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Developing a model to identify favorable export markets

NBDC often works with small businesses that recognize the opportunity to go global. Yet the majority of small businesses export to no more than two markets, mostly to Canada.

But it's a big world out there.

Small business owners often need help figuring out where to dedicate time and resources. Market research can help them identify consumers in other countries that might need exactly what they're selling.

This paper details how to survey global demand. The process can be broken into four steps¹:

1. Identify indicators
2. Gather and normalize relevant data
3. Weight normalized values with a demand function that produces a score
4. Scrutinize the markets that scored highest

Hops² can be used to demonstrate the process.

STEP 1 – IDENTIFY INDICATORS

Start with general information, such as Gross Domestic Product (GDP) and population. Such broad indicators eliminate economies and markets clearly too small to meaningfully import.

Next come indicators of the industry to which hops is a critical input. This takes into account countries where beer production represents a significant segment of the economy. The Czech Republic, for example, has a much smaller GDP as well as a tiny population compared to China. The size of the Czech Republic's beer industry, however, is comparable to China's and therefore more valuable to that country relative to its overall economy.

¹ This process is based on guidelines detailed in *The Global Entrepreneur*, 3rd Edition by James F. Foley; *Marketing Research*, 10th Edition by Carl McDaniel and Roger Gates

² Hops are relatively simple because they are one of only four inputs in beer. (The other inputs are water, barley, and yeast.) Hops are not used for much else, so the agricultural product corresponds directly to countries' output of beer.

Finally, include indicators that involve hops production and supply. As an agricultural product, hops statistics³ are tracked by a number of international organizations.

Create a spreadsheet with a column of countries as well as columns for each of the indicators.

Country	GDP (billions)	Population (millions)	Beer Production (million gallons)	Hops Pellets Production (million kilograms)
Argentina				
Belgium				
India				

STEP 2 – GATHER AND NORMALIZE RELEVANT DATA

GDP and population information is readily available from sources like World Bank and the United Nations' Comtrade.⁴

Data about the amount⁵ of beer imports and exports by country are available through Comtrade, and trade associations track countries' domestic production.

Data about hops production can be found at FAOStat, the statistics division of the U.N.'s Food and Agriculture Organization. Data about the amount of hops countries import and export are also available through Comtrade and other relevant trade organizations.

Some information will not be available, especially as a data set. If data is non-existent or spotty for an indicator, consider eliminating that column from the analysis. Identify another indicator that might capture the same underlying phenomenon and try to find that data. For example, per capita consumption of craft beer would be data unavailable for most markets, but per capita consumption of beer would be available and reflect the same pattern among consumers.⁶ If certain countries lack data, do not insert 0s or information from other sources.⁷ Those countries might need to be eliminated from the analysis.⁸

Country	GDP (billions)	Population (millions)	Beer Production (million gallons)	Hops Pellets Production (million kilograms)
Argentina	\$622	41.8	1.86	.249
Belgium	\$524	11.2	1.80	.813
India	\$1,861	1,267.4	1.99	.293

³ including production as well as the amount that is imported and exported.

⁴ These organizations use different methodologies to obtain their GDP figures, for example, but their results are more-or-less the same.

⁵ in kilograms.

⁶ Countries where consumers generally drink a lot of beer also would tend to be countries where consumers drink a lot of craft beer.

⁷ Zeroes suggest nothing, rather than "not available," and sets a false minimum that might not reflect reality. And data from other sources might not be credible and methods will differ that make values non-comparable.

⁸ Those countries might have robust beer industries in need of hops, but another study is required to discover that. This approach could help identify countries that lack information and focus primary research efforts.

Because the data have different units (gallons and kilograms) and scales (billions and million), they must be normalized to allow for comparison across columns and among countries. In short: Normalization adjusts values measured on different scales to a common scale.

This can be done various ways,⁹ but feature scaling transforms every value in the data set to a number between 0 and 1. The equation is $(x - \text{minimum value in the column}) / (\text{maximum value in the column} - \text{minimum value in the column})$.

Country	GDP (billions)	Population (millions)	Beer Production (million gallons)	Hops Pellets Production (million kilograms)
Argentina	.073	.033	.315	0
Belgium	0	0	0	1
India	1	1	1	.519

Already that provides some clarity.

Although 30.6 million people would seem to make Argentina a much bigger country than Belgium, such a difference is dwarfed when compared to the population of India. Thus the populations of Argentina and Belgium are more similar to each other than either is to the population of India.

Among these three countries,¹⁰ Belgium produces relatively more hops and relatively less beer.¹¹ Therefore, as a potential importer of hops, it appears less attractive than India, which produces relatively more beer and relatively fewer hops. (The same is true for Argentina, on a smaller scale.)

STEP 3 – WEIGHT NORMALIZED VALUES WITH A DEMAND FUNCTION THAT PRODUCES A SCORE

Of course, not all indicators are created equal. GDP and population, though informative, do not seem as influential to the decision about where to export as the difference in production of a critical input and output.

The result is the following function:

$$\text{Score} = 5 * \text{GDP} + 5 * \text{Population} + (10 * \text{Beer production} - 10 * \text{Hops pellets production})$$

The equation assigns smaller coefficients to indicators deemed less influential and larger coefficients to indicators deemed more influential. The function also subtracts the value for hops pellets production because countries that produce large amounts of hops pellets are unlikely to import them.

A perfect score would be 20, for the country with the largest GDP, population, and beer production and smallest amount of hops pellets production.

Applying the coefficients to the normalized data and plugging them into the formula results in the following values and scores.

⁹ Standard scores and percentages represent other methods that are commonly used.

¹⁰ based solely on the numbers.

¹¹ The analysis changes significantly when more than three countries are used.

Country	Weighted GDP (billions)	Weighted Population (millions)	Weighted Beer Production (million gallons)	Weighted Hops Pellets Production (million kilograms)	Score
Argentina	.365	.165	3.15	0	3.68
Belgium	0	0	0	10	-10
India	5	5	10	5.19	14.81

The score means nothing, except as a means of ranking the markets according to the function above. India is the clear winner. Argentina remains a contender, and Belgium could be eliminated from further consideration.¹²

STEP 4 – SCRUTINIZE THE MARKETS THAT SCORED HIGHEST

Ask whether the results make sense. Try adjusting the weights. If that leads to wild changes in how countries stack up, the coefficients have too much influence on their scores.

But no matter how robust, equations do not make business decisions. There are many factors that cannot be quantified and normalized.

India, for example, might levy significant tariffs on hops imports¹³ or a salesperson might have an existing relationship with a craft brewery in Argentina. Also, because of the limited sample size of the example, Belgium was an outlier and achieved the lowest possible score. (It performs much better with a more exhaustive list of countries and indicators.)

This process provides a starting point, a systematic way for small-business exporters to think beyond Canada but not be overwhelmed by the world of possibilities.

Businesses now operate in an environment of Big Data. Much of it is free, but it takes work to discern the signal from the noise. The steps provided – as well as a consultant from NBDC – can help do that.

¹² Again, Belgium performed much better when more countries and indicators were included in the analysis.

¹³ This might explain why India imports relatively fewer hops despite producing relatively more beer than the other countries in the analysis.



ABOUT THE AUTHOR

Josh Nichol-Caddy is a market research analyst and export consultant for NBDC. He received a master's degree in journalism and an MBA from the University of Missouri. While a student at MU and a full-time faculty member at Stephens College in Columbia, Missouri, he worked with various organizations to develop marketing and media strategies. He also has worked as a video editor, copy editor, social media marketer, reporter and freelance writer.

ABOUT THE NEBRASKA BUSINESS DEVELOPMENT CENTER

Researchers at NBDC provide a variety of services to small businesses including market research. For companies interested in exporting or commercializing new technologies, the cost for the in-depth report packages are frequently covered by grants.

Researchers have performed global demand surveys like the one described in this paper and have provided analysis for companies planning to enter specific foreign markets. Market research also is available to companies seeking to start or expand a business in the U.S. or developing new products for commercialization.

NBDC also consults small businesses about exporting. Resources to get started are available on the NBDC website at nbdc.unomaha.edu/export. The site features an export readiness assessment tool as well as a *Step-by-Step Guide to Exporting*.

Contact Josh Nichol-Caddy at (402) 554-4092 or jnicholcaddy@unomaha.edu for more information about market research or exports.

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