A typology of different perspectives on the spatial economic impacts of Marine Spatial Planning

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A typology of different perspectives on the spatial economic impacts of Marine Spatial Planning

Marine Spatial Planning aims to create a framework for the oceans and seas that minimise conflicts between economic activities within the marine environment while maintaining good environmental status. Although reports by international – and national – organisations suggest there are economic benefits to Marine Spatial Planning this analysis has, to date, been aspatial. Employing an explorative Q methodology approach with ten participants, this paper seeks to address this spatial and distributive gap by exploring stakeholders (marine renewable energy, fishing industry, aquaculture and marine tourism) perceptions of the economic impacts of Marine Spatial Planning across varying (local to national) geographical scales in the UK. The paper develops a typology of three different perspectives on the economic impacts of Marine Spatial Planning: the optimistic 'place-makers'; the sceptical 'place-holders'; and the utilitarian 'place-less'. Findings highlight that participants loading onto a specific 'type' cannot simply be explained by stakeholder categorisation. This research contributes to the coastal management literature by identifying differing perceptions on the 'spatial economic impact' of Marine Spatial Planning by economic actors utilising marine and coastal areas in the UK.

Subject classification codes: Marine Spatial Planning; Q methodology; Blue Economy; spatial economic impacts; typology

1 Introduction

The idea of coastal management as a policy framework has always contained an element of concern about the type and level of economic activity associated with use of ocean resources. In reality the link between the oceans and the economy in the policy environment has been a tenuous one (Colgan, 2013). However, as the global productivity of land resources reach the limits of economic and ecological exploitation, the value of the oceans as a resource for economic development has become more

prominent. The ocean and seas are now seen as essential to meet future global challenges; from feeding, heating, transporting and economically engaging an extra 2 billion people, to managing carbon sequestration and regulating the climate (Morrissey, 2017). Countries such as China and institutions such as the EU see the ocean, or the 'Blue Economy' -often defined as any commercial activity in the ocean environment (European Commission, 2018), as an integral means of meeting these resourcing needs at the national and global level. At the same time, the marine sector, particularly traditional sectors such as fishing and small scale aquaculture are believed to have an important economic (Morrissey, 2015, 2017; van Putten, Cvitanovic, & Fulton, 2016) and social role (Urquhart & Acott, 2013) in maintaining coastal economies. However, in reality not much analysis exists on how ocean activity impacts vary across different spatial scales (Morrissey, 2015). There is thus a growing need to understand the spatial distribution of the economic activity associated with the use of ocean resources not just at the national level, but also at the sub national level for planning and policy analysis (Colgan, 2013; Morrissey, 2015). This data in turn can be used to understand the connection between human activities and the marine environment, with the economic data providing a critical link on the impact of onshore socio-economic activities on the marine environment (Colgan, 2013; Morrissey, 2015). In practice, this means that policymakers and planners involved in marine management require techniques to be capable of estimating the 'spatial economic impact' (or distributive economic impacts across space and spatial scale) of the marine sector at the national, regional and local level (Colgan, 2013; Morrissey, 2015; Morrissey, O'Donoghue, & Farrell, 2013).

Marine Spatial Planning (MSP) is increasingly seen as a mechanism to support and create economic development in the marine environment (European Commission, 2011), while maintaining the good environmental status (GES) of the marine

environment that European member States are required to achieve or maintain by 2020 under the European Union's Marine Strategy Framework Directive (MSFD). From an economic perspective two reports, one for the UK (RSPB, 2004, p. 69) and a report by the European Commission (2011, p. 7), found that if MSP is managed properly economic benefits would arise from: (a) 'enhanced coordination and simplified decision processes', (b) 'enhanced legal certainty for all stakeholders in the maritime area', (c) 'enhanced cross border cooperation' and (d) 'enhanced coherence with other planning systems'[1]. These aspects are thought to reduce economic uncertainty for marine economic actors and their investment. For example, O'Hagan (2016) notes that consenting is the most time-consuming, and resource-intensive category of legal considerations encountered by a marine renewable project developer. In England, however, initial planning efforts were reported to have speeded up the wind energy approval process, providing greater certainty to developers and saving government $210,000 in staff costs in just six months (Blau & Green, 2015).

These findings, whilst helpful in outlining the pathways in which MSP may benefit the Blue Economy, particularly from the commercial perspective, do not examine the distributive economic impacts of MSP across different sectors or spatial scales. For example, Jay (2013, p. 519) notes that:

> 'Newcomers to the marine environment, such as the wind energy industry, appear to be benefitting well from the allocation of space, whilst more traditional users, such as the fishing industry, feel more constrained as a result'.

[1] Such as Marine Protected Areas, Marine Conservation Zones, Marine Reserves, Zoning and Seasonal area closures as well as terrestrial planning systems.

Also Blau and Green (2015) found that capital-intense projects, such as wind farms, have gained the largest benefits because of the increased certainty and enhanced speed of regulatory processes. The same authors found that commercial and recreational fishing; tourism and shipping (so called 'incumbent' industries) did not receive any substantial economic benefits.

Although MSP is currently underway in approximately 66 countries worldwide, only 22 countries, including Belgium, Norway, China and Belize have government-approved MSP plans (Santos et al., 2019). To date, there is a lack of economic data that can be used to conduct a formal sectorial or local level economic evaluation of these MSPs. Such an analysis would require detailed data on local economic production and conditions pre- and post MSP implementation as both outlined by Weig and Schultz-Zelden (2019) in their recent work examining the spatial economic benefit analysis for the shipping and offshore wind energy and called for in Kelly et al's (2014) study of MSP in the Shetland Islands (Scotland, UK). Given the lack of quantitative data to examine the spatial economic impacts, following the suggestion of Weig and Schultz-Zelden (2019), we turn to a qualitative based analysis to understand stakeholders perception of the varying economic impacts of MSP across different geographical scales. Using a Q methodology, this paper explores if stakeholders (marine renewable energy, fishing industry, aquaculture and marine tourism) hold different views and perceptions of the potential economic impacts of MSP at local, regional and national levels in the UK.

2 Method

First developed for the field of psychology (Stephenson, 1953), the Q methodology has been described as the 'science of subjectivity' in that it examines the subjectivities of individuals in a systematic way (McKeown & Thomas, 2014). Q methodology differs

from other data rich empirical (quantitative) methods in that it does not seek to identify traits across a population, nor provide results that are generalisable (Barry & Proops, 1999; Simpson, Brown, Peterson, & Johnstone, 2016). The focus of Q methodology is on identifying shared ways of thinking about an issue through revealing a number of different discourses (or perspectives) (Eden, Donaldson, & Walker, 2005; Ellis, Barry, & Robinson, 2007; McKeown & Thomas, 2014).

As the aim of a Q methodology is to capture the breadth of perspectives rather than the characteristics of participants that subscribe to them, large probability sampling is not required (Simpson et al., 2016). As such, the Q methodology is less concerned with sample size than other survey-based methods (Valenta & Wigger, 1997; Zabala, Sandbrook, & Mukherjee, 2018). Instead a Q methodology aims to understand the *how* and *why* people think the way they do and to uncover different patterns of thought (Valent & Wigger, 1997). The flexibility of the Q methodology with regards to sample size is important for business focused research. As was experienced in the current research, businesses, particularly small to medium enterprises (SME's) have limited time for responding to research surveys – often because these are voluntary compared to mandatory sectoral and/or governmental surveys (Giesen et al., 2018) – frequently resulting in low response rates (Mellahi & Harris, 2016). Given the flexibility with regard to sample size and the ability to elicit stakeholders' perspectives in a structured approach, the Q methodology was therefore chosen to begin to develop a discourse on the economics of MSP from a sectorial perspective, from which future larger scale and/or quantitative work may draw upon.

The Q methodology comprises five steps (McKeown & Thomas, 2014; Simpson et al., 2016): the person-sample (P-set); study stimuli (Q-set); survey and Q-sorting; and data analysis, each of these will be discussed below.

2.1 Stakeholder section (person-sample, P-set)

The EU has recognised a number of sectors including aquaculture, marine renewable energy and tourism as blue growth focal areas (European Commission, 2012). Mapping these sectors onto the UK Blue Economy and including commercial fisheries as a 'traditional' marine sector, this paper focused on four stakeholder categories including (i) recreational sea angling businesses (ii); marine renewable energy (iii); aquaculture (iv) and commercial fisheries. The justification for choosing these specific sectors is as follows:

i) Recreational fishing: Pre-existing conflicts have been reported between recreational sea anglers and fishers. This conflict stems from the exclusion of sea anglers from fishing quotas which fishers deem unfair (Voyer, Barclay, McIlgorm, & Mazur, 2017). Some studies have already touched on the relation between recreation fishing and MSP (Hooper, Hattam, & Austen, 2017) and therefore we have some pre-existing knowledge which to build our study on.
ii) Marine Renewable Energy: This form of marine energy production (wave, tidal and offshore wind energy) is a recent addition to the Blue Economy (Morrissey & O'Donoghue, 2013) and as such poses particular challenges to already existing marine activities, as well as possibilities for growth of the marine sector.
iii) Aquaculture: 50% of seafood production is currently through aquaculture and it is one of the marine sectors that are expected to expand rapidly over the short to medium term. Licensing and planning for aquaculture sites are contentious across other marine sectors and across public stakeholders. Conflict between inshore fisheries and aquaculture is already evident, while the push to move aquaculture further offshore will mean that aquaculture will be competing for space with a wider range of marine sectors.
iv) Commercial fisheries: Literature suggests that commercial fisheries can become displaced from areas as space is allocated to new marine sectors (Berkenhagen et al., 2010).

Each of these sectors, for the reasons listed above, is likely to hold a specific perspective on the issues pertaining to MSP.

In order to gather the P-set a total of 120 businesses were contacted from the four stakeholder groups of interest to this paper (in spring 2017) by emailing them asking them to take part in the research. The specific businesses and organisations were identified through online searches in databases held by national and regional associations representing these sectors. Within each stakeholder group, the researchers sought to include diverse representatives from the small and large-scale sector, located in urban as well as rural areas, and operating on national, regional and local levels. With the belief that each of these sectors, for the reasons listed above, is likely to hold a specific perspective on the issues pertaining to MSP. A total of 10 participants were recruited to this study.

2.2 Study stimuli (Q-set)

In Q methodology, participants are asked to organise a pre-determined number of statements according to which they agree with the most, or, the least (Simpson et al., 2016). Only a fixed number of statements can be sorted in one particular category of agreement. This means that participants need to choose carefully the number of statements they completely agree with (or completely disagree with, etc.) a process referred to as 'forced distribution' or 'forced choice' (McKeown & Thomas, 2014, p. 67). The sorted statements are the 'data' of Q methodology – also called 'Q-sort'. The Q-set is drawn from a concourse that comprises the wider range of relevant aspects of the topic (Simpson et al., 2016).

For the purpose of this study, the statements (known as the concourse) were developed using 'ready-made' material from academic publications such as journal articles and book chapters as well as policy documents (Eden et al., 2005; McKeown & Thomas, 2014). To develop the statements, an extensive literature review on the economics of MSP, marine economic geography and the economics of specific marine

sectors as well as policy documents on the economics of MSP were conducted through three main routes:

- A targeted web search on science databases including Scopus, Science Direct and Google Scholar using the search terms ‘Blue Economy’, ‘Blue Growth’, ‘marine economy’, ocean economy’ and ‘Marine Spatial Planning’ as well as ‘Marine Renewable Energy’, ‘Fisheries’, ‘Aquaculture’ and ‘Recreational fishing’ or ‘Sea Angling’;
- A targeted web search of known agencies, organizations and NGOs engaged in marine and marine spatial planning activities (e.g. the European Commission and OECD);
- A general web search using the search terms ‘Blue Economy’ and ‘Blue Growth’, ‘marine economy’, ‘ocean economy’ and ‘Marine Spatial Planning’.

No timeframe was specified for these publications. The wide range of perspectives outlined in the literature, together with the authors previous experiences of working closely with stakeholders in the marine economy, led to the development of a set of statements that represented a diverse set of positions on the economic impacts of MSP across our four stakeholder groups. Whilst the initial list of possible concourses was long, through an iterative process, we merged and refined statements to the 39 statements represented by the Q-set in this study.

This approach of developing statements from the academic literature has some limitations, such as concerns over potentially missing important perspectives or failing to develop statements which are linguistically meaningful to stakeholders (see Eden et al., 2005; McKeown & Thomas, 2014). To avoid these issues, some authors using Q methodology conduct interviews as part of developing the list of statements (see for example Hagan & Williams, 2016), in a ‘naturalistic’ manner in which participants are key in driving the concourse development (McKeown & Thomas, 2014). Whilst we did not interview participants before or after the Q-sort, we took other steps to ensure

statements were phrased in 'everyday language', rather than academic language, and to avoid the omission of important perspectives from the Q-set. First, as language could be an issue with a 'ready made' Q-set (McKeown & Thomas, 2014), care was taken to ensure that the wording of statements was easily understood and unique in relation to other statements by an iterative review process and testing among the authors and an external public engagement group**,** the Health and Environment Public Engagement Group (HEPE), based at the European Centre for Environment and Human Health. Second, and to further ensure the clarity and comprehensiveness of statements, the research used a piloting phase were three participants completed the survey. The research team informally spoke to the three participants piloting the Q-sort about possible statements which were potentially difficult to interpret and how these could be improved; if there was some perspective they thought was missing and could be added; their overall experience of the Q-sort; and the time they used to complete the Q-sort. The comments and suggestions from pilot participants helped to improve the Q-sort before it was sent out to potential participants.

2.3 Survey and Q-sorting

To administer the Q-sort, an online software called 'Q sortware' (www.qsortware.net) was utilised. Using this software, participants were asked to sort statements from the perspective of them as business operators as opposed to their personal opinions. As this study uses a relatively large number of statements, the sorting is preceded by an initial sorting where participants are asked to simply read the statements and store them into a small set of piles without restrictions (Agree, Neutral and Disagree) in order to become familiar with the content of each card before the final sorting. The final 'Q-sort' sets are analysed through factor analysis using the software PQMethod (Schmolck, 2014) to produce a number of 'ideal sort', or ideal Q-set that represent each factor identified in

the factor analysis. Before engaging with the Q-Sort, respondents were asked a number of background questions (see Table 1). These included the number of employees, location of the business and importantly their 'position' on MSP and whether they had or were involved in the MSP process. This qualitative data collected at the start of the survey was used to interpret and make sense of the results of the factor analysis of the Q-sorts.

2.4 Data Analysis

PQMethod (Schmolck, 2014) was used to analyse the Q-sorts. To begin with, Principal Component Analysis (PCA) was deployed to calculate eigenvalues to identify the strength of each factor. Following Addams and Proops (2000) and Watts and Stenner (2005, p. 81), factors with eigenvalues greater than one were maintained which is a 'generally accepted means of safeguarding factor reliabilities'. Based on this criterion, we kept three factors. As Q methodology is not a strict quantitative exercise, we also tested what it would qualitatively mean to include four factors for further analysis (following Eden et al., 2005). However, using four Factors did not make an important analytic difference, so the analysis progressed with three factors. The final set of three factors was then rotated using a Varimax rotation. The built-in add-on application PQROT was used for automatic 'flagging' (i.e. load particular participants Q-sorts onto a specific factors). The factor loadings represent the correlations between extracted factors and participants Q-sorts (Farrell, Carr, & Fahy, 2017). The PQMethod then calculates a z-score (see Table 2), which represent the relative rank-order of each statement for each factor. PQMethod also analyses which statements are distinguishing, or defining, a factor from other factors (and produces a p-value for these), and/or, which statements are so called 'consensus statements' – that is, similar across all three factors.

3 Results

3.1 Factor loading and grouping

Three factors with an Eigenvalue over 1 were kept for analysis: Factor A, B and C. The eigenvalue, for Factor A was 3.98; Factor B was 2.16; and Factor C was 1.15 and the composite reliability was 96%, 89% and 89%, respectively. All ten respondents loaded on a factor which cumulatively explained 68% (Factor A 36%; Factor B 17%; and Factor C 15%) of the total variance within the data. The questionnaire revealed that out of the 10 participants in the study, seven were in favour of MSP and three were neutral, with no participant stating that they were 'against' MSP. In terms of work location, three participants were based in urban areas (population greater than 10,000), three in towns, three in villages and one participated was located in an isolated/remote area (see Table 1). Additionally, four companies had already been involved in an MSP process. Details of participants loading onto the three factors are presented in Table 1 and the full statements, z-scores and significance levels of statements are presented in Table 2.

Table 1: Description of participants loading onto a specific factor

Factor	Number of individuals	Stakeholder groups	Type of businesses	Age of business	Location of business	Number of employees	Scale of operation
A	6	Marine renewable energy (3)	Limited companies	< 10	Urban areas or towns	4-60	National to global
		Aquaculture (2)	Limited company	25	Town	10	National
			Sole trade	10	Isolated dwelling	1-2	Local
		Fisheries organisation (1)	Organisation representing the interest of large-scale fisheries sector	N/A	N/A	N/A	Regional to national

B	2	Charter boat for sea angling (1)	Partnership	Approx. 20	Village	2	Local
		Fisheries producer organizatio n (1)	Limited company	Approx. 20	N/A	1	Regional
C	2	Sea angling club (1)	Organisation with 50 members	> 60	N/A	N/A	Local scope
		Aquacultur e (1)	Limited company	10	Urban	8	National

Table 2: Statements presented to participants. The z-score for each statement in respective factor is presented in the table (** indicates distinguishing statements with p-value <0.01 and * indicate p-values <0.05). Consensus statements – that is statements that all are similar across factors - are marked * in the statement column.

	Statement	**Factor A**	**Factor B**	**Factor C**
1	MSP is an important process for equitably dividing space between different users *	1.40	0.51	0.73
2	MSP will reduce costs for development at sea	0.18	-1.09	-0.53
3	Allocation of space within MSP should be based on sound scientific principles and economic rationality seeking to maximise national economic revenues from the sea	0.01**	1.63	2.26
4	Economic diversification can help traditional industries adapt to the negative economic impacts caused by MSP	0.40*	-0.79**	1.17*
5	MSP will have positive economic effects as a result of better coherence between planning systems, such as between the sea and land planning systems	1.77**	-0.42	0.20
6	MSP should prioritise marine businesses and sectors who spend their money regionally	-0.09	0.51	-1.10**
7	MSP is moving jobs from rural coastal communities to urban areas	-1.79**	-0.54	0.00
8	MSP will have economic benefits as it will simplify decision-making	1.22**	0.24	-0.37
9	Stakeholder participation is crucial to reduce the negative economic impacts from MSP *	1.21	1.97	0.97
10	Small-scale businesses will benefit economically from MSP *	0.27	0.33	0.00
11	I believe that maximising the national economic profits from the use of the sea will lead to economic benefits for my sector	0.16	0.00	1.46**

12	MSP will have positive economic impacts for my sector as it will enhance cooperation across regional and national boarders	0.85**	-1.97	-1.17
13	Expansion of new marine industries will generate jobs in local coastal communities *	1.08	0.12	0.93
14	Jobs will be created in cities and not in local coastal communities as a consequence of MSP	-1.67	-0.54	-0.93
15	Banks will grant loans much more easily because of MSP	-0.59	-0.63	-1.66*
16	MSP will lead to economic growth of all marine based sectors and will create jobs and income *	-0.23	-0.66	--0.93
17	In cases of displacement of previously existing activities economic compensation should be paid	-0.31*	0.54*	-2.26**
18	MSP will have economic benefits at the regional level	0.65	0.46	-1.13**
19	Low levels of negative economic impacts to already existing activities are acceptable to make space for new profitable activities	-0.03**	-2.18**	1.30**
20	The negative economic impacts from MSP will be felt on the household and local level whilst benefits will be gained at the national level	-1.27**	0.46	0.20
21	MSP has economic benefits as it improves the investment climate by clarifying who has the right of use to areas at sea	0.58	0.00	-0.89
22	The development of stationary objects at sea ruins the aesthetic value of the sea which will have negative impacts on the local economy *	-1.47	-1.18	-0.69
23	MSP will reduce conflicts between users which will lead to economic benefits for all marine sectors	1.06	-1.00**	0.40
24	Competition for areas at sea will be greatest in inshore areas as these are the most profitable areas	-0.44**	1.63	1.70
25	Coastal communities and families need to economically benefit from new marine sectors, or such activities should not be allocated space at sea *	-0.01	0.21	0.24
26	MSP is benefitting sectors with large scale investments *	-0.48	-0.66	0.16
27	MSP will speed up the process of investment in the marine sector	0.36	-1.00	-0.20
28	There will be no economic impacts (neither positive or negative) from MSP on any marine sector *	-1.49	-1.09	-0.97
29	Rural coastal communities will benefit economically from MSP	0.71	-0.63	-0.04
30	Better legal certainty from MSP will provide economic benefits to my sector	0.15	-0.76*	0.89
31	It is important that the use of the sea contributes to sustaining vibrant coastal communities *	1.73	1.76	1.13
32	MSP should seek to plan for co-existence of activities as much as possible to maximise economic output from the sea *	1.56	0.88	1.13
33	MSP will benefit the region as a whole, but won't have any significant economic impacts on the local level	-1.21**	0.21	0.37

34	Development of new marine industries will lead to the displacement of jobs in other marine sectors which were there previously	-1.28**	0.76	0.04
35	Skilled labour for new marine sectors can be found in rural coastal areas	0.44	1.09	-0.24
36	The necessary economic burdens from MSP will be carried by all marine activities equally *	-0.63	-0.88	-0.97
37	Those sectors which historically used the sea (previous to MSP) should be continuously allowed to do so	-0.37	1.42**	-0.40
38	New jobs in the marine economy has to be full-time jobs, not seasonal part-time jobs	-0.86**	0.54	0.33
39.	The biggest threat to the marine economy is Marine Conservation Zones which is part of MSP	-1.54	0.76*	-1.13

In Q methodology, there is a number of aspects that need to be considered when interpreting the significance of factors resulting from the factor analysis. First, the z-scores are of importance (see Table 2) to understand the perception of participants who loaded onto a factor based on how they sorted these on a scale from most agree to most disagree. Second, we also need to consider which statements are distinguishing a particular factor – that is those statements that strongly define this factor in relation to the other two factors. Distinguishing statements are determined by the significance value for each factor (see Table 2).

In the next sections we describe each of the three factors identified in the current study. We will extract and summaries the most important statements for each factor in separate tables: Table 3a for Factor A; Table 3b for Factor B and Table 3c for Factor C (See Supplementary Material) to aid analysis of the factors. Following the table summaries, we will describe the factors by first describing those aspects that are distinct about a particular factor followed by a description of the other statements (not necessarily distinguishing the factor from other factors) which the factor agrees or disagrees with.

3.2 Factor A – The optimistic 'place-makers'

Distinctive about Factor A (see Table 3a Supplementary Material): Participants loading onto Factor A perceive MSP to have positive economic benefits due to its ability to simplify decision making (8) and to promote coherency between planning processes (5). Factor A is also distinctive as participants do not perceive that MSP will lead to negative consequences, such as displacement, at the local level or in rural communities (7, 34 and 33).

Factor A as a whole (see Table 3a Supplementary Material): Participants in Factor A are optimistic about MSP and its role in maintaining vibrant coastal communities (31) through emerging marine activities. Respondents loading onto Factor A assert that it is important for the marine economy to sustain coastal communities and that new marine economic activities will help to do so. Their optimism about using the sea to contribute to sustainable coastal communities (13), its capacity to equitably divide space between activities (1) and MSP's capacity to harness positive economic effects as a result of better coherence between planning systems (5), underpins a view of MSP – and the role of emerging marine industries - as an enabler for 'making' places. From this, it could be understood that representatives loading onto this Factor are optimistic about MSP and the structural changes it can deliver and therefore see MSP as a positive economic and social opportunity for coastal communities. Therefore, we refer to Factor A as 'optimistic place-makers'.

3.3 Factor B – The sceptical 'place-holders'

Distinctive about Factor B (see Table 3b Supplementary Material): Representatives loading onto Factor B are distinguished from Factor A and C by their strong need to maintain the historic practices associated with the sea (37). A further distinction is that

participants refute the argument that low levels of negative economic impacts on existing users are acceptable to make space for new users (19) and, they agree (albeit less strongly) that if businesses are displaced they should be compensated for their negative economic impacts (17). Similar to this, Factor B do not agree that economic diversification can soften the negative economic impacts of MSP (4). This Factor is also distinct from Factor A and C by being more sceptical towards the wider potential of MSP, in particular in relation to its potential in reducing user-user conflicts (23) and creating legal certainty (30) and associated economic benefits.

Factor B as a whole (see Table 3b Supplementary Material): This Factor, similar to Factor A, strongly agree that it is important that the use of the sea contributes to sustaining vibrant coastal communities (31) but stands out from Factor A in also wanting those industries previously using the sea to be continuously allowed to use these areas (37). They agree that skilled labour can be found in coastal areas (35), that inshore areas will be exposed to most competition within the MSP framework (24), and that allocation of space should be guided by scientific principles and profit maximisation and the national level[2] (3). At the same time Factor B participants do not agree that MSP will lead to positive economic benefits resulting from enhanced spatial cooperation (12), that stationary objects as sea will have negative impact on local economy (22) and that costs will be reduced for development at sea (2). They also do not agree that MSP will speed up the process of investment in the marine sector (27). From this, it could be understood that representatives loading onto Factor B are less optimistic about MSP, particularly its economic implications at the local level than

[2] However, this statement (3) is slightly contradictory to other statements in this Factor and we believe this statement was ambiguous and participants interpreted this in different ways.

Factor A participants, and their main concern is that MSP maintain or 'hold' current practices in the sea. Given their strong preference for maintaining historic practices and coastal communities we refer to this group as 'place-holders'.

3.4 Factor C – The Utilitarian 'place-less'

Distinctive about Factor C (see Table 3c Supplementary Material): Representatives loading onto Factor C are distinguished from Factor A and B by their strong sense of economic rationality and their perception that maximising the Blue Economy at the national level will have a positive impact at the sub-national level (11). What is also distinctive is that Factor C agree that low levels of negative economic impact are acceptable to existing users to make space for new activities (19) and, in such cases, no compensation should be paid (17) demonstrating their utilitarian approach to MSP. Similarly, respondents loading onto Factor C also agree that economic diversification can help industries in adapting to the changing use of the ocean which MSP could develop (4). Factor C is also distinct from Factor A and B in disagreeing that banks will easier grant loans because of MSP (15), that MSP will have economic benefits at the regional level (18) and that MSP should prioritise industries with a regional focus (6).

Factor C as a whole (see Table 3c Supplementary Material): Representatives loading onto Factor 3 do not agree that the structural changes imposed by MSP will lead to specific economic impacts on their sectors (e.g. 12 and 15). For instance, they do not agree that increased cooperation across regional/national borders will lead to economic benefits (12). They also do not agree that Marine Conservation Zones are a threat to their activities (39). They agree that competition will be highest in inshore areas (24), that the use of the sea should contribute to sustaining vibrant coastal communities (31) and that MSP should seek to plan for co-existence of activities (32). At the same time,

they agree that space should be allocated based on sound scientific principles and economic rationality seeking to maximise national economic revenues from the sea (3).

Taken together, it could be understood that representatives loading onto Factor C have a more utilitarian approach to MSP compared to Factor A or Factor B representatives and their main concern is that MSP be carried out in a scientific manner that focuses on national level rather than sub national economic objectives for the marine resource. Given their utilitarian, national, future-focus we refer to this Factor as 'place-less'.

3.5 Consensus Statements

Though clear differences between the three groups can be seen, there are significant areas of consensus among the Factors that can provide further insights on stakeholder's perception of the distributive impact of MSP across sectors and locations (See Table 4 Supplementary Material). First, all Factors agree that stakeholder participation is crucial to reduce the negative economic impacts from MSP (9). They also agree it is important for MSP to seek the co-existence of activities to maximise economic output from the sea (32). They strongly disagree that there will be no economic impacts of MSP (28) (although this statement was interpreted in different ways) and that the economic burdens from MSP will be carried by all marine sectors equally (36). All Factors disagreed that the development of stationary objects (such as offshore wind turbines) at sea ruins the aesthetic value of the sea, which have negative impacts on the local economy (22). All Factors agreed that expansion of marine industries will generate jobs in local communities (13) and that MSP is important in equitably diving space at sea (1). All three Factors had statements that they all felt neutral about. For instance, Factors do not highlight any conflicts between small scale and large scale businesses in

terms of economic impacts of MSP (10; 26)[3]. Also, the Factors are neutral about the statement that coastal communities and families need to economically benefit from new marine sectors, or such activities should not be allocated space at sea (25).

4 Discussion

By interrogating the varied discourses of economic impacts that stakeholders of the marine economy hold in relation to MSP, the study identified three distinct discourses. First, Factor A and B are distinguished by their strong sense of the importance of locality and place. This is highlighted by the importance the representatives of both Factors attach to the view that MSP should ensure that local and coastal areas should benefit from the marine economy. However, while Factor A focuses on the role of MSP in emerging marine activities and their benefits to coastal communities, Factor B are distinguished by their strong sense of maintaining the historic practices associated with the sea for the benefit of local, coastal, communities. In contrast, representatives loading onto Factor C have a more utilitarian viewpoint and are distinguished by their beliefs that it is the overall economic benefit of the sea that is important and that low levels of negative economic impacts to already existing activities are acceptable to make space for new profitable activities.

Recent discussions of MSP has paid increasing attention to the distributive aspect of MSP (Flannery & Ellis, 2016), in particular to the distributive outcomes of its implementation. This study found that while each of the sectors represented in this study were either in favour or at least neutral on the implementation of MSP, only participants loading onto Factor A, who were mainly involved in the marine energy

[3] However, there was a lack of representation of small-scale fishing businesses in the sample.

sector, believed that MSP would have the same economic impact across different spatial scales. The study found that Factors were not delineated by the other three stakeholder categories (fisheries, sea angling and aquaculture) as they belong to a mix of the three identified discourse. Interestingly we find that, for the one fisheries organisation loading onto Factor A (loading 0.65), their Q-sort is loading quite strongly onto Factor B (loading 0.56) as well. Significantly, this respondent, whilst loading to the same Factor as marine renewable companies, were also close to the Factor where other fishing and sea angling companies were loading. As such, the marine renewable energy group was more homogenous in their views than the other sectors in the sample.

Whilst a key aim of MSP is to overcome sectorial conflicts the literature to date has grouped key marine sectors into pro (e.g. renewable energy) and anti (e.g. fisheries) MSP categories, the findings here reveal there is more complexity than this. This paper has expanded the discussion on distributive outcomes of MSP by highlighting that, with the exception of marine renewable energy who perceive MSP will have the same economic benefit across all spatial scales, the perception of the economic impact of MSP are not homogenous across sectors. Representatives of all 4 sectors examined in this paper are at the least neutral on the impact of MSP and views within sectors also vary.

More specifically, the discourse represented by Factor A stress an embeddedness within the locality and a want to sustain coastal communities through emerging marine activities. Representatives of this Factor see the potential of MSP to act as an economic instrument in local areas as well as providing guidance to the Blue Economy as a whole. However, the businesses loading on to this Factor represent largely ‘new industries’ and occupational identities recently entering coastal communities. While these ‘engineer-type’ occupation might support the economic development of local communities, an

emerging issue could be a potential shift in the social fabric of the coastal locality. Whilst the intention is to develop the local economy, the types of jobs, skills and culture are different from the other discourses represented in the data, particularly that of Factor B.

These findings suggest that, for Factor B, longevity within the marine economy has rooted these fishers and charter boat operators within a spatial structure that is threatened by the introduction of MSP and growth of other marine industries. Statements such as 'those sectors which historically used the sea (previous to MSP) should be continuously allowed to do so' and 'that if businesses are displaced they should be compensated for their negative economic impacts' reveal how representatives of Factor A ascribe historical presence as important in defining ownership and user-rights of the sea. Whilst it is easy to argue that the stakeholders loading onto this Factor are only acting in line with their economic self-interest, their strong agreement with statements such as 'it is important that the use of the sea contributes to sustaining vibrant coastal communities' reveal that perhaps their resistance to MSP is as much about the culture and practices of coastal communities as the economic implications. This is similar to work by Urquhart & Acott, (2013) and van Putten (2016) that note that fisheries underpin both the economic security and social wellbeing of small regional coastal communities.

In contrast, respondents loading onto Factor C have a more utilitarian viewpoint to Factor A and Factor B. For respondents loading onto Factor C, economic growth is important at the national level, where they believe the overall economic benefit of MSP will predominately occur. Whilst Factor C agree it is important that the use of the sea contribute to sustaining vibrant coastal communities it disagrees with any level of prioritisation of activities within MSP based on their benefits at the local level. In

contrast to Factor B, Factor C disagree that marine activities are not a unique characteristic of coastal communities, that require conservation or special concern. However, this group of stakeholders do not necessarily see MSP as being of benefit to their sector. They do not agree that cooperation across regional/national borders will lead to economic benefits nor do they agree that banks will easier grant loans because of MSP. Newer to marine activities, arguably this group accept MSP as being part of the required process to enter into the marine space, much as planning is required for terrestrial activities. With a utilitarian perspective, we suggest that this group may see MSP as the fixed entry cost of doing business in the Blue Economy, rather than an economic instrument that might help the survival of coastal areas.

As a final note of discussion, we want to reflect on the methodology chosen for this study. It is known that survey's present a sizable burden to businesses, particularly SMEs (e.g. Giesen et al., 2018). Nevertheless, it is essential that research is conducted on the perception of marine policies on key stakeholders including industry. Indeed, the need to engage with industry was further highlighted given that stakeholder participation was deemed important across all Factors in this study. As Q methodology is not dependent on sample size, one of the key advantages of this methodology is that it is flexible and allows one to elicit and explore the perceptions of future policies with key stakeholders. Using an online tool for conducting the Q-sort was a resource efficient approach to administering the Q-sort. However, drawing on our wider research experience with face-to-face interviews, we believe that more in-depth interviews would have provided additional information and knowledge which could have contextualised and eased interpretation of Q-sorts and enabled further and deeper analysis. As such, we recommend that a Q-sort is either embedded in an interview situation (where the sorting

process is qualitatively recorded) or that researchers can return to participants post-Q-sorting to make sense of findings.

5 Conclusions

MSP is increasingly seen as a mechanism to support and create economic development in the marine environment (European Commission, 2011), while maintaining the good environmental status (GES) of the marine environment. As such, MSP has been accepted as an important marine management approach for policy consideration (see Flannery & Ellis, 2016). Influencing the spatial distribution of activity in the marine environment and thus potential environmental impacts, it is important to begin to understand the different scale and scope of economic activity that will occur under MSP. Although reports suggest there are economic benefits to MSP (Ehler & Douvere, 2009; Santos et al., 2019) little research has looked at these economic impacts at different spatial scales. The findings of this study reveal that, in the absence of real-world (quantitative) data, the discourses used by different businesses and occupational groups, here identified through Q methodology, can help us understand the various perspectives which stakeholders might have within MSP participatory processes.

The typology of discourses developed in this paper can help to unravel some of those difference, going beyond understanding the Blue Economy as an opportunity for growth, but to understand growth for whom and of what? (Flannery and Ellis, 2016). There is an assumption that any marine based activity, particularly seafood-based activities are an important source of employment and income in poor coastal areas (Morrissey, 2015), particularly among policymakers. Interestingly, this study identified a group of marine stakeholders that see MSP as a means of managing the Blue Economy as beneficial to the overall national economic agenda, rather than a coastal or

regional development approach. This perspective is interesting and is in line with research by Morrissey and O'Donoghue (2012) and Morrissey (2015) that indicates that the marine economy has economic benefits in large urban areas as well as coastal areas.

Whilst other scholars have sought to understand the differing and competing interpretations of the 'Blue Economy' (Voyer, Quirk, McIlgorm, & Azmi, 2018) in academic and policy documents, little research have paid attention to the distributive dimension of the Blue Economy and stakeholders' differing perspective on spatial economic impacts stemming from MSP. This research importantly contributes to the coastal management literature by identifying different perceptions of stakeholders on the potential spatial economic impact of MSP in the UK. Following the suggestion by Weig and Schultz-Zelden (2019), to overcome the challenges associated with the lack of quantitative economic data, this paper used a qualitative framework to harness stakeholder knowledge from MSP stakeholder processes. Whilst using a Q methodology approach brings important insights into stakeholders differing perspectives on the spatial economic impacts of MSP and the Blue Economy, future research would benefit from mapping the quantitative spatial impacts of the Blue Economy, using the spatial economic benefit analysis methodology outlined by Weig and Schultz-Zelden (2019). As a final point we would like to reiterate Colgan's (2013) argument that the complex dynamics and physical/human interactions of the marine resource requires that policy for the sector is underlined by a wide set of both natural resource, economic and social indicators. Building on this, we argue that policymakers and managers has to go beyond collecting data on the marine resource itself but also about the economic environment in which it is used.

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8 Supplementary material

Table 3A Summary of important statements of agreement and disagreement for Factor A. The table includes all statistically significant distinguishing statements as well as all statements with z-score above +/- 1 ranked according the size of the z-score. Significant statements which distinguish the factor in relation to the other two factors are included and marked with ** if p-value is <0.01 and * if p-values is <0.05.

(5) MSP will have positive economic effects as a result of better coherence between planning systems, such as between the sea and land planning systems (z:1.77) **	(7) MSP is moving jobs from rural coastal communities to urban areas (z:1.79)**

(31) It is important that the use of the sea contributes to sustaining vibrant coastal communities (z: 1.73 consensus) (32) MSP should seek to plan for co-existence of activities as much as possible to maximise economic output from the sea (z: 1.56 consensus) (1) MSP is an important process for equitably dividing space between different users (z: 1.4 not significant) (8) MSP will have economic benefits as it will simplify decision-making (z: 1.22) ** (9) Stakeholder participation is crucial to reduce the negative economic impacts from MSP (z:1.21 consensus) (13) Expansion of new marine industries will generate jobs in local coastal communities (z: 1.08 consensus) (23) MSP will reduce conflicts between users which will lead to economic benefits for all marine sectors (z 1.06 not significant)	(14) Jobs will be created in cities and not in local coastal communities as a consequence of MSP (z: -1.67 not significant) (39) The biggest threat to the marine economy is Marine Conservation Zones which is part of MSP (z: -1.54 not significant) (28) There will be no economic impacts (neither positive or negative) from MSP on any marine sector (z: -1.49 consensus) (22) The development of stationary objects at sea ruins the aesthetic value of the sea which will have negative impacts on the local economy (z: -1.47 consensus) (34) Development of new marine industries will lead to the displacement of jobs in other marine sectors which were there previously (z: -1.28) ** (33) MSP will benefit the region as a whole, but won't have any significant economic impacts on the local level (z: - 1.21) **

Table 3B Summary of important statements of agreement and disagreement for Factor B. The table includes all statistically significant distinguishing statements as well as all statements with z-score above +/- 1 ranked according the size of the z-score. Significant statements which distinguish the factor in relation to the other two factors are included and marked with ** if p-value is <0.01 and * if p-values is <0.05.

Statement with most agreement	**Statement with most disagreement**
(9) Stakeholder participation is crucial to reduce the negative economic impacts from MSP (z: 1.97 consensus) (31) It is important that the use of the sea contributes to sustaining vibrant coastal communities (z: 1.76 consensus) (3) Allocation of space within MSP should be based on sound scientific principles and economic rationality seeking to maximise	(19) Low levels of negative economic impacts to already existing activities are acceptable to make space for new profitable activities (z:-2.18)** (12) MSP will have positive economic impacts for my sector as it will enhance cooperation across regional and national boarders (z-1.97 not significant) (22) The development of stationary objects at sea ruins the aesthetic value of the sea which

national economic revenues from the sea (z: 1.63 not significant) (24) Competition for areas at sea will be greatest in inshore areas as these are the most profitable areas (z:1.63 not significant) (37) Those sectors which historically used the sea (previous to MSP) should be continuously allowed to do so (z: 1.42) ** (35) Skilled labour for new marine sectors can be found in rural coastal areas (z:1.09 not significant) (39) The biggest threat to the marine economy is Marine Conservation Zones which is part of MSP (z: 0.76) * (17) In cases of displacement of previously existing activities economic compensation should be paid (z: 0.54) *	will have negative impacts on the local economy (z: -1.18 consensus) (2) MSP will reduce costs for development at sea (z: -1.09 not significant) (28) There will be no economic impacts (neither positive or negative) from MSP on any marine sector (z: -1.09 consensus) (23) MSP will reduce conflicts between users which will lead to economic benefits for all marine sectors (z: -1.00) ** (27) MSP will speed up the process of investment in the marine sector (z: -1.00 not significant) (4) Economic diversification can help traditional industries adapt to the negative economic impacts caused by MSP (z: -0.79) ** (30) Better legal certainty from MSP will provide economic benefits to my sector (z: -0.76) *

Table 3C Summary of important statements of agreement and disagreement for Factor 3. The table includes all statistically significant distinguishing statements as well as all statements with z-score above +/- 1 ranked according the size of the z-score. Significant statements which distinguish the factor in relation to the other two factors are included and marked with ** if p-value is <0.01 and * if p-values is <0.05.

Statement with most agreement	**Statement with most disagreement**
(3) Allocation of space within MSP should be based on sound scientific principles and economic rationality seeking to maximise national economic revenues from the sea (z: 2.26 not significant) (24) Competition for areas at sea will be greatest in inshore areas as these are the most profitable areas (z: 1.70 not significant) (11) I believe that maximising the national economic profits from the use of the sea will	(17) In cases of displacement of previously existing activities economic compensation should be paid (z: -2.26) ** (15) Banks will grant loans much more easily because of MSP (z: -1.66) * (12) MSP will have positive economic impacts for my sector as it will enhance cooperation across regional and national boarders (z: -1.17 not significant)

lead to economic benefits for my sector (z: 1.46) ** (19) Low levels of negative economic impacts to already existing activities are acceptable to make space for new profitable activities (z: 1.30) ** (4) Economic diversification can help traditional industries adapt to the negative economic impacts caused by MSP (z: 1.17) * (31) It is important that the use of the sea contributes to sustaining vibrant coastal communities (z: 1.13 consensus) (32) MSP should seek to plan for co-existence of activities as much as possible to maximise economic output from the sea (z: 1.13 consensus)	(18) MSP will have economic benefits at the regional level (z: -1.13) ** (39) The biggest threat to the marine economy is Marine Conservation Zones which is part of MSP (z: -1.13 not significant) (6) MSP should prioritise marine businesses and sectors who spend their money regionally (z: -1.10) **

Table 4 Summary of consensus statements

	Consensus Statement	**Average z-score**
1	MSP is an important process for equitably dividing space between different users	0.88
9	Stakeholder participation is crucial to reduce the negative economic impacts from MSP	1.38
10	Small-scale businesses will benefit economically from MSP	0.2
13	Expansion of new marine industries will generate jobs in local coastal communities	0.71
16	MSP will lead to economic growth of all marine based sectors and will create jobs and income	-0.60
22	The development of stationary objects at sea ruins the aesthetic value of the sea which will have negative impacts on the local economy	-1.11
25	Coastal communities and families need to economically benefit from new marine sectors, or such activities should not be allocated space at sea	-0.15
26	MSP is benefitting sectors with large scale investments	-0.33
28	There will be no economic impacts (neither positive or negative) from MSP on any marine sector	-1.18

31	It is important that the use of the sea contributes to sustaining vibrant coastal communities	1.54
32	MSP should seek to plan for co-existence of activities as much as possible to maximise economic output from the sea	1.19
36	The necessary economic burdens from MSP will be carried by all marine activities equally	0.83