that are important to all parties. On the other hand, where geographical proximity is important, collaborating locally affords the opportunity to realize the results of a project. These arguments on cultural and geographical closeness is reminiscent of Boschma's (2005) arguments on different types of proximity, and how other types of proximity could compensate for geographical proximity. On the point of cognitive proximity and the perception that previous successful engagements heightened the likelihood for further collaboration, it would be interesting for other studies to examine how firms' absorptive capacity plays in this scenario; though it is suspected that absorptive capacity would improve with continued exposure to these engaged academics.

Also, while the impact of collaborations on regional development is often the focus, we argue here that the region in itself also influences the motivation of academics to engage locally. For the example of oil-rich Stavanger, for instance, the academics whose research fields are related to the oil and gas industry expressed much value in being able to apply their expertise readily in the region. This was observed to have influenced the reason why certain of the academics moved

to the UiS (because their expertise is valuable there), and the decision of others to specialize in oil and gas-relevant fields. In this way, the region seems to provide relevance for their research areas and provided a platform to engage in problem-solving efforts with regional industries.

This claim of regionally embedded advantages lends well with the view put forward by Cooke and Leydesdorff (2006) on the construction of advantage. In this way, the argument maintains that the motivation of academics to engage locally is driven by both constructed and non-constructed regional advantages. In the given case, the personal motivations would be in reference to the regionally constructed advantages stemming from knowledge partnerships. Conversely, the regional incentives, relating to the oil and gas industry, would be an example of non-constructed advantages that provide relevance for engaging locally. Overall, it is projected that these non-constructed advantages set regions apart and attract human capital.

Regions are competitive when their prosperity depends on region-specific intangible assets that are hard to transfer or replicate in other places (Boschma, 2004). It is argued that these region-specific advantages present the primary distinction between researchers who are motivated specifically for regional engagement and those who are not. Regional actors who find these advantages irrelevant as far as their interests go may seek partnerships elsewhere, while those who find these advantages relevant are motivated to engage locally. For instance, the literature on scientific researchers' engagement in general attribute academic scientists' motivations for UILs to be for furthering their research agenda rather than commercializing their knowledge (D'este & Perkmann, 2011; Perkmann et al., 2013). While these views are supported by the present study, the added perspective is that academic scientists engage locally because they perceive the advantages that exist in their regions as relevant for pursuing their research agenda.

LIMITATIONS AND SUGGESTIONS FOR FURTHER WORK

In order to explore the motivations for local engagement by academic scientists, a single case study approach was adopted with a focus placed on a single case university and its engineering faculty. While the purpose of a case study of this kind is not to generalize, the insights obtained may be relevant for studying and understanding the motivations for academic engagement under different contexts. Further work focused on obtaining a wider range of evidence is therefore suggested to verify the findings here. These could take the form of comparative studies that consider different regional contexts and different subsets of academic scientists.

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ORCID

Rhoda Ahoba-Sam http://orcid.org/0000-0003-2869-9856

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