

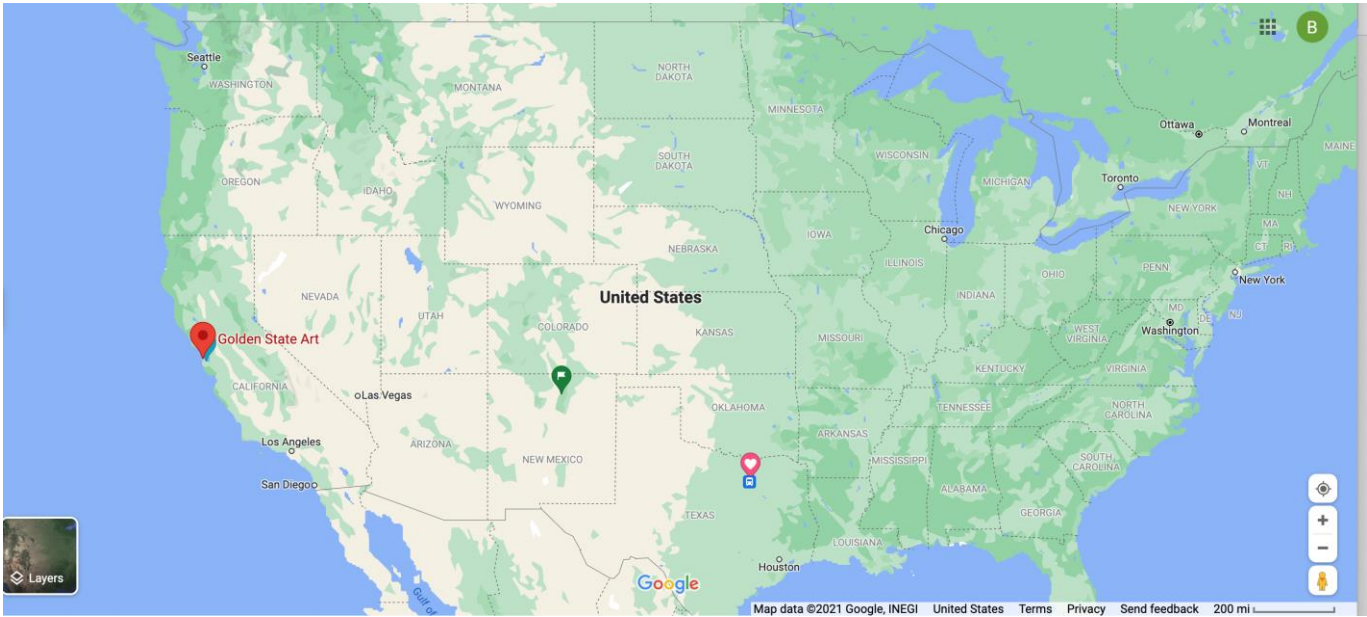
Should our company add a new warehouse?

By Baolu Yu

Executive Summary:

Online shopping has become an essential part of people's life under epidemic. Our company is mainly engaged in Frame and Matboard selling online as an e-commerce company. In the past two years, the company's business volume has surged, and our warehousing scale has been expanding, as well as the variety of goods. We have more and more online orders, but only one warehouse in San Francisco provides delivery at present. To improve customers' shopping experience, we should consider vigorously arranging warehousing and distribution to deliver goods to consumers in a timely and accurate manner.

Based on this background, considering customer satisfaction, warehouse location choosing is very important. Especially in the context of the epidemic, if combined with the transport company's delivery delay, customers in the East coast will have a very bad experience: not only expensive freight, but also a long time to wait for the arrival of goods. The choice of warehouse address will greatly affect the efficiency and cost of the enterprise, and the scale and development of the future storage.

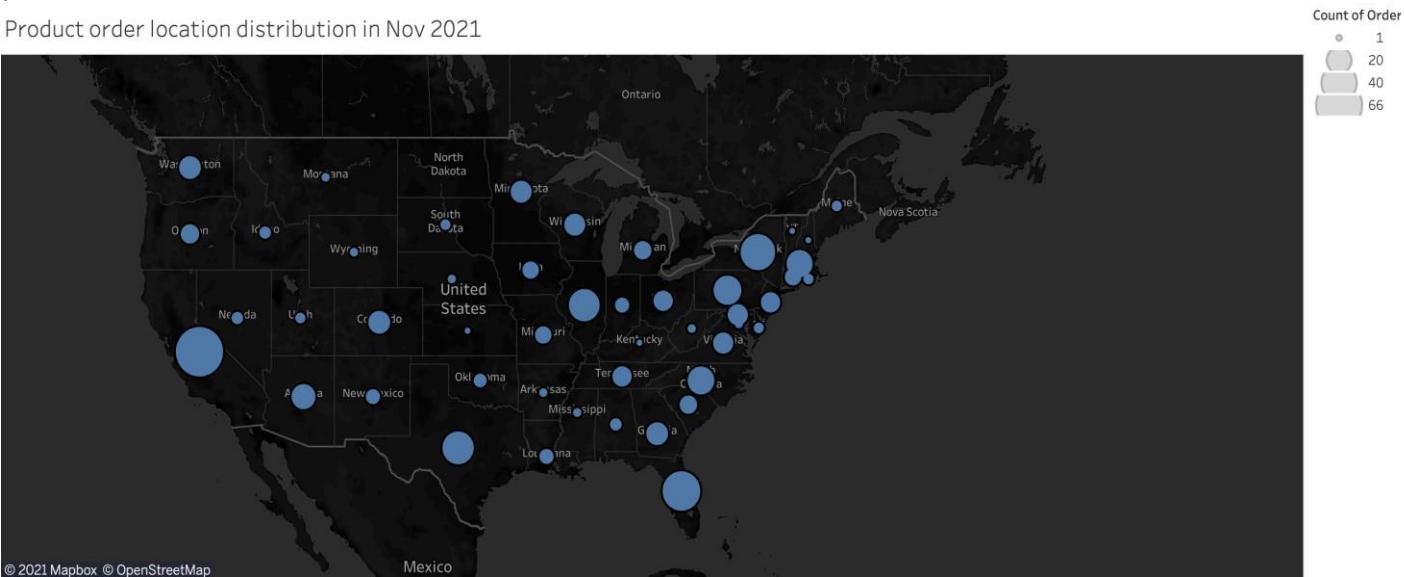


Based on the analysis of historical sales data and customer comment data, this policy brief finds out some problems encountered in the current development process of the enterprise, and clarifies the irrationality and drawbacks of warehouse delivery at. In addition, according to labor cost and warehouse location and sales revenue statistics released by the state, suggestions for the location of new warehouses are put forward.

Many orders in the East

This is the main distribution chart of our customers' order sources. Taking the latest data of November as an example, the larger the circle is, the more orders it represents. Most of our customers are distributed in western California, central and southern IL and TX, and most of the eastern regions such as NY, PA, NC and MA. One message from the location distribution is that we can't ignore the shopping experience of guests in the east, because they create a lot of orders. In contrast, the number of contributed orders in the West is relatively small, with the exception of places like California.

Product order location distribution in Nov 2021



Shipping in customer order cost ratio
(ten states at the top and ten at the bottom)

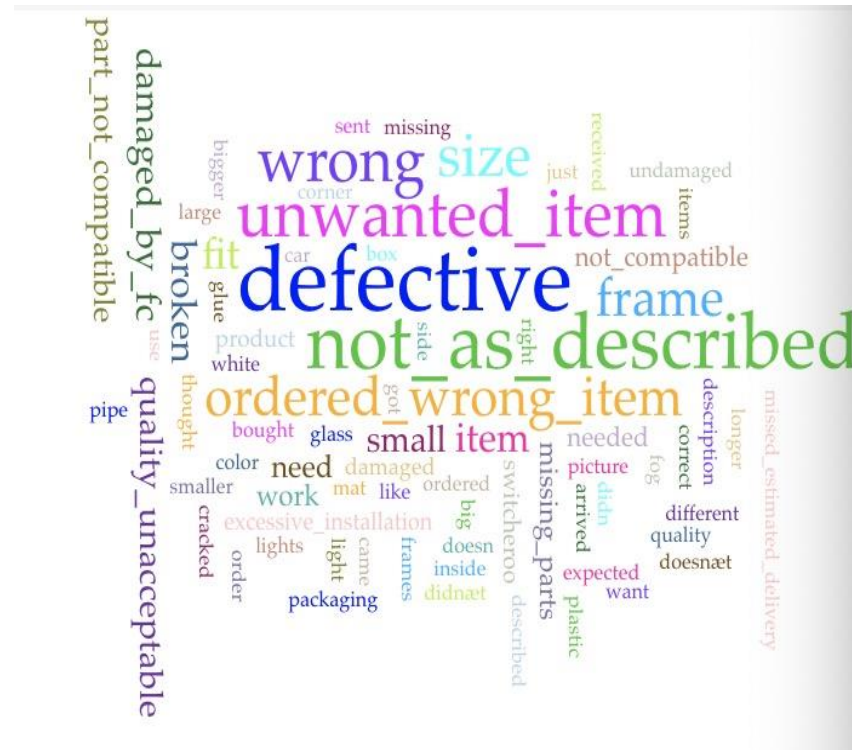
Shipping State	Avg. shipping in custo..
WV	0.7832
AK	0.7661
DC	0.6325
mn	0.5510
OK	0.5398
CT	0.5357
DE	0.5325
WY	0.5168
RI	0.5019
OH	0.4853
UT	0.2600
OR	0.2550
MS	0.2524
WA	0.2381
MD	0.2283
LA	0.1713
NE	0.1701
NV	0.1572
IL	0.1457
AL	0.1172

A Warehouse too far way can result in High freight charges:

This chart shows how much the average customer shipping costs as a percentage of the total order cost, broken down by location (state). For November orders, we found the top 10 states and the bottom 10 states for comparison. Generally speaking. Anything above 0.3-0.4 is considered expensive. For example, if a customer buys something for \$10, he has to pay \$3 for shipping. That's acceptable, but after \$3 he might start to wonder if he has to buy something. In this picture, we can find that WV and DC even account for 0.6-0.7. This means that a customer from WV and DC might want to buy something for \$10, but he's spending \$6- \$7 on shipping. This should have a negative impact on consumption appetite. WV and DC are both in the eastern part of the country.

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Long-distance transportation is easy to cause damage to goods, and customers will give bad comments



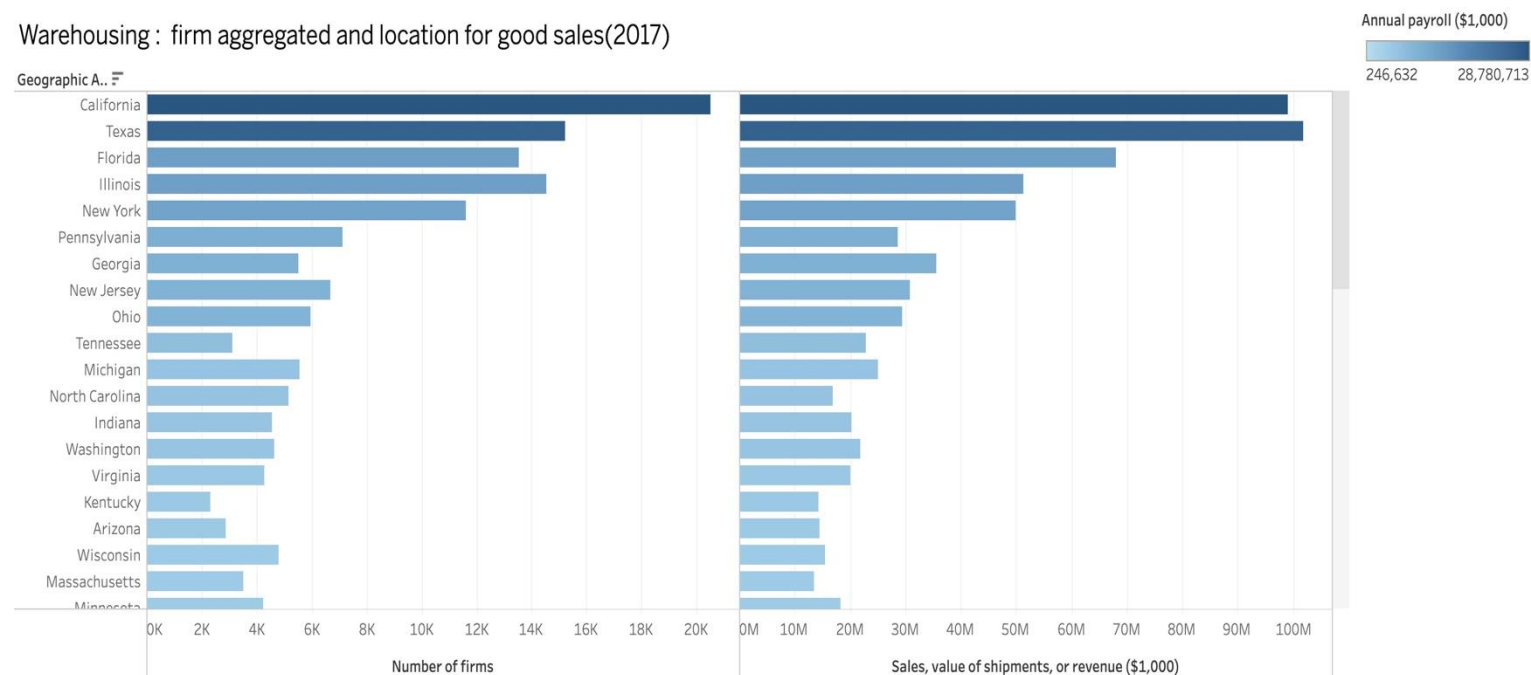
Here are the reasons record of customer returns in the recent three years, we can get many Most frequent words in the corpus through text analysis:

defective (1043); not_as_described (768); unwanted_item (565); size (513); wrong (505); ordered_wrong_item (440); fit (432); frame (422); item (295); broken (277); damaged_by_fc (256); small (253); quality_unacceptable (251); part_not_compatible (228);

The primary reason is the defect of the product, which may be caused by the poor quality control of the purchase. Another reason is that in many cases, the damage of the product cannot be avoided in the process of transportation. The repeated use of words like frame, glass, and broken indicates that the product is prone to negative reviews, either due to its fragile nature or incomplete packaging. In addition, the promotional picture may not be exactly the same as the product, there may be excessive beautification, or the size is not properly displayed in the advertisement

So Where should we add a new warehouse?

Warehousing : firm aggregated and location for good sales(2017)



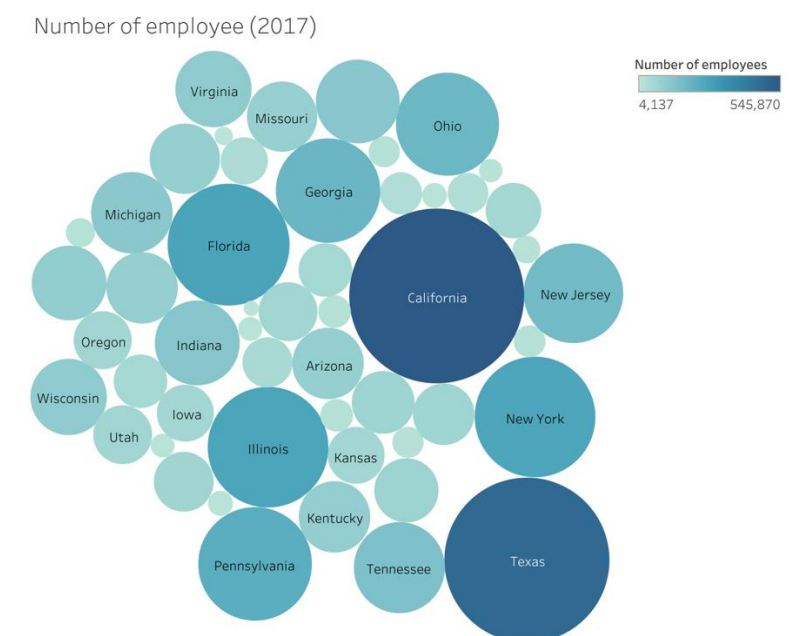
1. Lots of firm choosing Texas

The above Viz showing the number of firms and Sales, value of shipment, or revenue ranking of US companies in 2017. More companies settle here mean more business opportunities, more consumers and easier transportation in cities. Most companies choose California, Texas, Florida, Illinois and other places as the location of the company, the cost performance is generally relatively high.

Revenue also reflects which states are more valuable for business. As you can see from the graph, Texas is actually a good location because it generates a lot of revenue, but there are not as many companies and maybe not as competitive as California. Texas also exempts businesses from taxes, which can save companies a lot of money. Other states such as Florida are also worth considering.

2. Texas has rich labor resources

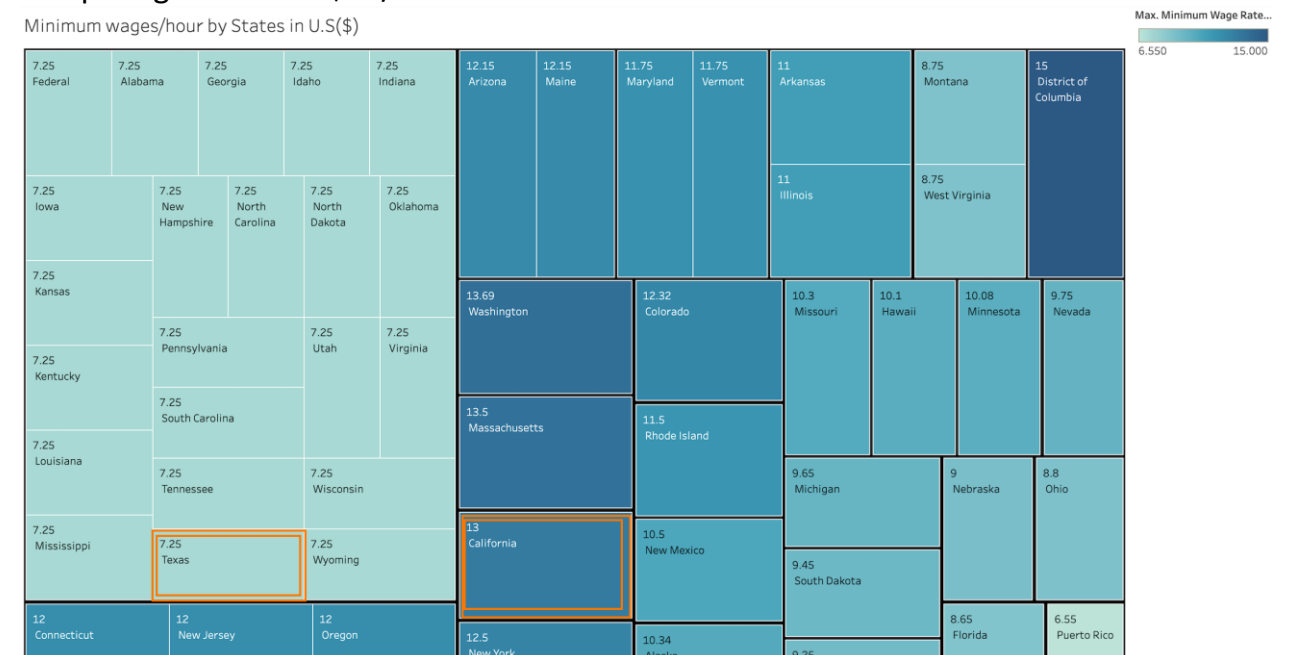
The larger the circle, the greater the number of employment, the greater the labor pool. We can see the big states: California, Texas, Florida and so on.



3. Texas might have cheaper labor

let's look at the cost of labor: In warehouse operations, moving, picking, packing, etc., requires a lot of labor, so it is important to observe minimum wages. Texas: \$7.25/hour comparing California: \$13/hour.

Minimum wages/hour by States in U.S(\$)



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There is only one warehouse in California that can cause problems when shipping products east:

1. Long mailing time leads to poor customer experience.
Take California to New York as an example, UPS normal mailing time is 5 days. Transportation is especially prone to delays during the pandemic. For example, truck drivers due to illness isolation shutdown, labor shortage and other reasons. The extra time was added to the already long shipping time, and although we picked up and delivered as quickly as possible, it took customers a long time to get the products they wanted. It is also easy to return the idea, or delay their exhibition activities.

2. We will lose high amount of freight charge when the customer returns the goods.

Recommendation:

1. Consider building new warehouses in Texas. In this way, we can not only reduce our transportation costs and shorten the transportation time, but also provide better service for customers. They can also get more and cheaper labor, save operating expenses and make profits more easily.

2. The location of the warehouse should be chosen in cities with convenient transportation, such as Huston, because shipping and other places are more developed.

3. Although many of our customers come from the east, we should avoid choosing the east as our warehouse location because labor is more expensive.

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