Blue Ocean Strategy in Global Energy Firms : "Why Open Systems Will Only Grow"

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Abstract: ***"An Open Business Model describes the design or architecture of the value creation and value capturing of a focal firm, in which collaborative relationships with the ecosystem are central to explaining the overall logic." Owing to its newness as a concept in research and its mixed origins in different domains, a huge part of (open) business model literature is concerned with conceptual topics such as finding a definition, enumerating components which make up a business model, developing representational forms, clarifying relations to the strategy domain, or discussing the role of openness and partnerships.***

Global Energy Corporation (ONGC) has arisen as world leader in work flow clock time speed and managing the strategic complexity of highly technological oil and gas industry. The company has succeeding in high velocity energy markets by following the Open Blue Ocean Strategy business model innovations creating the dynamic Blue Oceans of energy through value innovative R&D, unconventional and enhanced oil recoveries (EOR).

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JEL Classification: Q47, Q55, Q56.

Introduction (Business Model Innovation and Research):

A business model describes "how a firm organizes itself to create and distribute value in a profitable manner" (Baden-Fuller & Morgan, 2010, p. 157). Consciously or not, every firm has (at least) one business model (Casadesus-Masanell & Ricart, 2010; Chesbrough, 2007a). This business model was taken as a given for a long time, as it represented the 'dominant logic' of doing business in the firm's industry (Gassmann, Frankenberger, & Csik, 2013; Lehoux, Daudelin, Williams-Jones, Denis, & Longo, 2014; Prahalad & Bettis, 1986). Stable business models based on integrated manufacturing, in-house research & development, direct sales, and per-unit prices were the norm for the largest part of the 20th century (Massa & Tucci, 2014; Slywotzky, 1996, p. 27/28). In recent years, however, disruptive market entrants have demonstrated the power of innovative business models and turned the dominant logic of entire industries upside down. Apple's invasion into the music industry or Ikea's conquest of furniture retail are frequently cited examples (Giesen, Berman, Bell, & Blitz, 2007). As a result, the business model has changed its place in executives' attention: increasingly, established firms realize that product and process innovation alone are not sufficient to stay competitive in today's fast-moving economy (Massa & Tucci, 2014). Instead, innovation efforts must also be applied to a firm's core logic of doing business, its business model.

Business model innovation is today recognized as an important lever to achieve competitive advantage (Amit & Zott, 2012; Economist Intelligence Unit, 2005). Practitioner studies attribute higher profitability to firms undertaking business model innovations (BCG, 2008) and locate the topic high up on CEOs' agendas (IBM Global Business Services, 2008). Business model innovation is described as decisive for sustained firm success (Amit & Zott, 2012) and a key ingredient for the successful commercialization of technology (Chesbrough & Rosenbloom, 2002; Chesbrough, 2010). There are numerous generic strategies and directions which firms can follow to innovate their business model (e.g., Amit & Zott, 2001, 2012; Giesen et al., 2007; Markides & Oyon, 2010; Mitchell & Coles, 2004a). None of these directions is a panacea which works in all contexts or industries. One particular direction, however, stands out as a characteristic found in many successful business model innovations across industries: the companies portrayed have adopted 'open' business models, in which novel ways of collaborating with partners play a pivotal role. It is, for instance, hard to imagine the Introduction success of Apple's iPhone without the armada of independent software developers who ensure a constant flow of new 'apps' to Apple's demanding customers (Amit & Zott, 2012). Similarly, enterprise software vendor SAP could hardly have become Europe's largest software company without its partners who account for one third of product sales and deliver the vast majority of SAP-related services (Antero, Hedman, & Henningsson, 2013; Frankenberger, Weiblen, & Gassmann, 2013). Lastly, consumer goods giant Procter&Gamble would hardly be as innovative as it is without its Connect+Develop program which is the source of about half of its new products (Huston & Sakkab, 2006). Empirical evidence suggests that opening up their business model for collaboration with partners is a promising route for established firms to stay successful. IBM's CEO Survey 2012 reveals that achieving innovation is the strongest motive for top executives to seek collaboration with partners and that the group of companies which are financially most successful partner more extensively. Overall, 69% of the surveyed CEOs in 2012 responded that they were planning to 'partner extensively' – up 14% from a survey four years earlier (IBM Global Business Services, 2012). A study based on a similar survey by Giesen et al. (2007) shows that 'network plays' (i.e., new partnerships and collaboration) are the most common form of business model innovation in established firms and that they are particularly effective for older companies, as they allow to leverage existing assets in a new context. Lastly, Chesbrough (2006, 2007b) argues based on a collection of prominent cases that established firms which want to survive in the long run must embrace the opportunities which openness holds for them and adapt their traditionally closed business models.

Business model research has largely identified two obstacles on the way to an open business model. First, unlike new ventures, established firms face considerable rigidities and other challenges when innovating their business model (Chesbrough, 2010; Frankenberger, Weiblen, Csik, & Gassmann, 2013). Innovation management research has only started to examine the process behind business model innovation and to provide tools and guidance to support this task (Björkdahl & Holmén, 2013; Eurich, Weiblen, & Breitenmoser, 2014; Schneider & Spieth, 2013). Second,

many open questions remain around the design of successful open business models, their ideal setup and implementation. Although Venkatraman and Henderson (2008, p. 262) postulate that "business model innovation is to be framed in network-centric (rather than firm-centric) terms with greater recognition of co-creation of value", research concerning this exact co-creation of value in open business models is still in its infancy (Coombes & Nicholson, 2013). The compilation of research articles in this paper aims to contribute to the body of knowledge on open business models and to the management of related business model innovation efforts in established firms. The following two sections provide a state-of the- art overview of the literature in the (open) business model and business model innovation fields.

Literature Review

Research on the business model and its innovation is a young, but nonetheless very active, field, which is characterized by ambiguities and ongoing conceptual discussions (DaSilva & Trkman, 2014). The following sections aim to find a balance between providing a general foundation and detailing those aspects which are relevant for the remaining paper.

Business Models and Open Systems

The business model, as a concept in research, emerged with the dot.com boom (DaSilva & Trkman, 2014; Magretta, 2002) to describe "how a firm organizes itself to create and distribute value in a profitable manner" (Baden-Fuller & Morgan, 2010, p. 157). Due to its origin in practice and its ubiquity in the popular press, research still struggles in providing a unified and generally accepted definition of the concept (DaSilva & Trkman, 2014; George & Bock, 2011). Researchers from different domains (namely e-business and information technology, strategy, and innovation and technology management) have independently used and developed the concept in silos (Zott, Amit, & Massa, 2011). For my work, I assume the business model definition by David Teece, which is sufficiently broad to capture most research conducted in the business model domain: "A business model describes the design or architecture of the value creation, delivery and capture mechanisms employed [by a particular business]." (Teece, 2010, p. 191)

Some researchers explicitly consider boundary-spanning activities (e.g., Shafer, Smith, & Linder, 2005; Zott & Amit, 2007, 2010) or collaboration with partners (Al-Debei & Avison, 2010; Osterwalder, Pigneur, & Tucci, 2005; Teece, 2010) an integral part of business models, whereas others don't (e.g., Afuah & Tucci, 2001; Linder & Cantrell, 2001; Morris, Schindehutte, & Allen, 2005). Chesbrough (2006) introduced a distinction between two types of business models by coining the term "open business model". Originally, it was used to describe value creation in the context of open innovation (Chesbrough, 2007b), later more broadly to describe openness in "all the aspects of [the] business model" (Sandulli & Chesbrough, 2009, p. 20). Open business models can be seen as a subclass of business models in which collaboration of the focal firm with its partner ecosystem is a central element of value creation and capturing Extending the above definition, the open business model can hence be defined as follows:

"An open business model describes the design or architecture of the value creation and value capturing of a focal firm, in which collaborative relationships with the ecosystem are central to explaining the overall logic." (Weiblen, 2014, p. 57) Owing to its newness as a concept in research and its mixed origins in different domains, a huge part of (open) business model literature is concerned with conceptual topics such as finding a definition, enumerating components which make up a business model, developing representational forms, clarifying relations to the strategy domain, or discussing the role of openness and partnerships. Empirical work,which is mainly qualitative in nature, studies specific instances of business models (e.g., non-profit or social business models, e-commerce business models), the role of technology for business models, or performance implications of certain business model configurations. Table 1 provides an overview of these major literature streams in the (open) business model field.

Table 1: Literature review on open systems business models

Conceptual	Definitions, components	(Afuah & Tucci, 2001; Arend, 2013; DaSilva & Trkman, 2014; George & Bock, 2011; Hedman & Kalling, 2003; Johnson, Christensen, & Kagermann, 2008; Klang, Wallnöfer, & Hacklin, 2014; Magretta, 2002; Morris et al., 2005; Osterwalder et al., 2005; Pateli & Giaglis, 2004; Perkmann & Spicer, 2010; Shafer et al., 2005; Teece, 2010; Zott et al., 2011)
	Representations	(Al-Debei & Avison, 2010; Casadesus-Masanell & Ricart, 2011; Kiani, Gholamian, Hamzehei, & Hosseini, 2009; Osterwalder & Pigneur, 2010; Osterwalder, 2004; Pateli & Giaglis, 2004; Samavi, Yu, & Topaloglou, 2009)
	Relations to strategy	(Abraham, 2013; Al-Debei & Avison, 2010; Casadesus-Masanell &

		Ricart, 2010; DaSilva & Trkman, 2014; Richardson, 2008; Shafer et al., 2005)Kim& Mauborgne(2005, 2017)
	Role of openness	(Chesbrough, 2006, 2007b; Coombes & Nicholson, 2013; Mason & Spring, 2011; Sandulli & Chesbrough, 2009; Weiblen, 2014; Zott & Amit, 2009)
Empirical	Non-profit	(Seelos & Mair, 2007; Thompson & MacMillan, 2010; Yunus, Moingeon, & Lehmann-Ortega, 2010)
	E-business and IT	(Isckia & Lescop, 2009; Rappa, 2001, 2004; Tapscott, Ticoll, & Lowy, 2000; Timmers, 1998; Weill & Vitale, 2001; Wirtz, Schilke, & Ullrich, 2010)
	Technology	(Björkdahl, 2009; Calia, Guerrini, & Moura, 2007; Chesbrough & Rosenbloom, 2002; Chesbrough, 2007a; Desyllas & Sako, 2013; Doganova & Eyquem-Renault, 2009; Gambardella & McGahan, 2010; Holm, Günzel, & Ulhøi, 2013; Lehoux et al., 2014; Pateli & Giaglis, 2005)
	Performance	(Alexy & George, 2011; Amit & Zott, 2001; Frankenberger, Weiblen, & Gassmann, 2013; Malone et al., 2006; Weill, Malone, & Apel, 2011; Zott & Amit, 2007)

Table 2 gives a tabular overview of selected publications in the open systems business model domain and summarizes the key findings (relevant).

Table 2: Selected literature on open systems business models

Article	**Title**	**Research type / sample**	**Key findings**
(Al-Debei & Avison, 2010)	Developing a unified framework of the business model concept	conceptual	The BM concept provides a link between the strategy and operational layers of an enterprise the BM can be used to align strategy and the process level / IT
(Amit & Zott, 2001)	Value creation in Ebusiness	case study / 59 cases	existing research fields hold important implications for e-business model research: virtual markets, value chain analysis, innovation, resource-based view, strategic networks, transaction cost

			economics • locus of value creation often is the network, not the single firm
(Baden-Fuller & Haefliger, 2013)	Business models and technological innovation	conceptual	interactions between technology and BM are complex, particularly in two-sided BMs • BM openness and user engagement are two most important choices which influence technological and firm development
(Chesbrough & Rosenbloom, 2002)	The role of the business model in capturing value from innovation	case study / 7 cases	the BM acts as a mediating construct between technology and economic value • only the right BM can unlock the economic potential of a technology
(Coombes & Nicholson, 2013)	Business models and their relationship with marketing: A systematic literature review	review	BM so far understudied in marketing domain but has great potential for theory and practice • OBM is a valuable concept to study value co-creation for and with the customer
(Holm et al., 2013)	Openness in innovation and business models: lessons from the newspaper industry	case study / 2 cases	the term 'openness' in innovation is different from its use in BM • BM openness can be categorized on the inward/outward and broad/deep dimensions • BM openness induces dependency on other firms' capabilities and assets; potential 'probias' in existing literature
(Mason & Spring, 2011)	The sites and practices of business models	conceptual / 1 case	3 core elements of BM: technology, network architecture, market offering • new BMs cause other players' BMs to change; BMs are interlinked entities
(Morris et al., 2005)	The entrepreneur's business model: toward a unified perspective	conceptual	a BM links economic, strategic, and operational choices • choices to be

			made on three levels: foundation, proprietary, rules • internal fit between BM components is important
(Osterwalder & Pigneur, 2010)	Business Model Generation	conceptual / illustrative cases	graphical representation of BMs is important for joint BM development and communication • BM patterns occur in BMs across different industries
(Purdy, Robinson, & Wei, 2012)	Three new business models for "the open firm"	conceptual / illustrative cases	OBMs occur in typical patterns • economic benefits and increased complexity need to be balanced • openness requires specific management decisions and skills
(Storbacka, Frow, Nenonen, & Payne, 2012)	Designing business models for value cocreation	conceptual	BMs as important unit of analysis of value co-creation in networks • a focal network actor needs to develop value proposition for its partners • OBM fit needs to be achieved intra-actor and inter-actor
(Weill et al., 2011)	The business models investors prefer	quantitative / N=10'000	business models can be assigned to one of 14 types • the stock market particularly values business models based on innovation and IP
(Zott & Amit, 2009)	The business model as the engine of networkbased strategies	conceptual	the BM in a networked world explains how a focal firm is embedded into its network with other firms • design of boundary-spanning activities and governance are central management tasks
(Zott & Amit, 2013)	The business model: A theoretically anchored robust construct for strategic analysis	conceptual	value chain concept does not suffice to study today's value creation processes • literature streams of BM and

			business ecosystems are related as both go beyond firm boundaries • BM concept is anchored on a focal firm

Fostered by factors such as globalization, technological progress, or industry convergence, the way in which firms create and capture value has changed over recent years. New and more collaborative forms of doing business, such as collaborative networks (Romero & Molina, 2011), business ecosystems (Moore, 1993, 1996), or multisided platforms (Hagiu & Yoffie, 2009) have emerged. Leading scholars in the field of business models have argued that these more open forms of value creation and capturing profit from using the business model as an analytical device (Baden-Fuller & Mangematin, 2013; Zott & Amit, 2013). Zott and Amit highlight that the business model "[…] is centered on a firm, yet spans focal firm boundaries by including stakeholders with which the firm interacts when it produces and delivers value" (2013, p. 405).
Baden-Fuller and Haefliger (2013, p. 424) underline the relevance and innovation potential of these new types of business models when they state: "For managers, the ecosystems perspective holds the promise of opening up the wider entrepreneurial and collaborative space that a new technology affords – and provides room for novel business models to succeed." While, overall, the empirical foundations of business model research are characterized as rather thin (Coombes & Nicholson, 2013), this is particularly true for research on open business models. In this subfield, anecdotal evidence is at the basis of seminal works (Chesbrough, 2006, 2007b; Mason & Spring, 2011). Specific challenges of openness, such as aligning the business models of all actors (Lindgren, Taran, & Boer, 2010; Solaimani, Bouwman, & Itälä, 2013), creating separate value propositions for customers and potential partners (Storbacka et al., 2012), or managing the dependency on third-party assets (Holm et al., 2013) have been identified and described, but no solved. Despite the relevance and potential of firm openness in today's networked economy, the majority of extant business model research is firm centric (Storbacka et al., 2012; Klang et al., 2014) and aspects and effects of openness are not sufficiently understood (Holm et al., 2013).

Business Model[Innovation Strategies]

An innovative business model can be a source of superior performance and competitive advantage even in mature industries (Amit & Zott, 2012). In the context of established firms, understanding the managerial process of developing and implementing a novel business model is hence of particular relevance. The research field of business model innovation studies the purposeful process of changing a firm's business model. Two of the few formal definitions in the literature shall define the term for this thesis: "[…] designing a new, or modifying the firm's extant activity system – a process which we refer to as business model innovation […]" (Amit & Zott, 2010, p. 2)

"Business-model innovation is the discovery of a fundamentally different business model in an existing business." (Markides, 2006, p. 20) The notion that the business model itself can be the subject of an organization's systematic innovation efforts has aroused increasing interest from theory and practice over recent years (Amit & Zott, 2012; Schneider & Spieth, 2013). At root, a business model innovation in an established firm can be described as the process of reconfiguring its value creation and capture mechanisms, resulting in a novel or even unique way of doing business (Björkdahl & Holmén, 2013; Massa & Tucci, 2014). Technically, business model innovation is achieved by changing at least one of the constituting elements of a business model (Abdelkafi, Makhotin, & Posselt, 2013; Demil & Lecocq, 2010; Lindgardt, Reeves, Stalk, & Deimler, 2009). Scholars in the field do not agree in the meaning of 'novelty' in this context, i.e., whether the newness relates to the firm (e.g., Amit & Zott, 2012; Björkdahl & Holmén, 2013), to the industry (e.g., Johnson et al., 2008; Snihur & Zott, 2013), or even to the world (e.g., Thompson & MacMillan, 2010). For the purpose of this paper,which is most interested in the ways openness can be introduced into a business model, an agnostic view of the form of newness is assumed. Similar equality of perceptions exists concerning the question whether business model innovation implies changing or replacing the firm's current business model (e.g., Massa & Tucci, 2014; Santos, Spector, & Van Der Heyden, 2009). Prominent examples from the literature base suggest that there is a wider array of options to take new business models to market, such as launching spin-offs (Chesbrough & Rosenbloom, 2002) or running several business models in parallel (Markides & Charitou, 2004; Markides & Oyon, 2010). The latter option is often found in large corporations, where the overall corporation and its business units have different business models (Aspara, Lamberg, Laukia, & Tikkanen, 2013; Trapp, 2014). To stay generic and unbiased by organization specifics, we have considered or investigated the organizational form of new business model implementation.

Overall, there is a wide consensus among innovation management scholars that business model innovation must be seen as a new class of innovation which is different from other forms, such as product- or process innovation (Baden-Fuller & Haefliger, 2013; Björkdahl & Holmén, 2013; Massa & Tucci, 2014). Business model innovation is characterized as being both more complex to achieve and potentially more rewarding than other forms of innovation (Lindgardt et al., 2009; Schallmo & Brecht, 2010; Snihur & Zott, 2013). Other scholars have termed the subject as business model evolution (Demil & Lecocq, 2010) or business model renewal (Doz & Kosonen, 2010). Literature in the area is, overall, mostly empirically driven and deals with organizational and managerial issues of innovating the business model. It is mainly centered on three themes: prerequisites and challenges, process and elements, and effects and results of business model innovation (Schneider & Spieth, 2013). Table 3 provides an overview of the literature base along these themes.

Table 3: Literature review on business model innovation

Prerequisites and challenges	(Amit & Zott, 2013; Berglund & Sandström, 2013; Chesbrough, 2010; Desyllas & Sako, 2013; Doz & Kosonen, 2010; Frankenberger, Weiblen, Csik, et al., 2013; Linder & Cantrell, 2001; Sinfield, Calder, McConnell, & Colson, 2012)

Process and Elements	(Bucherer, Eisert, & Gassmann, 2012; Chesbrough, 2007a; de Reuver, Bouwman, & Haaker, 2013; Demil & Lecocq, 2010; Enkel & Gassmann, 2010; Eurich et al., 2014; Frankenberger, Weiblen, Csik, et al., 2013; McGrath, 2010; Mitchell & Coles, 2004b; Rohrbeck, Konnertz, & Knab, 2013; Santos et al., 2009; Smith, Binns, & Tushman, 2010; Sosna, Trevinyo-Rodríguez, & Velamuri, 2010)
Effects and results	(Bock, Opsahl, George, & Gann, 2012; Casadesus-Masanell & Zhu, 2013; Desyllas & Sako, 2013; Gambardella & McGahan, 2010; Massa & Tucci, 2014; Matzler, Bailom, von den Eichen, & Kohler, 2013; Mitchell & Coles, 2003; Sabatier, Mangematin, & Rousselle, 2010)

Table 4 provides a tabular overview of those articles which are particularly relevant for this paper.

Table 4: Selected literature on business model innovation

Article	Title	Research type / sample	Key findings
(Amit & Zott, 2012)	Creating Value through Business Model Innovation	conceptual / illustrative cases	four drivers of BMI: novelty, lock-in, complementarities, efficiency • designing partner networks and ecosystems is an important part of BMI • holistic and systemic thinking is required to achieve BM consistency
(Berglund & Sandström, 2013)	Business model innovation from an open systems perspective: structural challenges and managerial solutions	conceptual	although BM is acknowledged as a boundary-spanning concept, BMI research is usually firm-centric • the likelihood of BMI success depends on a multitude of factors in managing and incentivizing partners
(Bucherer et al., 2012)	Towards systematic business model innovation: Lessons from product innovation management	case study / 11 cases	similarities exist in between product innovation and BMI, but also differences • BMI currently lacks normative process models and tools • scope and implications of BMI larger than that of technology/product innovation
(Calia et al., 2007)	Innovation networks: from technological development	case study / 1 case	openness in R&D can lead to new

	to business model reconfiguration		opportunities and thus trigger radical BMI • networks of partners not only provide resources and technology but – by incorporating them into the new BM – help in BMI
(Chesbrough, 2007b)	Why companies should have open business models	conceptual / illustrative cases	opening up the BM has helped established firms like IBM and P&G survive • new and open BMs require a phase of experimentation and take time to pay off • the transition from closed to open BM requires strong (change) management capabilities
(Chesbrough, 2010)	Business model innovation: Opportunities and barriers	conceptual / illustrative cases	new technology is an important trigger of BMI • barriers to BMI exist in companies: dominant logic, resistance, lack of leadership
(Enkel & Mezger, 2013)	Imitation processes and their application for business model innovation: an explorative study	case study / 9 cases	BM analogies can be transferred cross industries and thus stimulate innovation • analogies start from single BM elements • BMI team members should have broad experience
(Johnson et al., 2008)	Reinventing our business model	conceptual / illustrative cases	the existing BM must be constantly analyzed for change need • existing orthodoxies must be challenged • the new customer value proposition drives innovation in the other BM elements
Kim & Mauborgne 2005, 2017	Blue Ocean Strategy	conceptual / illustrative cases	Re-constructionist View, Reconfiguration, Creating new markets. Value Innovation as main

			component. Making competition irrelevant. Strategy Canvas. Converting non-customers into customers Six paths: The Blue Ocean Instruments
(Lindgren et al., 2010)	From single firm to network-based business model innovation	case study / 3 cases	BMI in partner networks requires coordinated change of all partners' BMs • the leading firm(s) in the network typically change their BM less, small ones adjust more • overall, a network of firms can offer disruptive innovations with limited change of the single firms' BMs
(Massa & Tucci, 2014)	Business model innovation	conceptual	BM is a source of innovation in and of itself • BMI in established firms requires specific processes, tools, and capabilities • BMI is particularly relevant in mature markets
(Smith, Cavalcante, Kesting, & Ulhøi, 2010)	Opening up the business model: A multidimensional view of firms' inter-organizational innovation activities	case study / 3 cases	successful open innovation requires BM changes • opening up the BM is difficult for firms which are not used to collaboration • BMI requires organizational support on strategy level

Despite the fact that scholars from the innovation management domain are very active in business model research (Zott et al., 2011), many questions on its innovation are still open. Methodically, a general lack of systematic and large-scale studies is diagnosed (Bock et al., 2012; Schneider & Spieth, 2013). Thematically, among others, a lack of insights for the management of business model innovation in established firms, their implementation, and their alignment with the ecosystem are highlighted (Björkdahl & Holmén, 2013). Berglund and Sandström (2013, p. 275) add to the last point by observing that "existing research on Business Model Innovation (BMI) challenges focus [es] almost exclusively on intra–firm factors such as capabilities, cognition and leadership." Challenges of introducing openness, such as aligning the business model of a focal firm with those of its partners, have hardly been studied (Lindgren et al., 2010). Research into opening up, however, is highly relevant for practice, as the authors of the IBM CEO study point out: "The organizational changes required to be open and collaborative with partners are even more extensive than for internal openness." (IBM Global Business Services, 2012, p. 45).

Open innovation (Chesbrough, 2003; Gassmann, Enkel, & Chesbrough, 2010; Lichtenthaler, 2011), which is concerned with opening up a firm's research & development activities for collaboration, is an established stream in innovation management research. It has produced highly relevant results which might be transferable to business model innovation. Despite emphasizing the need to align open innovation mechanisms with the implementing organization's business model (West, Salter, Vanhaverbeke, & Chesbrough, 2014), most extant research in open innovation tends to neglect the business model aspect (West & Bogers, 2013). More importantly, it is to be noted that "the openness to innovations and openness of business models needs to be adequately recognized, understood, and treated as separate phenomena" (Holm et al.,

2013, p. 342). Therefore, a simple transfer of knowledge from open innovation to the opening up of business models is not possible. The very active field of open innovation, however, demonstrates that studying openness in innovation processes clearly benefits from a separate scholarly treatment. Similar to research on business models, the field of business model innovation has not yet sufficiently considered openness as a distinct subclass which requires specific attention. Adding new strategic insights to the sparse literature base in this field is one goal of my research work.

Red and Blue Ocean Strategies

Imagine a market universe composed of two sorts of oceans: red oceans and blue oceans. Red oceans represent all the industries in existence today. This is the known market space. Blue oceans denote all the industries *not* in existence today. This is the unknown market space.

In the red oceans, industry boundaries are defined and accepted, and the competitive rules of the game are known. Here companies try to outperform their rivals to grab a greater share of existing demand. The dominant focus of strategy work over the past twenty-five years has been on competition-based red ocean strategies. As the market space of red oceans gets crowded, prospects for profits and growth are reduced. Products become commodities, and cutthroat competition turns the red ocean bloody. Hence we use the term "red" oceans. Blue oceans, in contrast, are defined by untapped market space, demand creation, and the opportunity for highly profitable growth. Although some blue oceans are created well beyond existing industry boundaries, most are created from within red oceans by expanding existing industry boundaries. In blue oceans, competition is irrelevant because the rules of the game are waiting to be set. The term "Blue Ocean" is an analogy to describe the wider potential of market space that is vast, deep, not yet explored.

Re-constructionist View of Strategy in Blue Oceans

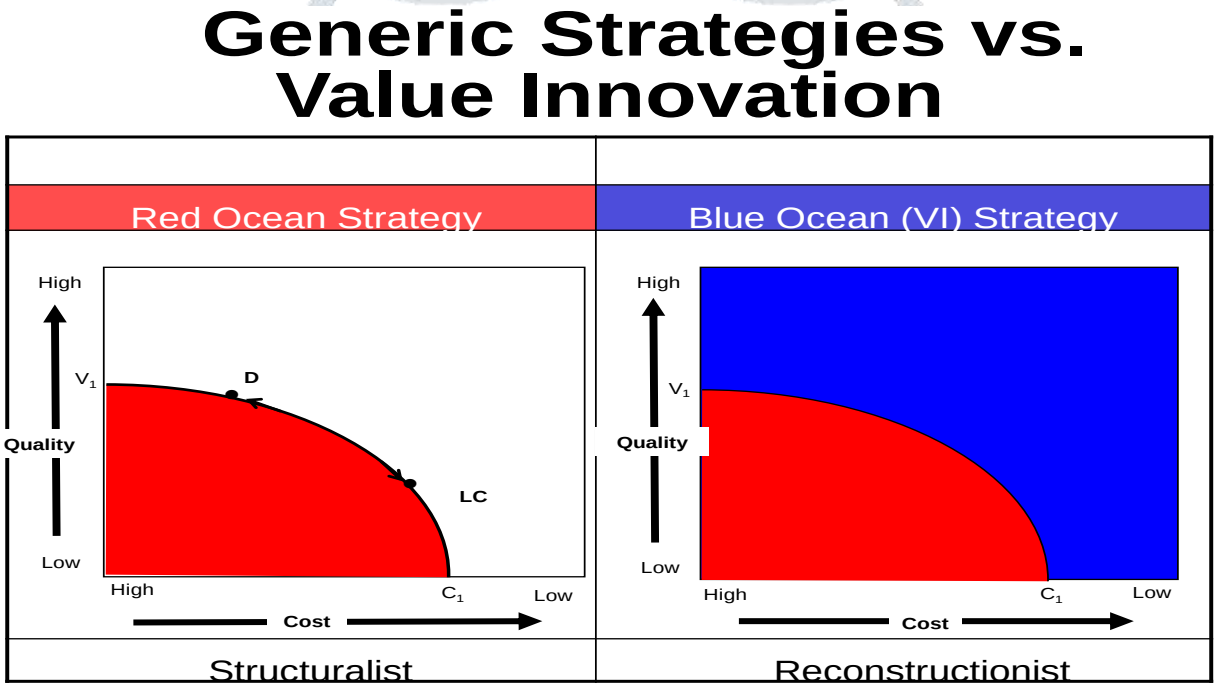

Figure 1: Generic Strategies vs. Value Innovation

There are common characteristics across blue ocean creations. In sharp contrast to companies playing by traditional rules, the creators of blue oceans never used the competition as their benchmark. Instead they made it irrelevant by creating a leap in value for both buyers and the company itself. While competition-based red ocean strategy assumes that an industry's structural conditions are given and that firms are forced to compete within them, blue ocean strategy is based on the view that market boundaries and industry structure are not given and can be reconstructed by the actions and beliefs of industry players. We call this the *re-constructionist* view. In the red ocean, differentiation costs because firms compete with the same best-practice rule. According to this view, companies can either create greater value to customers at a higher cost or create reasonable value at a lower cost. In other words, strategy is essentially a choice between differentiation and low cost. In the re-constructionist world, however, the strategic aim is to create new rules of the game by breaking the existing value/cost trade-off and thereby creating a blue ocean. Recognizing that structure and market boundaries exist only in managers' minds, practitioners who hold the re-constructionist view do not let existing market structures limit their thinking. To them, extra demand is out there, largely untapped. The crux of the problem is how to create it. This, in turn, requires a shift of attention from supply to demand, from a focus on competing to a focus on leaving the competition behind. It involves looking systematically across established boundaries of competition and reordering existing elements in different markets to reconstruct them into a new market space where a new level of demand is generated. In the re-constructionist view, there is scarcely any attractive or unattractive industry per se because the level of industry attractiveness can be altered through companies' conscientious efforts of reconstruction. As market structure is changed in the reconstruction process, so are the rules of the game. Competition in the old game is therefore rendered irrelevant. By stimulating the demand side of the economy, blue ocean strategy expands existing markets and creates new ones. The creation of blue oceans is about driving costs down while simultaneously driving value up for buyers. This is how a leap in value for both the company and its buyers is achieved. Because buyer value comes from the utility and price that the company offers to buyers and because

the value to the company is generated from price and its cost structure, blue ocean strategy is achieved only when the whole system of the company's utility, price, and cost activities is properly aligned. It is this whole-system approach that makes the creation of blue oceans a sustainable strategy. Blue ocean strategy integrates the range of a firm's functional and operational activities. In this sense, blue ocean strategy is more than *innovation.* It is about *strategy* that embraces the entire system of a company's activities.

Open Systems in Blue Ocean Energy Corporations:

Capturing and producing new oil and gas resources is complicated by increased competition, new meta technologies that open up unconventional plays, the rise of NOCs, large Independents and service companies. Meanwhile, a decrease in global geo science and engineering talent pools, the need to manage post-Macondo risks, pressure toward alternative sources of energy, complicate short term as well as long term decisions. We have outlined blue ocean strategies and value innovations framework of global energy firms to show how it has evolved from a strategic model employed by high-tech company from undergird agility in high-velocity markets, to a comprehensive strategic framework relevant for E&P oil and gas entities as they capture opportunities and manage risks in the changing business environment. Global oil & gas corporations has sharpened strategic agility by seizing and profiting from opportunities in the new business environment, creating its own blue oceans of energy through evolving value innovations (see Figure 2).

Today, Open Blue ocean strategy is being used to capture opportunities and mitigate strategic risks in Oil and Gas Exploration and production (E&P). Operational and general managers with key strategic decision-making responsibilities employ it to maintain sustainable value, to enhance safety and profitably, to increase reserves and production to meet the company's share of the world's energy needs, and to make competition truly irrelevant in high velocity and uncertain energy markets. This case describes how the blue ocean strategy is being adapted by global corporations and employed to create& capture opportunities and meet the considerable challenges created by recent changes in the industry.

To explore the contribution of the Blue ocean open innovations for E&P strategy of Global energy firms, "We:

a. Explicate the fact that blue ocean strategy is a dynamic process and not a static one.

b. Describe how new opportunities and challenges within the E&P industry have created an inflection point that requires a transformative approach to strategy and strategic management.

While demand for energy resources continues to increase, new technologies have opened unconventional plays and increased competition. Meanwhile, global geo science and engineering talent pools have shrunk, and the reality and perception of environmental risk has increased for industry participants.

c. Demonstrate how the blue ocean strategy is relevant to today's E&P strategic context .

d. Describe how the value innovations have empowered E&P strategic imperative. As this case demonstrates, the need to create & capture value and increase production, the very considerable economic potential created by new exploration opportunities, and the complexity of the challenges facing energy strategists and managers require a new and more effective approach to strategic oversight and execution of Blue Ocean Strategy.

Figure 2: The High velocity diversity of Energy Sources of Global Energy Firms

Hybrid Paradigm of Blue Ocean Strategy & Delphi Technique:

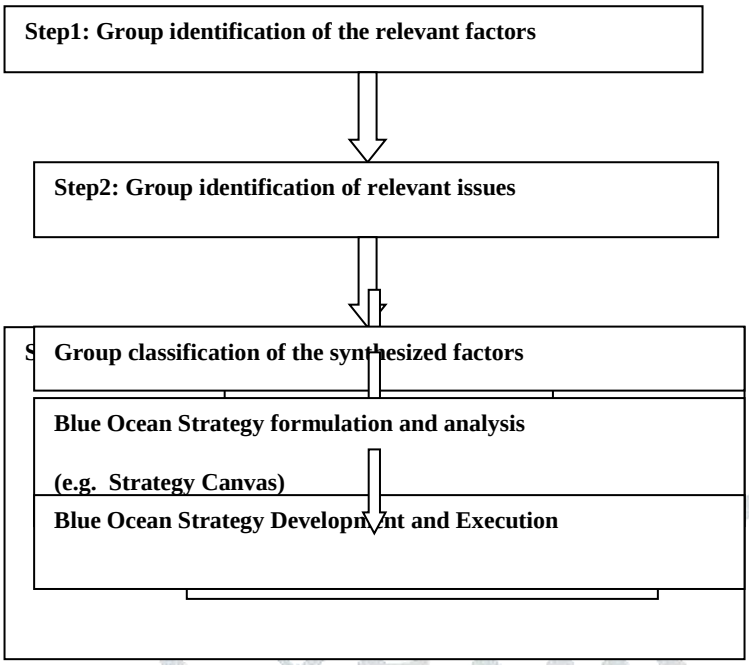

Figure 3: Open Delphi Technique for Blue Ocean Strategy Development in ONGC

The Delphi method was developed at the RAND Corporation to obtain the most reliable consensus of opinion from a group of knowledgeable individuals about an issue not subject to objective solution **(Dalkey and Helmer, 1963)**. It is a structured group interaction that proceeds through multiple rounds of opinion collection and anonymous feedback. Although Delphi dates back to early 1950s, the most recognized description of the method was offered by **Linstone and Turoff (1975). Fischer (1978), Schmidt (1997), Okoli and Pawloski (2004) and Keeney et al. (2006)** also provide excellent reviews.

A common group decision making activity is evaluating and deciding upon various alternatives **(Ngwenyama and Brysona, 1999)**. Decision making bodies in organizations are often formed as groups to evaluate decision alternatives by collecting and synthesizing information from different perspectives. Group decision making is an effective way to overcome judgment errors in organizations due to human fallibility **(Koh, 1994). Maier (2010)** summarizes the virtues of group decision making as follows: first, if every group member exerts effort to become informed, groups can gather more information than individual members. Better information can lead to better decisions. Second, if all group members have the same information, they may not reach the same conclusion since group members typically have different backgrounds and experiences. Third, if some information is erroneous, a group can pool signals and reduce uncertainty. Fourth, groups provide an insurance against extreme preferences of individual managers.

We used the open Delphi rounds technique for group classification of the relevant synthesized factors affecting ONGC, which were further used in Blue Ocean Strategy Formulation and Analysis through Strategy Canvas.

The following Group classified relevant synthesized factors were found significant for ONGC through the Delphi rounds technique:

1. Technological Innovations and adaptations
2. Health Safety and Environment(HSE)
3. Patents Research and Development
4. Corporate Social Responsibility(CSR)
5. Unconventional Resources of Energy
6. Global Collaborations and Strategic Partnerships
7. Discoveries
8. Carbon Emission Neutrality
9. Enhanced Oil Recoveries EOR/Improved Oil Recoveries IOR
10. Integrated Business Model of ONGC
11. Adaptive Business Model of ONGC

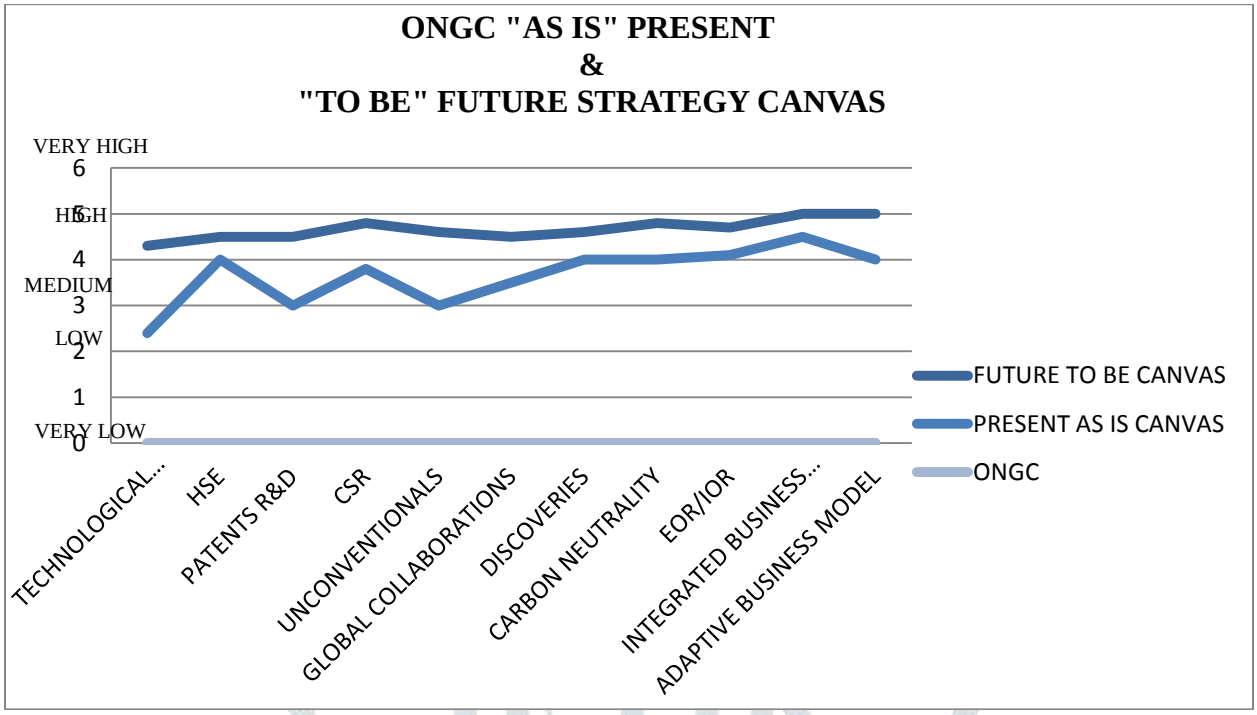

Figure 4: Strategy Canvas of ONGC

Strategy Canvas of ONGC i.e. "as is present" and "to be future" canvas were drawn by using the Group Classified Synthesized Relevant Factors of ONGC.

"As is present" today strategy canvas of ONGC shows the current status of the Group Synthesized Relevant Factors of the Company i.e. ONGC Today. Similarly "To be Future" Strategy Canvas of ONGC shows the future status (5-years) of the Group Synthesized Relevant Key Factors i.e. ONGC Tomorrow (see Figure 4).

We believe that the Blue Ocean Framework provides the leaders of upstream E&P firms a method to effectively and efficiently capture opportunities, create value, and mitigate risks through perfect industry game-changers in the turbulent times when industry faces a "strategic inflection point". At least five factors have triggered a climacteric for upstream entities; some have been building for decades, others are very recent. Only the confluence of several factors could bring about such a perfect storm of upheaval Blue Ocean Transformations that has strategic implications for all producers: the national oil and gas companies, the super-majors, and the independents.

High Rising Energy Demands (Enhanced Oil Recoveries)

Economists and strategists in most oil and gas companies regularly develop energy consumption scenarios. These provide projections on energy demand, over a 25-50 year period, broken down by resource (oil, gas, coal, nuclear, renewable etc.). Most show a consistent pattern:

- Between 2000-2050, total worldwide energy consumption doubles
- Oil and gas production increases to meet demand through 2040, when production levels off and demand is increasingly met by biomass and other renewable.
- A significant portion of the increased demand originates from developing countries.
- A rampant worldwide urbanization is occurring, which will move the world's urban population well above the current 50%; this is likely to shape and increase future energy needs.

One measure investors use to judge the operating performance of an E&P company is the Reserve Replacement Ratio (RRR). The RRR measures the amount of proved reserves added to a company's reserve base during a given year relative to the amount of oil and gas produced. To sustain 2% production growth requires a 118% RRR. Most majors target year-over-year production growth over 3%. They envision continuing at that level or more each year for the next two decades to meet their share of the energy demand allocated to oil and gas. However, in 2012, the two largest American oil companies, Exxon and Chevron, reported RRRs of 115% and 112% respectively, while European competitors reported somewhat concerning RRRs: BP (77%); Shell (85%) and Total (93%)..

Open Systems in unconventional sources of energy

Given the increasing scarcity of relatively cheap conventional hydrocarbons, upstream companies are investing in Unconventional oil and gas to grow reserves and production (RRR). Unconventional operations focus on shale plays which yield natural gas, NGLs, gas condensates and crude oil. Tight gas, coal bed methane, oil sands, and heavy oil are non-shale Unconventional resources. The move toward Unconventional requires the development and application of new technologies and new processes in new geographies. With Unconventional plays, managers confront both great opportunity and considerable challenge. This requires "Organizational Change", learning and a different set of managerial priorities. The development and application of cost effective fracking technologies, beginning first in the U.S., is a monumental game changer. In the last 15 years, horizontal drilling and hydraulic fracking have made large quantities of tight shale gas and oil reserves viable. Today over 60% of all new oil and gas wells are hydraulically fractured, employing over 2.5 million people worldwide, approximately 1 million in the US. US

domestic gas reserves have tripled; China's by an order of magnitude. The International Energy Agency has projected that due to the recent tight oil boom, the US will surpass Saudi Arabia and Russia to become the world's largest oil producer by 2020.

The rise of national oil and gas companies, large independents and service companies alongside the super-majors provides both competitive challenges, as well as collaborative possibilities. The characteristics and differences among these entities with regard to access to strategic focus, resources, technical and non-technical capabilities, experience with conventional megaprojects vs. unconventional resource plays, learning, agility, and responsiveness are well documented

in the literature and are generally acknowledged throughout the industry. One example of such comparisons, consistent with the "Blue Ocean Transformations" framework, concerns recent research on "clock-speed". A large-scale study of "time-to-build" of oil and gas facilities worldwide (1996-2005) suggests that firms with faster "clock-speed" or intrinsic execution speed capabilities have a performance and valuation advantage. Firms in faster clock-speed industries are encouraged to design and assemble assets as well as their supply, distribution and alliance networks to gain a series of temporary competitive advantages. Exxon, Shell and Chevron are identified as firm-level "clock-speed" leaders in their set of 6 IOC super-majors; ENI, ONGC and Stat Oil in their set of 6 public-private partnerships (NOCs) using the proxies of workflow speed, improvement of risk and portfolio value accrual .

Human resource strategy in open energy systems

A fundamental challenge for all Oil and Gas companies involves managing a cluster of human resource activities that provide enough people (capacity; recruitment; resourcing), who are doing the right things (technical competence; safety; learning and development), in the right role, with the right people (teams), in the right seat and place, at the right time (deployment), with the right supervision (management), all headed in the right direction (strategy and leadership). Deficiencies in the ways people are managed, alone and in their interactions, can undermine value creation, production, create disasters, and demolish a strategy.

- For the foreseeable future, capacity in E&P is challenged by a decreasing and aging geo-science talent pool. Given current trends, for the next 20 years, the supply of geoscientists will not meet the demand for geo-scientists.
- Traditional organizational support structures (HR; Learning and Development; Recruitment; Deployment) may not be aligned with the strategic requirements of the Ventures/Projects. In some companies, "The tail is wagging the dog!"
- There are often acute deficiencies related to learning and cross-generational mentoring, particularly related to capabilities for highly complex and high value ventures (e.g., Unconventionals).
- A large portion of a company's talent resources may be contractors who are (understandably) not properly aligned with the company's culture, processes and strategy.
- Deployment within the organization is not aligned with strategic priorities. Other priorities take precedence over getting the Ventures, with highest or potentially highest economic value, the human resources they need.
- Strategic investment decisions about what to drill need to be connected to an analysis of current organizational do-ability. A particular project or venture may have high-potential economic value, but may not be doable given the level of technical competencies or available human assets. Many firms do not ask the "do-ability" and "Organizational Transformations to achieve the do-ability status" question when making strategic decisions about investments.

A focus inside the organization alone as the context for resolving human resource challenges ignores systemic solutions available in the company's business ecosystem: partnerships with service companies, joint ventures, the use of contractors, etc. As we will explain, the Blue Ocean Strategic Organizational Transformations that empower people strategy lead to a better management of a cluster of activities inside and outside the organization that recruit, train, and retain the talent required to create value.

Health, Safety and Environment (HSSE)

On April 20, 2010, an explosion and subsequent fire on the Deepwater Horizon semi-submersible Mobile Offshore Drilling Unit (MODU), killed 11 workers and injured 16 others. The unit was owned and operated by Transocean, which was drilling for BP in the Macondo Prospect oil field about 40 miles (60 km) southeast of the Louisiana coast. The explosion caused the Deepwater Horizon to burn and sink, triggering a massive offshore oil spill in the Gulf of Mexico. This environmental disaster is now considered the second largest in U.S. history, behind the Dust Bowl. Not only was the explosion disastrous for Transocean, BP and Cameron International, it also led to severe criticism of the oil and gas industry as a whole and curtailment of drilling operations in the Gulf of Mexico. Many factors contributed to the disaster. Together they indicate that the management of health, safety, security and environmental (HSSE) risks requires attention and asset orchestration activities not only throughout the organization but also in the wider business ecosystem. This kind of management task differs from other kinds of

risk management, such as regulatory or compliance risk, where point-of risk solutions may be adequate. Since the origins of these risks are complex, since the impacts of these risks cross boundaries of the organization, involving partners to whom key operational activities are outsourced, and since the impacts of these risks simultaneously affect several drivers of economic value, not just for one company but for all E&P companies, a comprehensive, systemic, cultural and strategic organizational transformations approach around HSSE must be developed and applied by firms seeking longer term survival, growth, and prosperity.

- **Conclusion:**
  - Global energy firm (ongc) has arisen as world leader in work flow clock time speed and managing the strategic complexity of highly technological oil and gas industry. The company has succeeding in high velocity energy markets by following the Open Blue Ocean Strategy business model innovations creating the dynamic Blue Oceans of energy through value innovative R&D, unconventional and enhanced oil recoveries (EOR).

With the potential to deliver even more, global energy firms continue to create their own Blue Oceans of energy, as "Blue Ocean Strategy is an open innovation Dynamic Process, not static one".

Fossil fuels will give place to the renewable in medium to long term. All the unconventional green technologies will take together 39% share in the period 2025-35 in Global Energy. Hence, global firms have shifted its focus to these unconventional renewable resources

of energy along with its E&P operations. This blue ocean business model open innovation approach demands continuous value innovations, technological improvements, IOR /EOR techniques along with the adaptive Blue Ocean Strategy Business Model of dynamic evolutions.

Testing of Your Open Systems: Blue Ocean Energy Corporations for adaptive evolutions:

• How can you stay better informed of new dynamics in the industry landscape, including end users' increasing use of alternative energies through open systems?

• How are risk identification and mitigation embedded in your organizational governance, processes and culture, and how will you prioritize improvements to risk management through open systems?

• What is your plan to selectively increase investments in both R&D and new technology to achieve the necessary technological breakthroughs? How can you improve collaboration with external parties for research development and deployment through open systems?

• In what new ways are you considering collaborating and partnering with NOCs or other semi-government bodies, especially in emerging markets to create open systems?

• What is your long-term plan to develop a flexible and appropriate future skill mix through open blue ocean systems?

• How will you begin to integrate diverse operational models, including challenging conventional, unconventional and manufacturing through open systems of blue ocean strategy?

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