The Research Monograph Series in Computing, Electrical & Communication Networks
Vol. 1 (01), April 2023, pp. 6–11

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LITERATURE REVIEW

2.1. INTRODUCTION

The centre of the solution for accurate product sales marketing is to accurately predict product sales volume, that is, extract valuable, new, and understandable information from big data to predict sales trends and get the key according to the accurate sales forecast. Consumer groups and sales regions help buyers adjust sales strategies in real time and help businesses find the best advertising channels based on expected results.

Important elements of this study use information obtained in previous publications and these documents are duly always referenced. This study aims to:

- Find the products with the highest sales in the past 3.5 years.
- Understand the impact these products hold over the total sales.
- Understand the fluctuation in demand for the top 10 products sold in the same period.
- Forecast the sales of these products for the year 2023.

This review of the literature formed the recommendations found in the last part of the report. Documentary research covers the areas considering and highlighting the gaps in the existing publications as well as in the needs of the company in which we are doing this study.

The main reason why the researcher decided to undertake this research is due to two things: first, the importance of not only theoretical but also practical experience in the industry. The researcher firmly believes that this case study will bring benefits not only personally but also for the company in question. And second, the importance of knowing what is expected to sell and how a company's sales have evolved.

Sales analysis comes as part of the sales forecasting process; therefore, one need to know and understand how sales have behaved in the past in order to take the most out of the forecasting process and the decision-making that will come after it.

2.2. SALES ANALYSIS

A sales analysis brings together the data obtained during the sales process and business management with the aim of developing actions and strategies to increase profits. A company's sales analysis is critical, sales reps spend almost 69% of their time on activities that do not generate sales revenue (Krogue, 2018).

There are several types of sales analysis:

- Sales analysis by product: This type of sales analysis allows one to visualize the current state of the products or services and predict their future evolution.
- Channel sales analysis: With this type of sales analysis, one will be able to understand which channels give the best sales results so that one can focus the efforts there. The sales process, especially after the impact of the COVID-19 pandemic, is going digital, and sales teams must be ready to give their customers what they want and need. In this context, the analysis of sales by channel is essential to determine if you are investing in the right sales channels or if you need to evolve.
- Sales analysis by region: This analysis allows one to see if the sales are working better in certain regions and if one needs to optimize the distribution channels or communication with the target audience.
- Sales analysis by representatives: This type of sales analysis allows one to assess the performance of the sales force as a whole and determine if goals and objectives are clear, the team has the recognition it deserves, the team has the proper training to produce good results, and if the team has the right tools to do their job efficiently and increase the productivity.

Some of the benefits of doing a sales analysis of a company are as follows:

- One can take decisions based on data: Companies that implement the different types of sales analysis are better prepared to deal with changes in consumer behaviour. Furthermore, connecting customer data also helps improve collaboration between teams, which is a key element in the success of high-performing teams (Zendesk, 2020).
- One can focus on sales: With a sales analysis tool, one will not only be able to make decisions based on data but also have more time to dedicate to selling. As we saw earlier, sales reps spend most of

their time on administrative tasks instead of concentrating on the leads with the best chance of converting. A sales CRM, in addition to providing the company with analysis ready to share with their teams, automates all those tasks that take up ones time to deal with qualified leads.

- One can keep an eye on trends: A sales analysis, for example, focused on products, can tell the company a lot about market trends and what opportunities the company should take advantage of.
- One can deliver a memorable customer experience: Customer data are becoming increasingly valuable to companies' sales analytics. In fact, companies that capitalize on the largest volume of customer data (those in the top 25% for data management compared to peers) see 36% faster resolutions and reduced 79% in waiting times (Zendesk, 2020).

Sales analysis focused on customer data will also help the company define their retention strategies. Remember that increasing customer retention by just 5% will increase the company´s revenue by 25–95%.

Sales analytics provide direct insight into the sales team, market trends, customers, and the company's overall ability to grow their product.

By using different sales analysis methods, the company get versatile insights into how their teams are performing and where they need to improve. It also better prepares the company to scale their team and their product: when the company has laid the foundation for their sales cycle and are at their best, the company will be better prepared to grow with purpose and certainty.

2.3. SIGNIFICANCE TEST

The researcher uses null hypothesis significance test (NHST) to achieve one of the four objectives. NHST is the most common analysis of research questions, and it is the base of statistical inference. McNuthy explains that "in NHST a null hypothesis (H0) is rejected in favour of an alternative hypothesis (HA) only if the P-value, P (observed data or more extreme |H0), falls below a pre-specified α-level" (McNulty, 2022). It is important to know that NHST is a combination of two different statistical theories: R. A. Fisher's P-value significance test and the Neyman–Pearson technique of hypothesis testing.

The author explains in her article that Fisher's P-value significance test and Neyman–Pearson hypothesis test are not the same thing and that often this is ignored. According to her, "while the significance test produces a P-value, which according to Fisher should be interpreted context dependently as a continuous measure of evidence against the null hypothesis, the p-value serves as a decision criterion if the necessary steps of the hypothesis test are followed." To perform the significance test, three criteria need to be met: probability, the null hypothesis assumption, and the counterfactual element. A null hypothesis is one of many competing reasons for small P-values and the evidence against it can play an important role in empirical studies.

2.4. SALES FORECASTING

Estimating a company's sales revenue for a specific time period – such as a month, quarter, or year – is known as sales forecasting. Basically, a sales forecast predicts how much a business will sell in the future. The primary purpose of sales forecasting is to reduce uncertainty "by predicting what will be sold to whom and when" (McHughes, 1987). Sales forecasts are different from sales targets, both of which are what enterprises hope to achieve. To predict future sales performance accurately, sales forecasts use a variety of data points.

This practice is one of the most important tasks that a company must perform and it is vital that an accurate sales forecast is produced for the business success. The company's hiring, payroll, compensation, inventory management, marketing, and budgeting are based on this information. In the event that a public company misses a forecast, their credibility can quickly be damaged. Outdated forecasting practices produce bad forecasts despite its importance to many organizations and, according to Gartner, even by 2025, this situation might have not improved: "90% of B2B enterprise sales organizations will continue to rely on intuition instead of advanced data analytics or their B2B CRM, resulting in inaccurate forecasts, sales pipelines and quota attainment."

There are different things to take into account that can radically alter a sales forecast: first being the industry; to be able to forecast in the future, one needs to know when peak periods and off seasons are in every industry. Second, there are external factors; in 2020, COVID-19 proved to be a huge stumbling block for everyone's sales forecasts, and it was an entirely unexpected external factor that no one could have predicted even a year before it. However, this outside influence did not affect everyone the same way, even though it ruined almost everyone's forecast for 2020. The best sales forecasts consider both the best- and worst-case scenarios so that the company is prepared no matter what happens. Finally, internal factors, that is, things happening within the business, can also have a dramatic impact on the company sales forecast; even though external factors are often hard to predict, it is entirely possible for a forecast to be completely derailed by unforeseen changes in the company´s manufacturing process, changes to the management team, or upgrades to the equipment, even though it is probably less likely that internal factors will catch one by surprise than external ones, but that does not mean one should not prepare for them as well.

Sales teams are under pressure to deliver, putting the focus on forecasting. Facing stiff competition and an uncertain market, sellers' expectations continue to rise, and forecasts are how sales activity, and by extension the health of the business, is most easily monitored. Unfortunately, enterprise makes the same mistakes in their forecasting process repeatedly.

- Sales data do not bring information into deal status: One limitation of existing forecasting approaches is that they rely heavily on salespeople to provide accurate information about the status of specific opportunities. Given the pressure on sellers, it is not surprising that the information they provide is often more optimistic than reality.
- The manual processes that consume a lot of time can reduce valuable selling time: Sales reps spend about 2.5 hours a week forecasting, while their managers spend an average of 1.5 hours. Every hour spent on these manual and time-consuming activities would be better spent on actual sales.
- In the interest of not compromising revenue, accuracy is often sacrificed: Under the pressure to provide positive numbers, sellers often overestimate the number of deals that will close. Perhaps not surprisingly, 79% of sales organizations report that they typically miss their forecasts by more than 10%. Meanwhile, 54% of trades predicted by reps never close.

The sales forecast is considered an essential tool to guarantee the success of a company's marketing strategy. For this to be possible, it must have the support of all the departments involved so that it is as efficient and effective as possible.

Once there is an understanding of what is forecasting, why it is needed, and some of the mistakes the companies do when forecasting, it is important to know there are different type of methods and techniques.

A forecast can be done using qualitative data or quantitative data; if one wants to do a forecast based on qualitative data, there are mainly four options to work with: Delphi Method, Market Survey, Executive Opinion, and Sales Force Composite. Now if one is hoping for a quantitative forecast, there are two general methods: Time Series and Associative

Table 1. Forecasting techniques.

Technique	***Use***	***Math involved***	***Data needed***
Straight line	Constant growth rate	Minimum level	Historical data
Moving average	Repeated forecasts	Minimum level	Historical data
Simple linear regression	Compare one independent with one dependent variable	Statistical knowledge required	A sample of relevant observations
Multiple linear regression	Compare more than one independent variable with one dependent variable	Statistical knowledge required	A sample of relevant observations

Models, which, at the same time, have four techniques, the first two are associated with Time Series models and the next two with associative models; for more detail, see Table 1.

The researcher addresses the specific method that will be used in the following chapters, but it is important to mention that the researcher is working with time series data; this means that the researcher is going to work with historical data that contains time (dates).

Time series techniques may encounter difficulties when using internal company data as input. Furthermore, there may be other inconsistencies as a result of the "cleaning" of such data (to ensure that the sales history is correct, free of adjustments, etc.). Thus, it would appear that contextual knowledge plays an important role in sales forecasting. Contextual information is defined as "knowledge gained by practitioners through experience on the job, consisting of general forecasting experience in the industry as well as specific product knowledge" (Sanders and Ritzman, 1992). In this framework, "when time series are unstable, contextual information is particularly advantageous, presumably because of the greater number of discontinuities that can be explained by human judgement" (Webby and O'Connor, 1996).