भारतीय प्रबंध संस्थान बेंगलूर
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TESTING MARKETING HYPOTHESES AT WSES

U DINESH KUMAR

U Dinesh Kumar, Professor of Decision Sciences and Information Systems, prepared this case for class discussion. This case is not intended to serve as an endorsement, source of primary data, or to show effective or inefficient handling of decision or business processes. The case is adapted from the case titled, "Marketing Head's Conundrum (Case Number IMB 541)", authored by Maneesh Bhandari, Pramod Kumar Bagri and U Dinesh Kumar. Few Exhibits and parts of the case discussion from "Marketing Heads Conundrum", are reproduced in this case.

We Sell Everything in Software (WSES)[1] Inc., sold innovative off-the-shelf products and had customers across the world. WSES specialized in providing software solutions for different industries such as defense, clinical research, consumer goods, capital markets, security, banks, retail, and insurance among others. Although the products were commercial off-the-shelf, many clients required personalization and after sales support which WSES was happy to provide. The list of products sold by WSES are shown in **Exhibit 1**. After sales support in the form of maintenance and updates also significantly contributed to the revenue of the company. Jack Williams cofounded WSES in 2005 and took charge as CEO in 2015 and was instrumental in driving data-driven decision making. He created a team consisting of more than 100 data scientists to assist newly created consulting business at WSES which also supported internal projects.

WSES was primarily a B2B (Business to Business) company, the sales conversion took anywhere between 3 months to 1 year once the lead was generated by the salesforce. Between 2010 and 2018, it was able to scale up from modest revenue of USD 2 billion to USD 10.3 billion. It possessed a healthy pipeline and a sales force which was aggressive in pursuing opportunities. However, over a period of time, the competitors of WSES became aware of this lucrative market and started introducing competing products. With increased competition, there was a pricing war, which naturally led to the loss of customers to competitors. Jack was under constant pressure from investors to improve win percentage of the bids submitted by WSES. The marketing team at WSES had to decide whether to pursue a sales opportunity based on its perceived ability to convert a lead.

On March 7, 2018, he met Ben Osborne, Vice President-Marketing at WSES, to determine ways to improve effectiveness of the sales force. He felt that salesforce most often depended on its gut feel to allocate marketing expenses to an opportunity.

Jack: *Do you understand Ben that our win percentage opportunities was about 50% and in some products it is much less than 50%.*

Ben: *Jack, we have discussed this before. The competition is high, and our competitors are selling at much a lower price, it is difficult to cut costs for us. Compared to our competitors, we are doing great in converting leads, winning probability of 50% is the best in the industry.*

Jack: *Sure Ben. I acknowledge that. But we are strong in a few segments such as FinSys and LifeSys, we should focus on customers who are interested in these products and give less importance to segments in which we are not very strong.*

We need not have spent the $1.25 million on the Indian auto finance company 'Super Auto Finance (SAF)' who was more than keen to buy the Finsys product to fix his management reporting.

[1] Names of all companies and individuals are changed to maintain the confidentiality. The problem context is adapted from the case titled, "Marketing Head's Conundrum (Case Number IMB 541)", authored by Maneesh Bhandari, Pramod Kumar Bagri and U Dinesh Kumar.

I can also tell you that these guys in Australia would never have bought the Procsys product from us and we continued to shower those marketing guys with budgets that vanished faster than water from palms on a sunny day.

I am sure if we had invested $2 million more on the 'White Beauty Dental Care (WBDC)' while selling them our Lifesys solution, we would be sitting on an additional $35 million sales. But, these are patterns you and I notice. What about things we missed?

Ben: *Our sales team chases leads that have higher value since our incentive system encourages them to do so. High value projects also have high risk. I am not sure whether this is the right strategy.*

Jack: *Last week I was chatting with our sales team, I was asking them how they decide whether to pursue an opportunity or not? They told me that they get a hunch from the product, geographical location, value of the sale, etc. I don't think they have analyzed the data to find whether their hunch is true.*

WSES allotted marketing budget to various sales leads that it received based on the expected sales value. In 2018, the marketing budget was a flat 6% of the sales values. Jack did not approve of this method, especially the decision-making process associated with allocation of marketing budget and was exploring multiple options with Ben. Ben believed that the sales force was in touch with the customer and understood the situation better. Hence, allocation to projects should be based on the probability to clinch a deal as indicated by the instincts of the sales force. However, there was a risk in using instincts to estimate conversion probabilities. The sales force grouped the sales leads into four groups such as excellent chance of sales conversion, very good chance of conversion, etc. (**Exhibit 2)**. Each salesman could use a different process to arrive at the win probability and there was no methodical structure to it.

Jack believed that the estimation of probabilities by the sales force was ''good to have'' information but not the best and certainly not the most methodical; at best, it could be used as ancillary data. However, given that WSES pursue around 1,000 opportunities every year, which it either won or lost. WSES should be having a more concrete way to interpret the data and generate business rules based on inferences obtained from the data. The sales and marketing team had to decide whether to pursue a lead since it involved costs to the company in the form of travel, time spent by the sales team with potential customers, client visits, legal costs, etc.

ABOUT WSES

WSES has been headquartered in London and was started by Jack Williams and his friend in 2005 when they realized that there was an opportunity after collapse of a leading product and consulting firm for selling customized software solutions. They started with the creation of a services product – Procsys –

and in a decade added an array of products to meet needs across multiple industries. Some of their products such as GTMsys, Finsys, Procys, and Lifesys have been market leaders in their segments.

WSES started with the focus on clients in the United Kingdom and in 5 years they started offices across the globe. In 2018, about 50% of their revenues were derived from the United Kingdom and the rest from other countries. WSES also had an enviable track record in customer service and claimed that 88% of its customers had placed repeat orders.

TESTING THE MARKETING HYPOTHESIS

On March 8, 2018, Jack and Ben met again to find a solution to the problem that they had discussed the previous day. WSES maintained the records of all the leads and their outcome in its enterprise resource planning (ERP) system.

Jack: *Are there patterns that are visible from the data? I think our chance of winning deals in Africa is better than UK, but we are too focused on the UK and other European countries where the competition is much higher. The European market is becoming crowded and we should put our efforts in emerging markets.*

Ben: *I know where you are coming from Jack. I think we should involve Liz Smith who heads our data science team. I have scheduled a connect with her now and I can call her here.*

Jack: *Would you like to have a coffee? I am making one for myself.*

Ben: *Let me call Liz while you take out the best coffee beans from your collection.*

Jack, a coffee connoisseur, looked at his coffee collection wondering what was best for the occasion. His choice was Kenyan coffee.

Ben: *Just spoke to Liz and also managed to give her some context. She should be here in fifteen minutes.*

While Jack was preparing the coffee, Liz, who holds a Ph.D. in statistics from an Ivy school walked in took a seat next to Ben. Looking at her, Ben heaved a sigh of relief hoping that the data presented and interpreted by this young woman would provide a way to solve the nagging problem that they had been dwelling on. Jack and Ben explained the problem to Liz.

Ben: *Do you think we have a choice to let data influence our marketing decisions? For example, I want to know the geographical locations that we should give prioritize. I believe that our winning chances are not the same across different*

geographical locations. Also, the average sales value of different products is different.

Liz: We do Ben. If we have historical data, we can check what the data is saying. Sometimes data shouts. It is just that we are too busy to listen, or we are listening through our noses.

For instance, in this case, we can do several hypothesis tests such as two-sample t test and chi-square test of independence to check whether your beliefs are in fact true.

Ben: Liz, I do watch Big Bang Theory but I find your explanation too technical, can you explain to us in simple English?

Liz: Let me try again, you must have watched several advertisements of the Axe deodorant, in which women are drawn towards man sprayed with the deodorant. Do you believe in that advertisement? Basically, hypothesis testing is a technique which can be used to verify such claims.

Jack: I really like those advertisements, I once read that a Professor at Liverpool University was trying to check whether women are drawn towards men sprayed with Axe.

Liz: Most men live in fantasy world, they run out of ideas to attract women. But, let us talk about the data.

Liz then explained to Ben that hypothesis testing is an inferential statistical technique used to check claims or beliefs. She went on to explain various types of hypothesis testing such as parametric testing and non-parametric testing to Ben and Jack and how to carry out hypothesis testing. Liz promised that she would start working on the project and come back to Jack and Ben in a week's time with her recommendations on what was potentially possible.

DATA COLLECTION AND PROBLEM ANALYSIS

Liz started her research with available data. WSES Inc used Oracle ERP and Liz realized that since the implementation of Oracle (on January 1, 2011), data on every sales opportunity was available in the system. The sales leads had collected information on a variety of fields for every sales opportunity and there were about 50 different fields for every opportunity. Liz then requested a meeting with Ben to clarify his understanding about which data fields would be more useful for determining the probability of clinching the deal.

"The good news is that we have four years of data for each and every opportunity", remarked Liz to Ben.

"Yes, the team is quite disciplined. Though there are few cases where all data is not populated for an opportunity, we generally do not miss out information on any important fields (**Exhibit 1)**", said Ben.

"This is exactly what I need, but how accurate will your prediction be?", exclaimed Ben.

With the potential variables identified, Liz started her work on cleaning the data. She took a random sample of 1000 opportunities for her analysis from opportunities that WSES pursued during the period 2014 and 2018. She had multiple interactions with Ben on business-related questions to ensure that he was not missing out any critical component of the analysis. Ben in turn kept Jack informed about the progress of the project.

Once the data clean-up was completed, Liz listed several hypotheses based on her discussion with the marketing team. Liz met Ben and said:

> I have had a long meeting with our marketing team, they told me their beliefs about various aspects of our business. I have listed few of them below, but I am not sure whether they are actually true".

- The chance of winning a lead is not the same for different products.
- The chance of winning a deal in Africa is better than in the United Kingdom.
- Average size of a deal is at least 8 million USD
- Average size of a deal in different geographical locations is not the same.
- Winning chances are higher when the relative strength is higher.

"Excellent, I can quickly carry out hypothesis tests on these claims made by the marketing team" remarked Liz.

"Sure Liz. but my interest is in knowing how we can use the insights from the data to manage the leads that we receive from various sources effectively" said Ben.

Liz met Jack and Ben after two weeks and shared what he found in the data. "Liz – Why did I not find you before" chuckled Jack. He was already thinking about the implementation plan and how best to showcase this exciting story to the Board.

Exhibit 1

Variables in the Data

Opportunity No.	Sl. No. of the Opportunity
Reporting Status	Won or Lost as per the data
Sales Outcome	1 = Won and 0 = Lost (binary code of reporting status)
Area	Includes the following area of the client (in order of size): • UK • Other Europe • Americas • Africa • India • Japan • Singapore • Spain • Canada
Customer Industry	Industry of the customer (in order of size): • Capital Markets • Banks • Defense • Consumer goods • Others • Security • Energy • Insurance • Airline • Finance • Infrastructure • Mobility • Other government • Government • Telecom equipment • Health • Clinical research • White goods • Agriculture
Product Vertical	Product category by talent required (in order of size): • 1.GTMSys, 2. Procsys, 3. LearnSys, 4. Finsys, 5. Lifesys, 6. Logisys and 7. ContactSys
Relative Strength	Strength of the product based on benchmarking carried out by a third party organization. Higher is better.
Sales Value	Expected Sales value if the deal is won. This constitutes only WSES's share if it is a joint bid
Profit %	Profit as per the proposal submitted or planned to be submitted
Joint Bid - WSES Portion	WSES works jointly with multiple partners to strengthen the bid. This indicates the % of WSES portion to total value
Leads Conversion Class	E, V, F and L as described in **Exhibit 2**

Source: Primary data from WSES
Note: Mn – million

Exhibit 2

Current Classification of Leads Conversion Based on Opinion of the Sales Team

Class	Description
E	Excellent chance of sales conversion
V	Very good chance of sales conversion
F	Fair chance of sales conversion
L	Low chance of sales conversion