Forecasting inventory needs for home depot stores nationwide commerce essay

Forecasting is one of the most important aspects of any business that wants to maintain its competitive advantage. The Home Depot uses the gross national product (GNP) to forecast its demand for inventory. Due to the current state of the housing market, The Home Depot is finding it difficult to properly forecast inventory stocks resulting in a surplus of unsold goods and missed sales opportunities due to lack of other merchandise This paper will briefly describe some of the different techniques and methods used to forecast. There will be two courses of actions (COAs) developed. One will be recommended over the other and an implementation plan will be presented.

Forecasting Inventory Needs for Home Depot Stores Nationwide

Introduction

The Home Depot is a multi-international organization with brick-and-mortar stores in the United States, Canada, Mexico, and China. The current state of the United States economy has been detrimental to many organizations. The Home Depot bases its inventory needs on the housing market. Recently the housing market has been fluctuating in an unpredictable manner. This becomes a concern for organizations that base their inventory needs on it. Improper inventory stocks can be a detriment whether it is overstocked or under stock. If inventory is under stocked organizations may lose potential business to competitors due to an inability to keep up with demand. Overstock causes an issue with costs associated with storage of unsold merchandise and can tie up much needed capital.

Problem Statement

Due to the current state of the housing market, The Home Depot is finding it difficult to properly forecast inventory stocks resulting in a surplus of unsold goods and missed sales opportunities due to lack of other merchandise.

NOTE: BACKGROUND CONTENT SHOULD BE THE LITERATURE REVIEW. LIT REVIEW CONTENT SHOULD BE THE BACKGROUND. I'M NOT SEEING MANY OF THE MANAGEMENT TOPICS INTEGRATED INTO EITHER SECTION. YOU MENTIONED SEVERAL OF THE TOPICS JUST AS YOU STARTED THE LIT REVIEW, BUT YOU ONLY MENTIONED THEM – THIS IS NOT GOOD ENOUGH. YOU HAVE TO WRITE SOMETHING ABOUT THEM THAT WOULD BRING VALUE TO THE SUBJECT OF YOU PAPER.

Background

A forecast is a statement about the future. Many businesses use forecasting in an effort to squeeze every last drop of profit out of a situation. The Home Depot, for example, bases sales forecast on mortgage refinancing rates. Usually the smaller rates are at any given time in history will equate to higher sales. There are many different uses of forecast. Forecast can be used for accounting, finance, human resources, marketing, management information systems, operations, and product or service design to name a few. While forecasts are instrumental to an organizations financial future they are rarely perfect due to the randomness of the variables involved. The accuracy of forecasts themselves decrease as the time horizon of forecast increases. For example, the Home Depot can forecast sales for this year more accurately than they can for next year. There are many different elements of the forecast that would be considered good. In order for a

forecast to be considered good the forecast would have to be timely, reliable, accurate, meaningful, and easy to use.

According to Stevenson, there are two main uses for forecasts. The first is to assist managers with " planning the system" and the second is to assist them " plan the use of the system" (Stevenson, 2001). What is meant by planning the system is just that. It is a means to plan the system that involves long-range plans such as what products or services to offer as well as what equipment to buy and where to build facilities and things of that nature. According to Stevenson, planning the use of the system generally refers to the " short-range and intermediate range" which typically involves things such as planning the budget, scheduling, short-term goals, the needs of the investor, inventory, etc. Forecasting for business goes far beyond just forecasting the demand of products and services. It also includes being able to predict profits, revenue, availability of raw materials and many other variables. The Home Depot, being a home improvements store, must also be able to predict things such as the housing market.

There are certain features that are common to all of the different forecasting techniques. One of the main commonalities of forecasting is that no one has a crystal ball, and no one can see into the future; therefore forecasts are far from perfect. " No one can predict precisely how often a large number of related factors will impinge upon the variable in question, this, and the presence of randomness, preclude a perfect forecast" (Stevenson, 2001). Another commonality to all forecasting techniques is that forecast accuracy will become less accurate as time moves on, an example of this is given above, due to the fact that forecasting errors for group items will have a

canceling effect upon themselves. For example, the Home Depot can forecast the sales goals of a particular department better than the sales goal of an individual product.

According to Stevenson (2001) six basic steps are involved in the forecasting process shown in Table 1. Note: I would put these steps in a Table. Label it Table 1. Paraphrase the content.

Step One – Determine the purpose of forecast (Stevenson, 2001). One must know the reason behind forecasting in the first place. If a person is forecasting how many individuals will show up to a bake sale as opposed to how many pallets of shingles need to be urgent in order to facilitate demand at any given time, knowing the purpose will justify the level of accuracy that is necessary.

Step Two – Establish a time horizon (Stevenson, 2001). One must have a time horizon in their forecast, one must also realize that the accuracy of the forecast will diminish as the time horizon increases.

Step Three – Choose a forecasting technique (Stevenson, 2001). Once again there are numerous amounts of forecasting techniques that are being used today. It is extremely important for the forecaster to choose one that will best suit the needs of the forecast.

Step Four – Gather and analyze relevant data (Stevenson, 2001). Before beginning any daunting task one must gather all relevant information that one needs in order to put it all together and make sense of it. In this stage

the forecaster must also identify any assumptions that are made while preparing using forecast.

Step Five – Prepare the forecast (Stevenson, 2001). In this step one would use whichever technique that was decided in order to prepare the forecast for monitoring.

Step Six – Monitor the forecast (Stevenson, 2001). The forecast is similar to that of any automated program and therefore will need to be monitored. The reason that the forecast needs to be monitored is because it is not performing in the way that it should be, the forecaster needs to go back re-examine the data and make any relevant changes in order to keep the forecast on the straight and narrow path. If the forecast is not performing in a satisfactory manner certain assumptions could've been overlooked or completely wrong. In either case the forecaster must then prepare a revised forecast

Literature Review

Inventory management is one of the key issues faced by managers that deal with seasonal products. It is important to understand how product forecasting has been previously used. As technology advances and globalization continues to be on the rise, keeping up with supply and demand becomes a challenge. Businesses need to learn how to create a supply chain advantage. In this section demand forecasting, demand learning, and product lifecycle forecasting methods will be discussed. Six rules for effective forecasting will also be included.

Demand Forecast

According to Huang, Chang, and Chou (2006), the first step in finding precise demand forecast is to collect and organize complete and applicable historical demand data for any given product. Demand of this nature can be issued daily, weekly, monthly, or yearly depending on the time within the planning window. The process of modeling demand and determining demand forecasts is as follows: "…demand data, demand analysis, demand forecast model, perimeter estimation, demand simulation, demand forecast, and expected demand" (Huang et al, 2006). There are two aspects of forecasting that are vital. The first is the expected level of demand, the second is the degree of accuracy that can be assigned to a forecast.

Demand Learning

Demand learning is one of the inventory models that has received considerable attention in the literature. Herbert Scarf is one of the first authors to incorporate demand learning in an inventory modeling context. In his literature, Bayes Solution of the Statistical Inventory Problem, he developed an interesting inventory model that uses observed demand information and a current stock level together in the decision process. It is his assumption that demand is generated from an exponential class of distributions, and a collaboration of prior distributions are used for the unknown parameters (Scarf, 1958). For seasonal demand forecasting a Quick Response policy was adopted by many manufacturers. This procedure was developed in an effort to reduce a manufacturer's production time to respond to orders in a timelier manner so that forecast can be improved by collecting more information about the future demand. Suri (2004) studied

the Quick Response policy extensively. According to his literature, there are four core concepts of quick response manufacturing: The Power of Time, Organizational Structure, Understanding and Exploiting System Dynamics, and Enterprise-wide Unified Strategy.

Product Lifecycle Forecasting Method

Burruss (2002) describes the product lifecycle forecasting method. He used this method to propose a way to more accurately forecast products with high uncertainty and a short lifecycle. According to Burruss, a short lifecycle ranges anywhere from 9 months to 18 months. According to the literature, products forecasted using this method, should have well defined lifecycle phases from introduction to maturity and then to end-of-life, a high demand spike during the introduction phase, which is then followed by a " gradual downward leveling off during maturity, and a steep end-of-life drop-off that is usually caused by planned product rollovers" (Burruss, 2002).

Six Rules for Effective Forecasting

Paul Saffo describes the difference between prediction and forecasting. He says that prediction deals with " future certainty while forecasting looks at how events in the present are influential to the possible changes in direction" (Saffo, 2007). In his literature he describes six simple rules for effective forecasting that managers should observe as they develop forecasting policies (Saffo, 2007).

The first rule is to define a cone of uncertainty. According to the literature, the cone of uncertainty is used to help managers exercise strategic judgment. The most important part of the cone of uncertainty is defining its

breadth, which is a measure of overall uncertainty (Saffo, 2007). The second rule is to look for the S-curve. Saffo explains that change does not usually follow a straight line. It is important to see and identify an S-curve pattern once it begins (Saffo, 2007). Rule three is to embrace the things that do not fit. A successful forecaster will be able to look to the left of an S-curve inflection point and notice indicators of what is to come. However, sometimes there are items to the left of the S-curve inflection point that simply do not fit. It is the job of the forecaster to recognize those items and adjust the forecast appropriately. The fourth rule is to hold strong opinions weakly. Here, Saffo is saying that one of the largest mistakes a forecaster will make is to rely on one piece of information, which at the time seems extremely strong due to the fact that it reinforces the conclusion that the forecaster had previously. According to the literature, more weak information, bits and pieces, put together is more trustworthy than a single source of strong information. Rule five says look back twice as far as you look forward. This rule is a continuation of rules two and three. One must know one's history before they can effectively expect future outcomes. One of the hardest parts of looking in history is to know when it does not fit. Rule six, the last rule, is to know when not to make a forecast. There are certain times when forecasting is easy and sometimes when it is just not possible. Saffo uses the dot com bubble of the 1990s as an example of this rule. Forecasters suggested that at the time that old rules did not apply when in fact they were extremely prevalent and the " old economic imperatives bursts the dot com bubble" (Saffo, 2007).

Discussion

As stated above there are many different types of forecasting methods that may be used. Moon and Mentzer (2004) describe a time series technique as only looking at " patterns of the history of actual sales." The time series technique will look and determine whether the patterns that are prevalent at the time can be projected into the future. This will be the basis of the forecast. All time series techniques examine one or more of four time series patterns, which include level, trend, seasonality, and noise (Moon & Mentzer, 2004). Research by Moon and Mentzer (2004) suggest that " the level is a horizontal sales history, or what the sales pattern would be if there were no trend, seasonality, or noise." Most forecasters use the level as the starting point for the time series and look at the other patterns later. In Figure 1 that follows, the data follows a horizontal pattern around mean.

Figure 1. Title???? (Note: All tables and figures must carry a number and a title. This does not mean anything because you gave no legend. What is the X axis? What is the Y axis? What do the numbers represent.)

The way the line moves up and down as sales increase or decrease or curve or remain a straight line is what is considered the trend. Most businesses will prefer a trend that is always increasing; however, this is usually not the case. The trend is essentially the bread-and-butter of any forecast. It allows forecasters to be able to determine what is working and what is not, and present this information to management in an effort to mitigate future loss. In Figure 2 that follows, the data is progressively increasing which shows a trend.

Note: So trends are based on data? You never really said that. Here you have to introduce Figure 2 and title it. You cannot just stick a graphic in and say nothing about it.

Figure 2. Title?? (Note: You need to include a legend.)

Seasonality is described by Moon and Mentzer (2004) as " a repeating pattern of sales increases and decreases that occurs within a one-year period or less." For example, the Home Depot experiences high sales every fall for snow blowers, high sales of lawnmowers during the spring, and high sales every summer for air-conditioners. The pattern of these high sales during those periods within the year typically repeat themselves every year and therefore, the seasonality line can be seen as a regular pattern. Figure 3 that follows represents a seasonal pattern. The data exhibits a regularly repeating pattern. (Note: Same comment. You need to title and provide a legend.)

Figure 3. Title???

Noise is the unexplained phenomena that occurs in forecasts. These phenomena usually seem unexplainable until a regression analysis or similar has been conducted. For example if the Home Depot were to have high sales of lawnmowers in the winter months, that would be considered noise. The high sales of lawnmowers can be explained possibly by global warming (unusually warm weather in the winter months), a fire sale of lawnmowers during these months, or some other explanation. The fact is that high sales of that product are unusual and have not happened consistently in the past

years and therefore is considered noise. The Figure 4 shows how noise would appear on a chart. There is an inconsistency in the pattern.

Figure 4. Title??? Insert Legend

Management Concepts

There are many different techniques and approaches when it comes to management. However while dealing with a forecast, managers are faced with more decision-making attributes. In order for any organization to be successful it all starts with being able to properly manage not only personnel, but also the other aspects of the business. In the military, soldiers are taught to lead by example. They are taught very early on to Be, Know, Do. Be the individual that you want your soldiers to be, know all of the required information before presenting it to a subordinate, and do what is morally and ethically right at all times regardless of the situation in which one might find themselves (Hesselbein & Shinseki, 2004). You need a citation for this information. Not sure the military example is relevant.

Li (2007) describes supply change management as " a set of synchronized decisions and activities utilized to efficiently integrate suppliers, manufacturers, warehouses, transporters, retailers, and customers so that the right product or service is distributed in the right quantities, to the right locations, and at the right time, in order to minimize system wide costs while satisfying customer service level requirements."

The Home Depot is an industry that ranks inventory in the top five business costs. Oversupply and undersupply of inventory at any given moment could have an extremely detrimental impact on the corporation. Establishing the

right amount of product through effective forecasting will ensure that the Home Depot has the products customers need when they want them. This will also mitigate the overstock costs for storage of unsold goods.

Economic Environment

The current economic environment in the United States is bleak to say the least. As of the writing of this paper there is a high unemployment rate of 7. 9% and a slow growth of the United States economy. Growth in the previous year has been at an extremely slow pace. Home sales directly impact inventory needs of the Home Depot. Total sales of homes in the United States have declined 1. 7 percent since August of 2012 (realestateabc. com, 2012). Figure 5 shows . . .???

Figure 5. Title??? What year? You need to state the year.

If home sales continue to decline it could mean that mortgage rates will increase. Increase in mortgage rates would mean that home improvement stores such as the Home Depot would take the brunt of the impact in the hike of the rate. " Improvement in the economic environment is crucial for retailers like Home Depot" (Steverman, 2009).. The housing bust in the United States hit the Home Depot hard. Due to the state of the economy, the Home Depot had reduced the square footage growth plans in an effort to improve free cash flow and provide strong returns for the company. (Home Depot, 2012). In 2009, the company was forced to exit its EXPO, THD Design Center., Yardbirds, and HD Bath businesses in an effort to focus solely on the brick-and-mortar stores (Home Depot, 2012).

According to the five-year summary of financial and operating results of the Home Depot, the company is slowly regaining its previous financial success. Its total net sales are still lower in 2011 than they were in 2007. However, the trend indicates that the company is poised to regain its momentum and bring sales back to what they were previously. Table 1 is a five-year summary of The Home Depot's financial and operating results.

Table 1. Title????

Quantitative Tools and Techniques

There are many different tools and techniques that are commonly used to support business decision-making. Arguably, decision trees are one of the best tools to assist managers in choosing between several courses of actions. Decision trees take information directly from the managers and allows them to see the outcomes of different courses they might take. According to Mind Tools, there are five steps to creating a decision tree, as shown in Table 2. The first step is to draw a decision tree. This will be the outline to which the manager would fill in the information related to each course of action. Second step will be to evaluate the decision tree. In this step the manager would decide which options have the greatest worth (Mind Tools, n. d.). The third step would be to calculate the values in the tree. Mind Tools suggest to start on the right-hand side of the tree and work backwards to the left. The fourth step is to calculate the value of uncertain outcome nodes. When calculating the value of uncertain outcomes, one would " do this by multiplying the value of the outcomes by their profitability. The total for that node of the tree is the total of these values" (Mind Tools, n. d.). The fifth step of creating a decision tree is calculating the value of the decision

nodes. In this step managers will have to write down the cost of each option and then subtract the cost from outcome that would give managers a value that represents the benefit of that particular decision. Figure 6 is an example of a decision tree that was retrieved from the Mind Tools website. (Note: It should be Figure 6, not Figure 4)

Figure 6.

Marketing Concepts

As a home improvement warehouse store, the Home Depot's customer base are the average do-it-yourselfers, do it for me, and professionals. The Home Depot's competition not only includes big-name stores like Lowe's but the local hardware stores. The Home Depot uses multiple social media outlets such as Facebook, Twitter, and YouTube. On these sites they reach out to customers through videos depicting how easy it is to do-it-yourself with the right tools and support from the store. They bring customers into the store by hosting how-to seminars. They do these things in an effort to increase brand loyalty, interaction with customers, and customers' comfort level when doing projects on their own.

In this day and age there are many outlets that companies can utilize an effort to reach maximum customer base. Chantal Tode (2012) wrote an article on how Home Depot decided to do an iPad app in an effort to integrate a customer experience that would get them more involved in home decor. Home Depot launched the Home Depot Style Guide Spring 2012 app around mid-March (Tode, 2012). This iPad application for the Home Depot has proven to be a huge success. The Home Depot will attempt to optimize

Home Depot. com in an effort to provide iPad users with the best experience. Matt Jones, general manager of mobile for HomeDepot. com, Atlanta, Georgia said " it has outperformed our expectations in terms of downloads, page views per visit and time spent in the app" (Tode, 2012).

Global View of Business

Marketing. Success in international markets depends on a number of different things. When thinking about marketing for an international organization one must consider the wants and needs of that particular market. What works in Houston may not be the same in China. The Home Depot entered China's market in 2006. Unfortunately, the company did not do due diligence and study what the market demanded in that country. The Home Depot attempted to market in China the same way as it did in the United States. As a result the Home Depot will close the last of the seven stores in that country. Further research shows that the market in China " is more of a do it for me culture" (Burkitt, 2012), in part due to cheap labor and the fact that most individuals live in apartments. This means they have less need for items such as lumber and gardening tools. The closing of the stores will cost the Home Depot approximately $160 million after-tax in the third quarter 2012 (Burkitt, 2012).

The Home Depot has a YouTube channel dedicated to Spanish speaking customers. This is a strategic marketing plan that should assist the Home Depot with its Spanish-speaking customers and improve its brand with.

Management. Same comment as above.

International management is one of the key things that brings success when working in a global economy. It is important to understand the culture of the country in which the business will operate. The Home Depot has stores in Canada, Mexico, . Canadian business is improving performance in the fourth quarter (Home Depot, 2012). Mexican business has 33 consecutive quarters of positive comp growth (Home Depot, 2012).

Economic and Business Operations. Same comment as above about format.

As previously discussed, the Home Depot's economic and business operations are going quite well in the international market with the exception of China. The international businesses are operated similarly to those based in the United States. Nextel's for the Home Depot outside of the United States were $8 billion for fiscal year 2011 (Home Depot, 2012).

Social, Cultural, and Behavioral Foundations of Human Enterprise

The Home Depot is very involved in community outreach programs. They have an organization known as The Home Depot Foundation with a mission " to ensure that every veteran has a place to call home" (Home Depot Foundation, 2012). In 2011 this organization completed more than 1000 projects with more than 400 of them focused specifically on veterans. They worked on projects such as painting local schools, community gardens, and refurbishing needy family's homes while working with local nonprofit organizations. The Home Depot also helps when disaster relief is needed. They assist local governments and organizations by providing supplies and

resources needed to clean up and rebuild neighborhoods. The organization also contributes $500, 000 to the American Red Cross annual disaster giving program (Home Depot Foundation, 2012).

Business and Economic Principles

Organizations such as the Home Depot need to understand that basic business and economic principles are of the utmost importance. This paper has discussed many different business and economic principles to include demand, economies of scale, opportunity costs and exit strategies.

Critical Thinking

The Home Depot solves problems and makes decisions more quickly due to the development of common vocabulary that is used throughout the organization. It utilizes a cross functional relationship approach by mixing the different strengths of the creative, teamwork, and rational approach to problem solving. The Home Depot also empowers its employees to think critically by taking courses offered through the employee website to enhance current skills and learn new ones. They also provide web-based seminars to help their employees learn how to resolve problems efficiently and effectively when they occur.

Elements of the Environment That Influence Management Activities

This paper has already presented many of the elements that affect management. Elements such as economic conditions, competition, and international environment have been discussed. Other elements that affect management, especially in a home improvement environment, would be

things such as weather and social environment. The weather plays a large role due because it directly impacts customer flow to the store. During seasons that involve multiple days of inclement weather, management must make the decision as to what hours the store will be open, what conditions would cause the store to close early, and what items should be brought to the front of the store in an effort to catch the eye of customers. The Home Depot is already answering the question to social environment. When society changes so should business, and the Home Depot has done just that. One can find the Home Depot on many social media outlets such as Twitter, Facebook, and YouTube.

Courses of Action (COA)

The Home Depot currently uses microeconomic data and economic theory to forecast the levels of demand for its products through the Gross National Product (GNP). The problem is that its demand is closely based on the housing market. As of late the housing market has been unpredictable and therefore the Home Depot should utilize a different forecasting technique. Below are two different COAs to take in consideration.

Course of Action One

The first course of action would be to implement the Delphi method to forcast inventory needs. This method is a combination of qualitative and quantitative processes that are derived from qualified experts' opinions and are used to develop possible theories for the future. There are five steps in the Delphi method (Chong, Adnan, & Zin, 2012). The first of his two identify the problem. Administrators will design questionnaires and evaluate total costs before starting the actual procedures. Upon completion of this step the

expert selection will begin. Step two is actually selecting the experts. The actual size of the project that needs to be completed will be the determining factor as to how many experts will sit on the panel. The size of the panel actually depends on the budget allotted (Chong et al., 2012). The next step is to administer the questionnaire to the experts. In this step the members of the panel will draw conclusions from their own personal experiences and any other sort of data or research that is available to them at the time (Chong et al., 2012). The fourth step is actually broken down into different parts. The first part will be to evaluate the responses that were generated from the original questionnaire. The responses that are evaluated from the first questionnaire are used by the director to develop more in-depth questions to be used in the second questionnaire. The second part of the fourth step is to redistribute the questionnaire with more focused questions in an organized list of the responses to these questions on the first questionnaire (Chong et al., 2012). The fifth step is to interpret the results. This final step will continue until all the experts said on the panel comes to a consensus (Chong et al., 2012). The reason this process works relatively well is because the experts are not together. This allows administrators to get a true consensus without prejudice or bias. Figure 7 shows how the Delphi method is used.

Figure 7. Delphi Method.

Course of Action Two

The second course of action would be to implement the Holt-Winters Method for Seasonality Technique. This method utilizes the seasonality factor in order to account for seasonality associated with a product (Gelper, Fried, & Croux, 2008). For example, the Home Depot sells many lawnmowers in the

springtime and many air-conditioners when the temperature rises in the summer. This particular method needs to estimate three components of a forecasting equation (Gelper et al., 2008). The first component is the current level of sales. This component is achieved by removing noise and all seasonal aspects of the level. The second component is to use the current trend. This is the difference between the levels that are expected to happen between any two given seasons. The third is to add the seasonality. For example, if the Home Depot wanted to forecast sales for August and it is June, the following equalization could be utilized:

[level (100) +2*trend (10)]*seasonal (1. 4) = 128 units

The Holt Winters method estimated that the current level is 100, the trend is five, and August has the seasonal index of 1. 4. Figure 8 shows an example of the Holt Winters exponential smoothing.

Figure 8. Holt Winters Exponential Smoothing. (Note: I see you have a legend on this one. Good)

Recommendation

Given the choices between the Delphi method and t