WHITE PAPER:

THE CANADIAN OCEAN ENTERPRISE 2020

Quantifying the size and scale of Ocean Enterprise business activity in Canada

COVE

centre for ocean ventures & entrepreneurship

EXECUTIVE SUMMARY

The ocean economy is growing globally and in Canada. We are seeing announcements of new technologies and entrants on a weekly basis. However, we do not have a consistent definition of the ocean economy or a standardized way to measure the size and scope of the companies that are driving innovation and technology development. Previous analyses often grouped together the full value chain of fisheries, aquaculture, shipbuilding, energy, ocean science, and other disparate sectors.

For the purpose of this study, we went out to measure the 'Ocean Enterprise', sometimes referred to as the 'New Blue Economy,' which comprises the platforms, technology, and information services that deliver the ocean observations, measurements, analyses, and forecasts enabling the wider Blue or Ocean Economy.

We focused on this definition of 'Ocean Enterprise' for a few reasons. Most important of these is that the underlying ocean technology it captures is the force multiplier for the broader ocean economy. Our success in developing the 'Ocean Enterprise' economy in Canada will directly make our broader ocean economy more competitive and sustainable. Additionally, this definition of 'Ocean Enterprise' is a competitive advantage for Canada, and it is where we have seen the bulk of new company formations and project developments among the COVE ecosystem of companies.

KEY FINDINGS

1. There has been a **surge in the formation rate of new Ocean Enterprise companies** coinciding with the opening of COVE and other significant investments into the ocean economy.

2. The Canadian Ocean Enterprise's revenue per capita is comparable with the United States and exceeds the US in the number of companies per capita. We see that **60% of Ocean Enterprise companies are clustered in Atlantic Canada**, **making the region equivalent to the largest US Ocean Enterprise clusters** such as Massachusetts or Southern California.

3. Canadian Ocean Enterprise companies tend to be export focused with a low failure rate. We found that **60% of these companies** generate revenues in the range of **$1M-$20M**, which could imply a series of barriers that need to be better understood to unlock the growth potential of this industry.

4. There is strong optimism in the industry with a majority of companies **expecting both an increase in employees and an increase in revenues**. A noteworthy point is that **this growth was expected even as businesses faced the uncertainty of the 1st and 2nd waves of the COVID-19 pandemic**.

5. The majority of Ocean Enterprise companies remain **focused solely on hardware and product development**, with **limited focus on value-added services or analysis**. This presents a significant opportunity for companies to **uncover value through data products and associated services**.

This report was developed in partnership with the Society for Underwater Technology (SUT), and the Marine Technology Society (MTS) who have been involved with creating this definition for 'Ocean Enterprise'. This definition and the methodology for this study has been used in international studies in the UK since 2009 and the US in 2015. By using the same definitions and methodology, this research will allow for comparisons across these tightly connected ocean economies.

Launched in early 2020, the Canadian Ocean Enterprise Study set out to quantify the Canadian ocean economy: benchmarking the current Ocean Enterprise with a consistent and defined methodology. An online survey tool was sent to 122 identified companies that fit the criteria for 'Ocean Enterprise' from March to August 2020. The results are presented in this study.

The survey period ended in late August 2020 with a statistically significant 50% response rate. Survey data was aggregated and tabulated to maintain company privacy and to create the following analysis. The majority of respondents identified as providers, focused only on the equipment that makes ocean observations possible. While 20% of respondents identified solely as intermediaries, focused on creating value added data products and services. A further 22% of firms identified as taking part in both activities.

A significant portion of the industry has been operating for over 10 years, many of these companies were created upwards of 30-40 years ago, indicating the long-standing ocean industry in Canada. This industry is unique compared to the broader Canadian economy and shows a significantly lower failure rate of both start-ups and younger companies. In addition, there was a spike in companies founded 2-3 years ago. This spike is not easily explained by the normal success or failure rate of new companies and means that there was a recent influx of companies being formed. This surge in start-up activities also coincides with the launch of COVE and with significant federal and provincial government investments and funding programs that were announced during this timeframe.

Due to the longstanding nature of existing ocean economic activities on both coasts, many companies are based primarily in British Columbia, Newfoundland and Labrador, and Nova Scotia. If we consider relative population, the cluster of companies in the Atlantic provinces is massive compared to the rest of Canada with nearly 60% of all Ocean Enterprise businesses yet representing only 6.2% of the population. In absolute terms, the Atlantic cluster is comparable in the number of companies to the largest clusters in the US such as Southern California or Massachusetts.

Compared to the overall Canadian economy, the Ocean Enterprise respondents generally employ more people per company. This is likely a necessary relationship as most Ocean Enterprise companies would need a critical mass of employees to be able to design and develop the technologies used in the ocean economy. This study estimates that there are roughly 6000 people directly employed in Canada by companies focused on Ocean Enterprise activities. This number is also likely to grow given the respondent companies' expectations. A significant majority of the respondents expected their employment numbers to increase between 2020 and 2021, despite the COVID-19 pandemic. Only 8% of surveyed companies anticipated a reduction in employment.

A look at Ocean Enterprise revenues shows that most companies are between $1M-$5M (30%) and $5M-$20M (30%) with only a few companies generating larger amounts. The estimates of this paper place revenues of the Canadian Ocean Enterprise activities between $1.1-$1.3 Billion CAD. This is a substantial figure as it still represents a very narrow definition of associated activities that contribute to a significantly larger ocean economy.

MEASURING OCEAN ENTERPRISE SUCCESS

Overall, the response to this first-time survey gave an initial overview of the diverse and complex Ocean Enterprise cluster in Canada. There appears to be a strong baseline industry that can grow to capture the quickly expanding global ocean economy. This seems likely due to the rate of newly formed companies, and the positive employment and revenue expectations from the surveyed companies.

This study also presents the possibility for further research to better understand the ecosystem of Ocean Enterprise companies. Further research into who is founding new companies, and what barriers to entry exist, could further increase the formation rate of companies. Understanding and addressing why many companies stagnate when they reach $5M-$20M in revenue could help significantly grow total revenues and employment. This research has the benefit of there being a 'small' total number of companies in Canada, which allows for a more focused approach in future research, such as case studies and company interviews. Finally, this research provides a benchmark for future quantification of the Canadian Ocean Enterprise to measure its growth over time and an opportunity to compare with similar studies in the US and UK.

INTRODUCTION

Due to the ocean economy comprising many starkly different industries such as shipbuilding and aquaculture, there is no consistent definition for what the ocean economy is in Canada, let alone an accurate assessment of its size and economic impact. For the purpose of this study, we went out to measure the 'Ocean Enterprise', sometimes referred to as the 'New Blue Economy,' which comprises the platforms, technology, and information services that deliver the ocean observations, measurements, analyses, and forecasts enabling the wider Blue or Ocean Economy.

These activities include products and services related to the world's oceans, coasts, and tidal reach environments, as well as the Great Lakes system. It does not include the end-use activities of resource extraction, fishing, or transportation of goods. It also does not include shipbuilding or mechanical marine solutions such as marine cranes, or marine construction equipment.

DEFINITIONS

Due to the difficult nature of defining the ocean industry in Canada, this paper will use a framework of definitions for the 'Ocean Enterprise' that was developed for the 2015 US Ocean Enterprise study (Rayner, Gouldman, & Willis, The Ocean Enterprise, 2018). This framework breaks up the Ocean Enterprise into three main groups:

Providers of the infrastructure that make the observations and measurements of the ocean environment possible.

Intermediaries who use ocean data or information as an input to the production of information products and services that underpin economic or societal benefit.

End-users whose activities or business derive benefit from ocean data and information products and services.

Providers sell physical or data infrastructure, sensor arrays, instruments, components, systems, or platforms used by the Ocean Enterprise. Examples include but are not limited to final and component products associated with: monitoring buoys, satellite or air-based observation systems, underwater or surface observation systems and platforms, instruments for navigation and positioning, communication and reporting systems for observation data, and IT infrastructure.

Intermediaries combine, synthesize, or integrate Ocean Enterprise data to create a value-added data product or service. Examples include but are not limited to weather or surf forecast services, ocean temperature and current modeling, environmental hazards evaluation or research systems, coastal threat models, fisheries monitoring, and related activities.

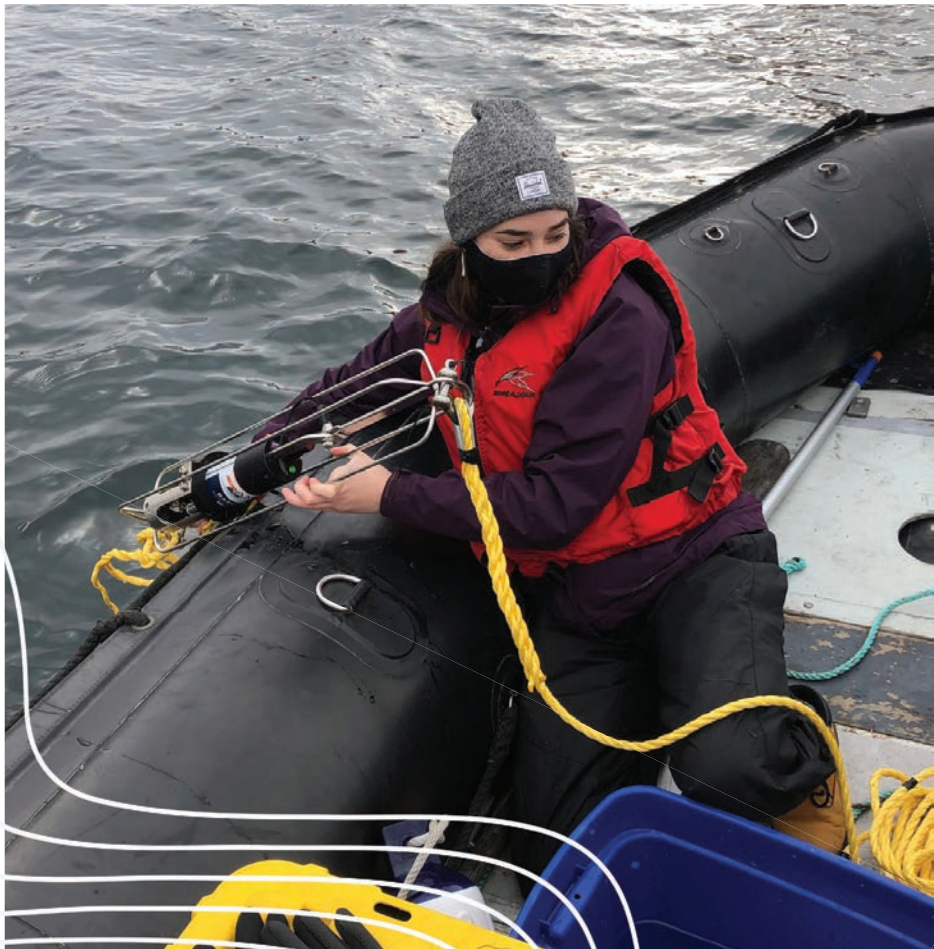
End Users use Ocean Enterprise data in products or services but are not an ocean data products or services company. End users are generally the ultimate beneficiary of ocean observations, measurements, and models. Examples include but are not limited to operational end-users, such as freight shipping, offshore oil and gas extraction, fishing fleet operation, or charter boat services; science end-users, such as academic research departments; policy end-users, such as government regulators; or public end-users, such as users of weather or surf websites and apps.

The Canadian public sector makes up a large proportion of operational ocean observations in the country. The Department of Fisheries and Oceans (DFO), Environment and Climate Change Canada, other government bodies, post-secondary Institutions, and non-profit research groups create a significant amount of industry critical data annually. Unfortunately, the value of this data is not easily measured in an economic analysis unless a price is associated with accessing the data. Therefore, this study will primarily focus on the provider and intermediary business activities that lead to the creation of end-use data that is bought and sold.

METHODOLOGY

The work on this study began with compiling a list of companies and contacts that could potentially fit the criteria of a provider or intermediary in Canada. This was done through reviewing Canadian ocean industry association lists, past ocean conference attendances, industry email lists, and company websites. The list was then checked by industry experts for omitted companies, and for companies no longer in business. The final list was made up of 122 identified companies, 27 of which were COVE member companies at the time of the survey.

An online survey tool was also created to be sent out the 122 identified companies. The survey was designed to be the same as the survey used in the US Ocean Enterprise studies so that comparisons could be easily made. The survey period ended in late August 2020 with 61 respondents, a 50% response rate. Survey data was aggregated and tabulated to maintain company privacy and to create the following analysis.

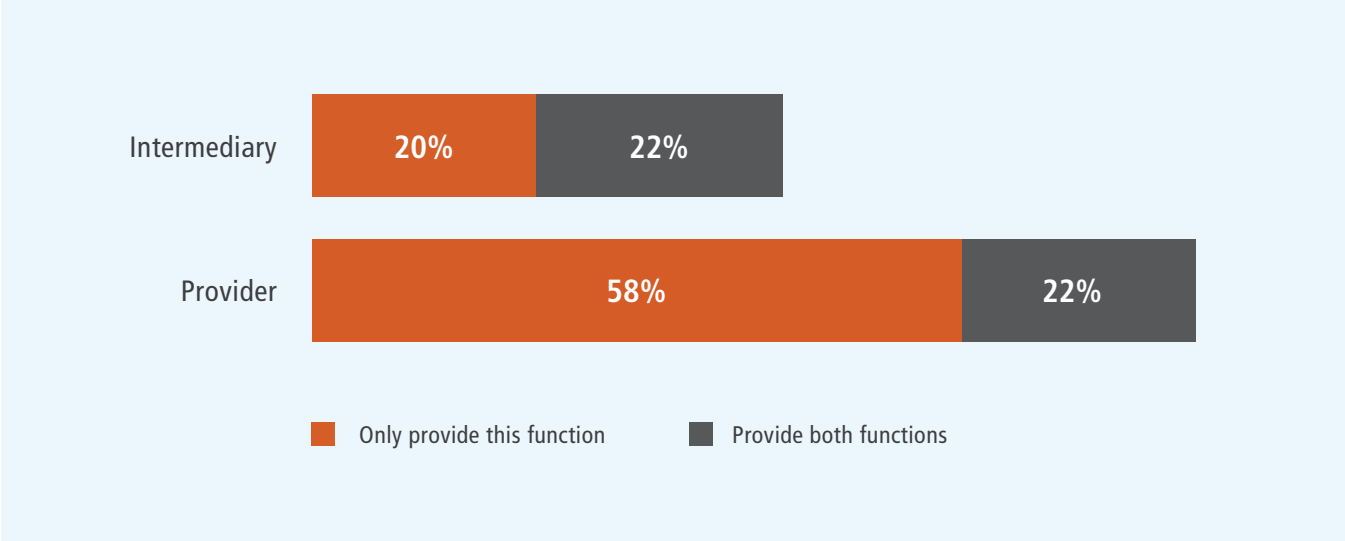


CHARACTERISTICS OF THE CANADIAN OCEAN ENTERPRISE

As discussed above, the survey was focused on detailing the companies in Canada that would be defined as either providers or intermediaries. **Figure 1**, below, shows the breakdown of respondents that categorized themselves as either a provider, intermediary, or both. The majority, 58% of respondents identified as providers, focused only on the equipment that makes ocean observations possible. While 20% of respondents identified solely as intermediaries, focused on creating value added data products and services. A further 22% of firms identified as taking part in both activities.

It likely comes as no surprise that 80% of companies are focused on building physical equipment and systems that allow for the collection of ocean observations. However, there is a significant opportunity for companies to provide value added solutions by creating data products or services. Only 22% of providers integrate this type of value add into their offerings.

Figure 1 – Business Function of Respondents



TIME IN BUSINESS

Figure 2

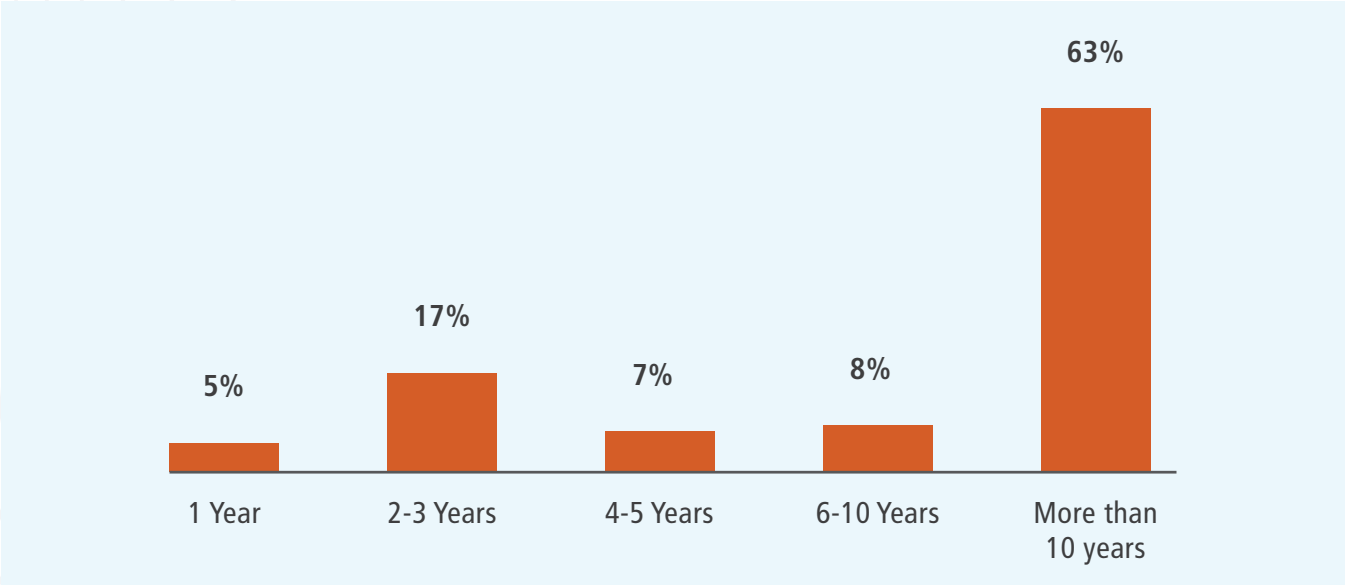


Figure 2 shows the distribution of time that a business has been operating in the Ocean Enterprise. This figure shows that a significant portion, 63%, of the industry has been operating for over 10 years. Further research found that many of these companies were created upwards of 30-40 years ago, indicating the long-standing ocean industry in Canada. This industry is unique compared to the broader Canadian economy. There is a significantly lower failure rate of both start-ups and younger companies.

Of interest is the spike of companies that were founded 2-3 years ago. This spike is not easily explained by the normal success or failure rate of new companies, if it were, we would expect to see a higher amount of 1-year old companies. Instead, there are more than three times the number of 2-3-year companies as there are 1-year old companies. This means that 2-3 years ago there was an influx of companies being formed. The surge in start-up activities also coincides with the launch of COVE, the founding of the Ocean Frontier Institute, the announcement of Canada's Ocean Supercluster, and significant federal and provincial government investments and funding programs.

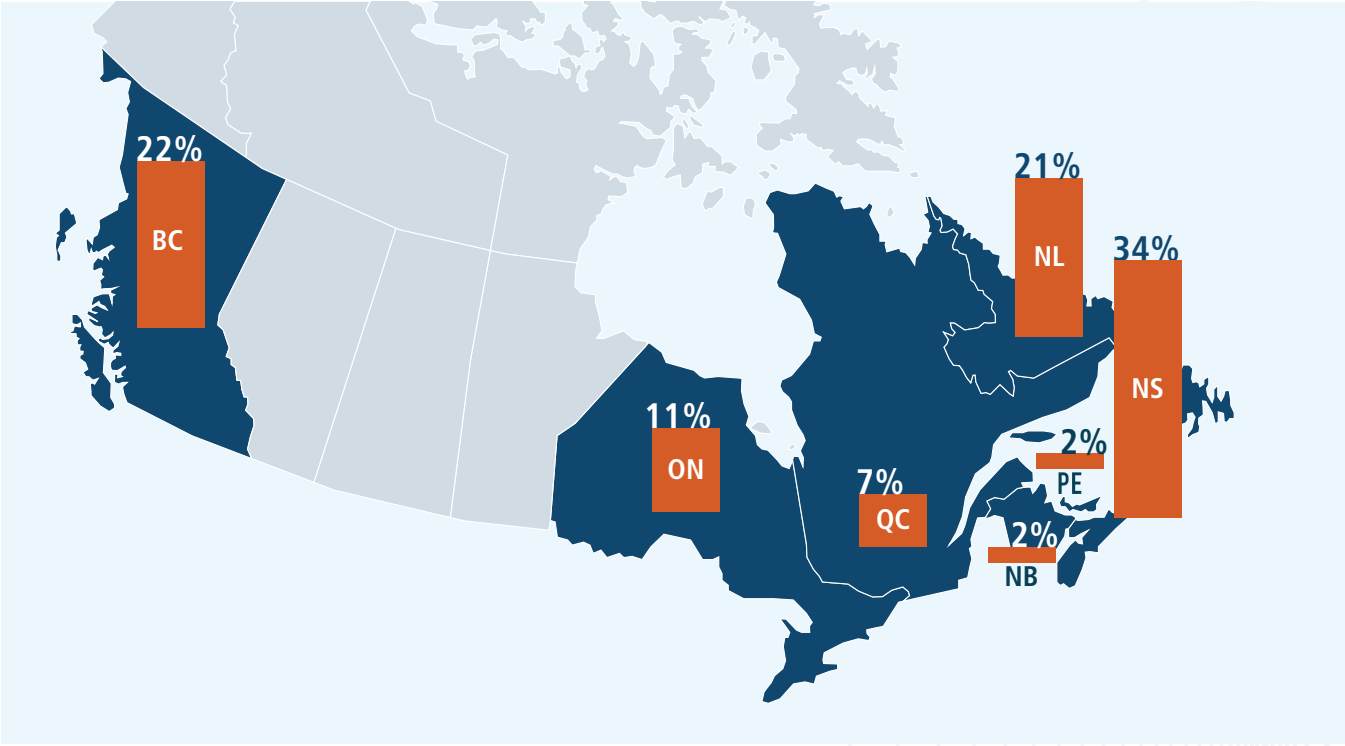
PRIMARY LOCATION OF IDENTIFIED COMPANIES

The distribution of provincial location for these companies is shown in **figure 3**. This distribution includes all 122 identified companies and uses the location of the company's head office in Canada. There were no companies identified that fit the criteria in Alberta, Saskatchewan, Manitoba, or the territories, however it is possible that some could exist. The most common location was Nova Scotia (NS), followed by British Columbia (BC) and Newfoundland and Labrador (NFLD).

Overall, the location of many companies in BC, NFLD, and NS is not very surprising due to the long-standing nature of existing ocean economic activities on both coasts. However, New Brunswick does have a smaller than expected industry given its coastline and other marine activities. If we consider relative population between provinces, the cluster of companies in the Atlantic provinces (NS, NFLD, NB, and PEI) are massive compared to the rest of Canada. The Atlantic provinces represent roughly 6.5% of the population and nearly 60% of the Ocean Enterprise businesses. Compared to British Columbia, the Atlantic provinces have roughly 5.5 times more companies per capita.

Compared to the US, per capita, Canada is roughly equal in overall Ocean Enterprise activity. In absolute terms, the Atlantic cluster of companies are also comparable to the largest clusters in the US (Southern California, Massachusetts, etc.).

Figure 3



OCEAN ENTERPRISE EMPLOYMENT

Figures 4 and 5 show the employment distribution and employment outlook for respondent companies. Compared to the overall Canadian economy distribution for employee totals, the Ocean Enterprise respondents generally employ more people per company. This is likely a necessary relationship as most Ocean Enterprise companies would need a critical mass of employees to be able to design and develop the technologies used in the ocean economy. However, there is still a significant number of companies, 29%, that have 10 or fewer employees. These companies are generally resellers or start-ups that operate with a smaller staff count. Compared to the broader Canadian economy, roughly 75% of all companies have 10 or fewer employees. This paper estimates that there are roughly 6000 people directly employed in Canada by companies focused on Ocean Enterprise activities. This number is also likely to grow given the respondent companies' expectations in Figure 6. A significant majority of the respondents, 77%, expect their employment numbers to increase between 2020 and 2021. Only 8% of surveyed companies thought that their employment numbers would decrease over this period. Overall, this is a very positive outlook for growth in the industry.

Figure 4 – Employees in Canada (Respondents)

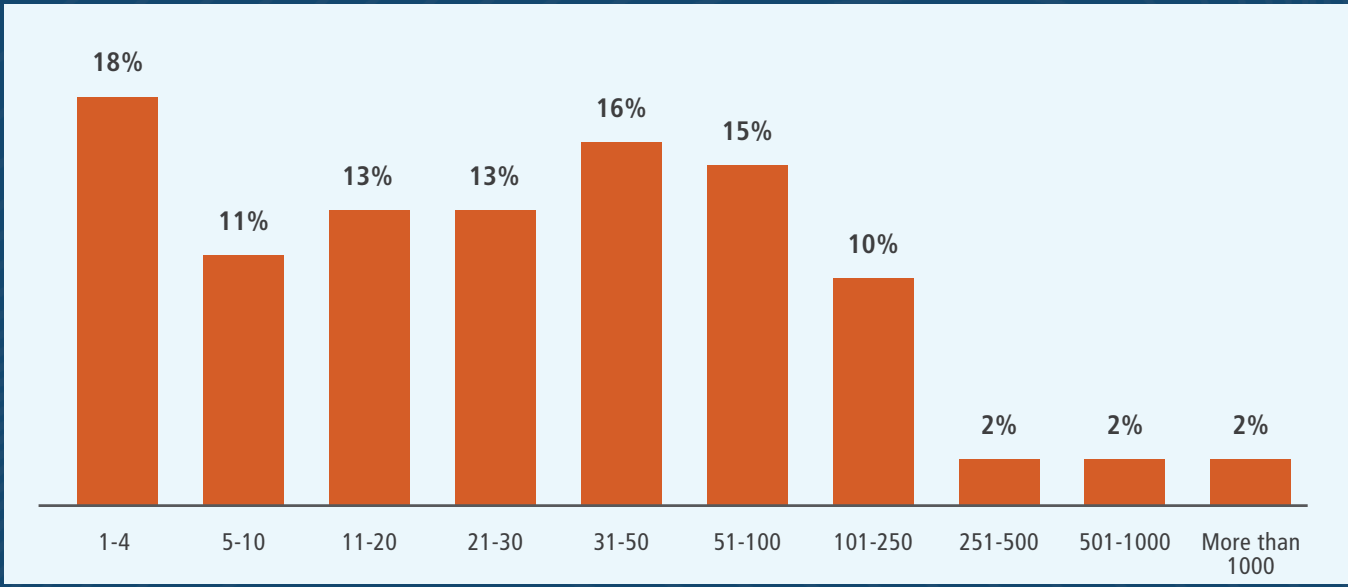
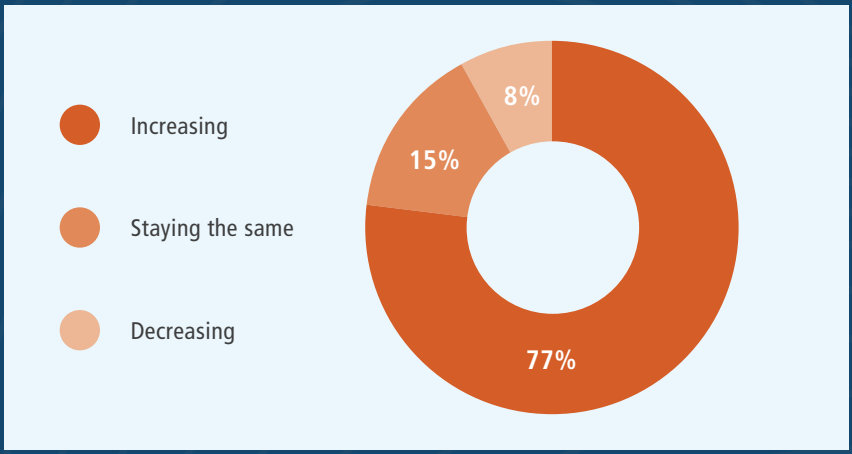


Figure 5 – 12 Month Employment Expectations (Respondents)



OCEAN ENTERPRISE REVENUE

Figures 6 and 7 show the revenue distribution and the revenue outlook for respondent companies. This distribution shows that most revenues are between $1M-$20M with only a few companies generating larger amounts. It is unique how few companies responded to be in the $500k-$1M revenue bracket. This could be a filter point for many growing companies, where they either quickly grow past this revenue bracket or exit the industry.

Based on this data, this paper estimates the revenues of the Canadian Ocean Enterprise, due to provider and intermediary activities, to be valued between $1.1-$1.3 billion CAD. Additionally, the data shown in **Figure 7** supports the expected continued growth of this industry with 61% of respondents expecting their revenues to grow over the next 12 months.

Figure 6 – Revenue Distribution of Respondents

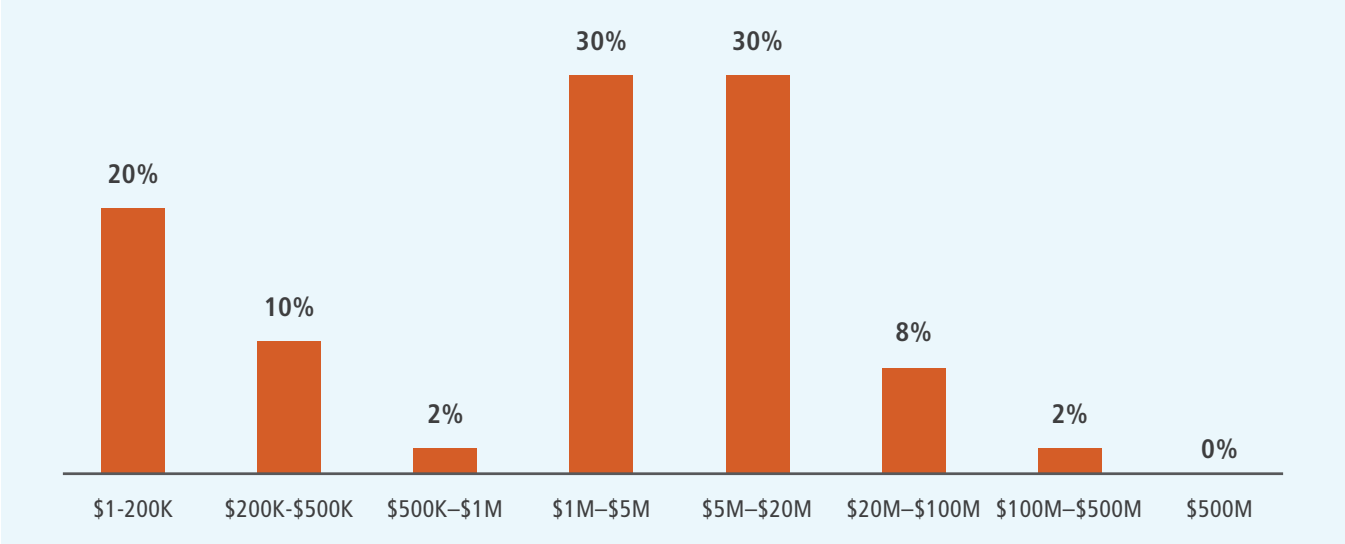
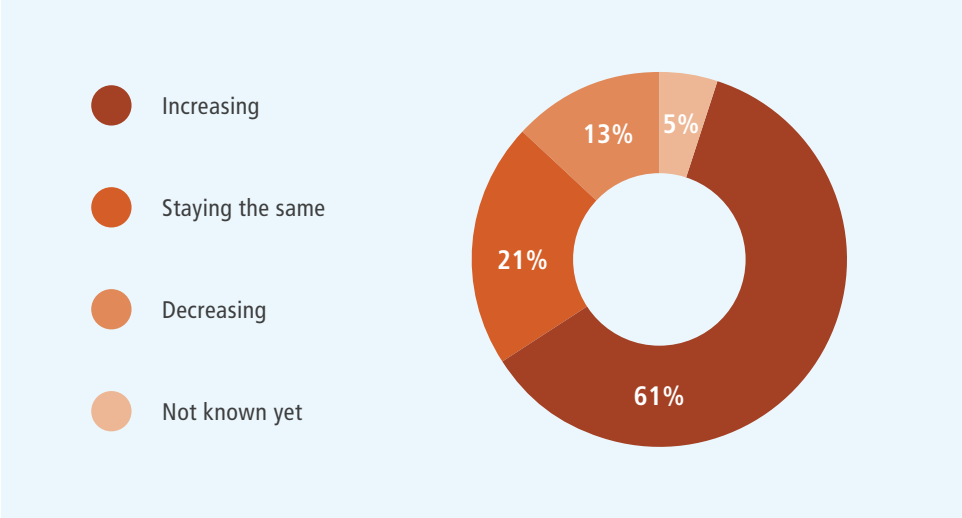


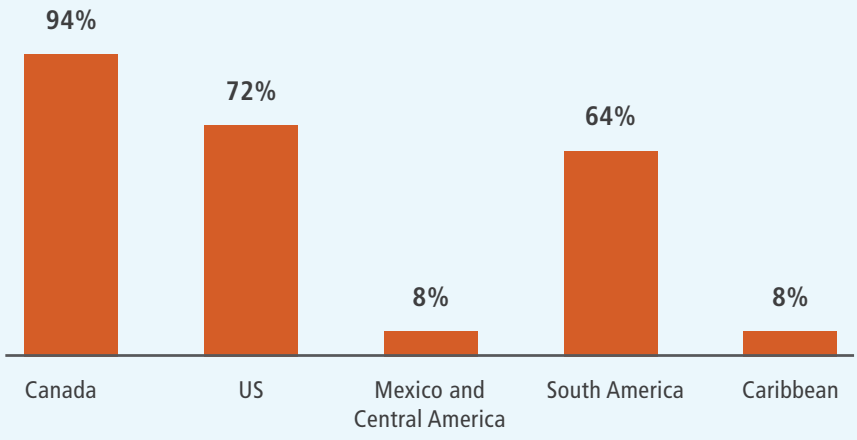
Figure 7 – 12 Month Revenue Expectations (Respondents)



KEY MARKETS

Finally, we look at the important export markets for the Ocean Enterprise companies in Canada. These are markets that represented at least 5% of revenues. Nearly all the companies had a strong focus on Canada, with Continental Europe (75%) and the US (72%) the next largest markets. The UK & Ireland, South America, South Korea, and Australia & New Zealand all represent large export markets. Of note was the 31% of companies that sell products or services for use in the Arctic or Antarctic. This is interesting compared to the 2015 study on US companies where this location was only important for 1% of companies. It is likely that due to Canada's geography, a significant body of knowledge and familiarity has enabled many Canadian companies to build an advantage in developing and contracting products and services that are used in the extreme Arctic and Antarctic environments.

Figure 8



DISCUSSION

Overall, the response rate from this first-time survey was a success. It gave an initial overview of the diverse and complex 'Ocean Enterprise' cluster in Canada. There appears to be a strong baseline industry that can grow to capture the quickly expanding global ocean economy. The high rate of newly formed companies, and the positive employment and revenue expectations from the surveyed companies are strong signs that high growth rates will occur.

This study also opened the possibility for further research to better understand the ecosystem of Ocean Enterprise companies. Further research into who is founding new companies, and what barriers to entry exist, could further increase the formation rate and success of new entrants. Understanding why many companies stagnate when they reach $1M-$5M or $5M-$20M in revenue could help significantly grow total revenues and employment. This research has the benefit of there being a relatively 'small' total number of companies in Canada. This allows for a more focused approach in future research, such as case studies and company interviews.

The estimates of this paper place revenues of the Canadian Ocean Enterprise, due to provider and intermediary activities, between $1.1-$1.3 billion CAD. This is a substantial figure as it still represents a very narrow definition of associated activities that contribute to a significantly larger ocean economy. It is also a substantial amount for the business operating out of Atlantic Canada, as this amount of business has an outsized impact on the regional economy. This paper also estimates that the direct activities of these identified companies employ roughly 6000 people across the country.

Beyond the near-term opportunity to be able to compare the results of this study with those of the US analysis, it will be valuable to conduct this survey again in 3-5 years to follow the growth and changes of the companies.

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