



## Table of Contents

Executive Summary.....	4
Overview .....	5
Zara's Planning Environment and Key Variables.....	6
Zara's Analytical Capabilities .....	7
Smoothing using Centred Moving Averages .....	9
Key Challenges .....	10
Conclusions and Recommendation .....	11
References.....	12
Appendix 1 – Forecasting Calculations .....	13

## List of Tables

Table 1 Zara UK Annual Sales Forecasting for 2019-2020 .....	14
Table 2 Evaluating Forecast Accuracy .....	14
Table 3 Evaluating Forecast Accuracy in/out of sample .....	14
Table 4 Forecasting using Simple Exponential Smoothing .....	15
Table 5 Evaluating Forecast Accuracy in/out of sample .....	16

## List of Figures

Figure 1 Forecasting Process using PHIVE Method .....	8
Figure 2 Zara UK Annual Turnover 2008-2020 .....	10
Figure 3 Zara UK Annual Turnover 2008-2018 .....	13
Figure 4 Zara UK Annual Turnover 2008 – 2020 .....	15
Figure 5 Zara UK Annual Turnover 2008-2018 (SES) .....	16

## Executive Summary

This report studies the fast fashion retailer giant, Zara and its adopted forecasting techniques as a key marketing area. The report uses secondary data such as books, company articles and journals, the company's official website, and the company's published data and annual reports to examine how is forecasting being used by the company to improve its decision making. One forecasting technique example and calculations are included and discussed, and the forecasting process steps are examined to better understand how Zara uses forecasting. Forecasting challenges facing Zara are also discussed and finally, conclusions and recommendations are included to wrap up this report.

## Overview

Zara, the flagship of the Inditex group, opened its first shop in 1975 in Coruna, Spain by Rosalia Mera and Amancio Ortega (Forbes 2019, Inditex 2019). Inditex was a textile company at that time, and was incorporated in 1985 to group all its owned companies under a single brand (Inditex 2019). Zara is a clothing and accessories manufacturer and retailer and one of the first to adopt, if not create, the fast-fashion line of business. Zara segments its products to 60% women, 25% men and 15% for kids (Harbott 2011). In 2003, Zara expanded its operations to home accessories by introducing Zara Home, and finally embraced the e-commerce business model by going online in 2010 (Inditex 2019). Zara's current stores network include over 2,200 stores across 96 countries (Forbes 2018), and its estimated brand value, according to Forbes (2018), is \$13B ranking the 46<sup>th</sup> 2018 most valuable brand.

For a fast fashion leader as Zara, forecasting the demand of their products is at the heart of its business. Adopting a just-in-time supply chain model, Zara forecasts the fashion styles, colours and production amount that will be in demand according to its design division, which in turn keeps a keen eye on the latest fashion shows and the fashion in the street, combined with their customers' feedback from their stores and point-of-sales. The forecasted demand will then go through Zara's manufacturing supply chain, hugely reputed to be one of the fastest in the industry as it takes a new clothing item 15 days from design approval to stores shelves worldwide (STEVENSON 2012). Data is collected pre-production and followed up for in-season response in case any demand decisions are required (Loeb 2019).

The demand and sales forecasting affect most of Zara's supply chain operations directly. The forecasted demand will impact the supply order quantities, production scheduling for both Zara's owned or outsourced factories, manufacturing lead time, Logistics and distribution operations and products arrangements and stock management both in shops and online will have to adapt to demand forecasts and be prepared to accommodate them. The forecasts will impact the number of employees along all the processes of the supply chain and if extra time is required. And most importantly, the forecast will affect the pricing. All of this will be reflected on the financial performance of Zara, in addition to reputational impact. In its endeavour to keep its fast fashion business model, Zara usually forecasts and produces new products in small batches inhouse in order to keep its lead time short and have its new products in stores within two weeks (TradeGecko 2018). After which, these products will be monitored to forecast further productions or pulling the plug on a failed product that did not perform as expected.

## Zara's Planning Environment and Key Variables

Sanders (2017) defines forecasting as "the process of predicting the future". Zara attempts to predict its future by forecasting its demand and sales using its already available historic data in order to ease the decision-making process when it comes to better manage its production, manufacturing and servicing its customers and to keep its goals of providing affordable, trendy and beautiful cloths fast.

Zara uses qualitative forecasting when it comes to designing new product items and lines. Its large team of expert designers will use the latest runway shows fashion, their knowledge of which trends are most likely to pick up sales, the different customers preferences from previous experiences, customer demographics and regional fashion behaviour in their designing decisions. This means that they adopt a combination of qualitative forecasting techniques starting from market research, historic comparison and finally the experts Delphi and consensus method (Wisniewski 2016:290).

This qualitative forecasting will then be combined with different quantitative demand forecasting techniques to make better data-driven decisions. The demand forecast, based on historical data collected from previous products sales and customers feedback collected directly from shops and points of sales where stores managers will get in direct contact with the customer for better understanding of their likes and dislikes, will be used in deciding the supply quantities to order and when, the required manufacturing time and staffing needed for it, logistics and shipment scheduling to minimize the lead time and fasten delivery to stores, and the pricing as all items are priced and packaged to be shipped during the manufacturing process. All of this requires short term forecasting as the new product lines have to be available within a couple of weeks from their inspiring fashion shows, in addition to Zara's fast fashion policy where new lines are produced in small batches within 2 weeks from designing, this is all part of Zara's plan where it creates a sense of urgency with their customers leading to more stores visits and higher sales, enabling Zara to make about 85% of its cloths full price and unsold items accounting for less than 10% of its stock (TradeGecko 2018). These new lines sales are then monitored and forecasted to decide wither to continue producing or withdraw the line and fore any pricing modifications.

Zara also carries quantitative long-term forecasting for its around-the-year products of basic clothing items. These items production is outsourced and committed 6 months in advance (TradeGecko 2018). And as these items are almost always on demand, their previous sales data will enable more accurate forecasts. This will be reflected on supplying, outsourced manufactory pre-booking, inventory, logistics, distribution, pricing and even shelving decisions.

In addition, annual sales forecasting is carried on global, markets, regional and country levels for sales targets decisions, pricing policies, and shops expansion, merger or closure decisions. These decisions will reflect on mid to long term company plans which means better preparations.

## Zara's Analytical Capabilities

**PHIVE** approach draws an accurate picture of the forecasting process. The forecast **purpose** should be clearly defined by defining the plans depending on the forecast's outcome. The time period or **horizon** of the forecast should also be clear as this will decide whether it's a short term or long term forecast and choosing the appropriate forecasting method. That is when the data or **information** available comes into light, is it available and accessible to be forecasted, and which data exactly to use. Then the **value** of the forecast's new insights and reflection on future decision should be measured to gauge its implications on the organization's performance. Finally, the devised forecasting model should be **evaluated** to measure if it is good and its error possibilities acceptable (Ord et al. 2013).

For Zara, the PHIVE forecasting process approach is noticeable in its adopted forecasting approach. Forecasting at Zara starts by identifying why are they carrying this task and what are they planning, from new season's clothing line, a new targeted segment, changes to the company's product mix, to a new store or market expansion.

The purpose of the forecast will then help to set the horizon of the forecast, making it a short, mid or long term forecasting and plan. The horizon can be as small as a seasonal two weeks for a new clothing line, and up to 3-5 years when long term forecasting when it comes to new stores expansion.

Now that the purpose and horizon are defined, Zara's forecasting team along with its analytics team will start looking onto the available data to decide which data and from which sources will be most suitable to use as the giant fast-fashion retailer accumulates huge data from different sources across its widely-spread network of stores. Zara's customer data comes from its point-of-sales in its brick-and-mortar stores and online shops, from RFID in stores, in-stores augmented reality, and customer feedback through store managers to name a few. Also data along all of its supply chain are collected and available for use depending on what is to be forecasted. Supply and inventory and logistics provide very important and useful data. The data is then prepared for forecasting by "cleaning" the data from any errors or outliers and its plotted to decide on which forecasting methods are to be used.

The three above-mentioned steps are considered preparation steps prior to engaging in the actual forecasting step and attributes in deciding which forecasting techniques are most suitable, usually more than one technique is applied to determine the one with the most accurate forecasting.

Once the forecasting is done, the forecast value's implication on Zara's performance will be reflected on and included in the making the final required decision. This will make the decision more data-based and solid, un-mystifying the ambiguity of the unknown future. Also, to insure the utmost levels of accuracy, the forecast will be evaluated by measuring the error levels and deciding what is the accepted level of error in forecast depending on Zara's risk appetite and inline with purpose of the forecast.

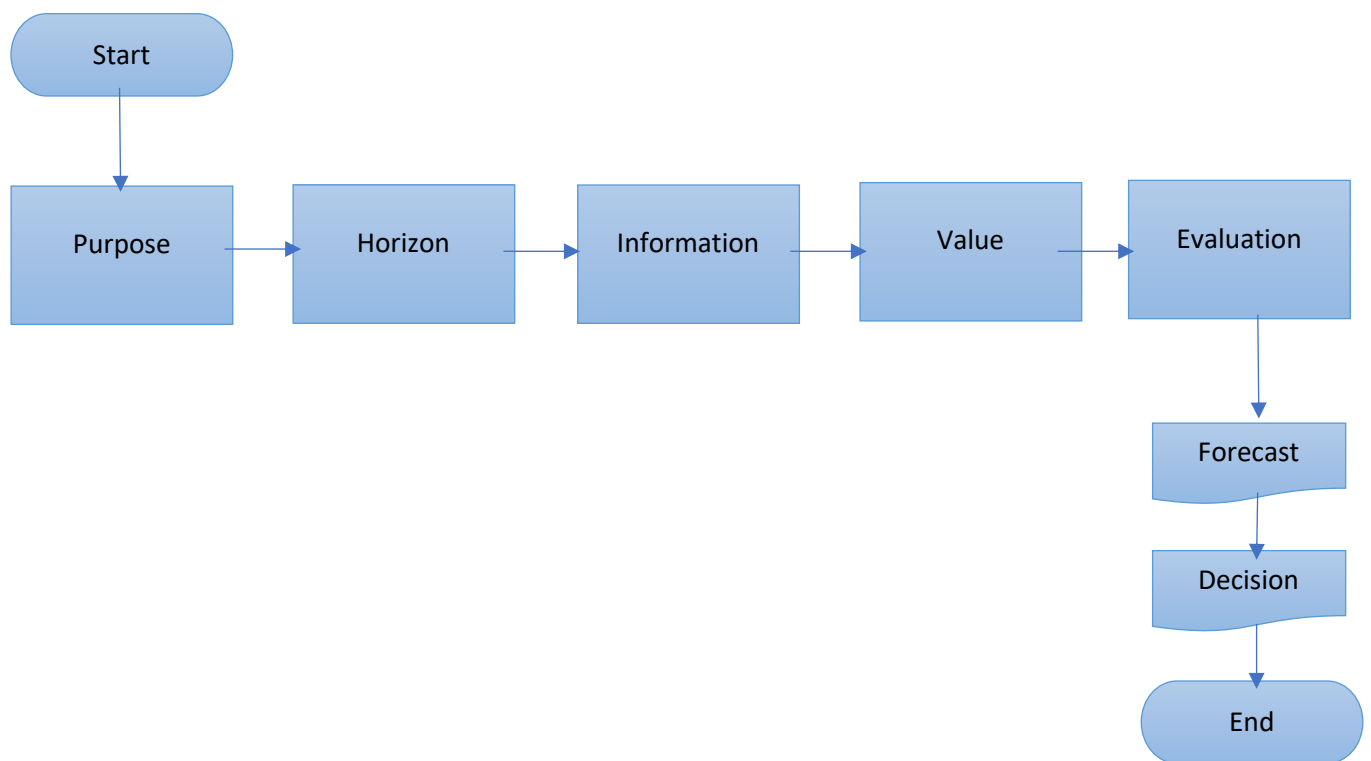


Figure 1 Forecasting Process using PHIVE Method



## Smoothing using Centred Moving Averages

forecasting a time-series variable, better known as trend projection, falls into two main methods: Smoothing using moving averages and time-series decomposition (Wisniewski 2016:294). Moving averages method calculates a series of averages moving along the time series to smooth out any noises and irregularities in the data to establish the trend of the time series which can then be used for forecasting. There is more than one type of moving averages such as centred moving averages. Moving averages are good for small datasets, smooths irregularities and establish trends but can't detect seasonality which is a pattern repetition over the same time period (weekly, monthly, quarterly) of the total time series. For time series with trend and seasonality, which usually contains irregularities as well, the second method of time series decomposition will be more suitable.

Zara's marketing strategy is not to market! (Bhasin 2019) They do not do marketing in the traditional sense of advertising and rely instead on stores expansion and flagship stores focusing on the store's design and provided customer experience, it is even said that the music played in a store will not be random and is matched to their currently in season fashion line. And recently Zara started introducing augmented reality experiences in 120 of its worldwide stores drawing digitally focused millennials to stores (Danziger 2018). Also, by creating a sense of curiosity and urgency at the customers, Zara marketing strategy of pulling customers in has proven effective.

Customers curiosity depends on Zara's provided lines and their frequency which, as mentioned before happens around every couple of weeks, this depends heavily on demand forecasting. And as lines introduction to market signals a new season this means that for demand forecasting their will be trend, seasonality and irregularities and for such big data over time a time series decomposition will be used to forecast demand.

On the other hand, to plan a certain country's stores expansion, Zara will need to forecast its sales for that specific country to better decide on the appropriate expansion plan. Taking Zara UK as an example, Zara will have to forecast the annual sales for the next couple of years based on previous annual sales to decide if it will be beneficial. For that purpose, sales figures for the last 10 years will be used to forecast. Increasing the size of data will jeopardise the integrity of the forecast due to enormous environment changes over the period of 10 years.

As per the forecast carried out in appendix 1, figure 1 below shows that the forecasted years 2019-2020 show a steady increase in the sales indicating a steadily growing market. This

forecast, combined with market analysis will make the expansion decision more data-driven, and with less chances of failing.

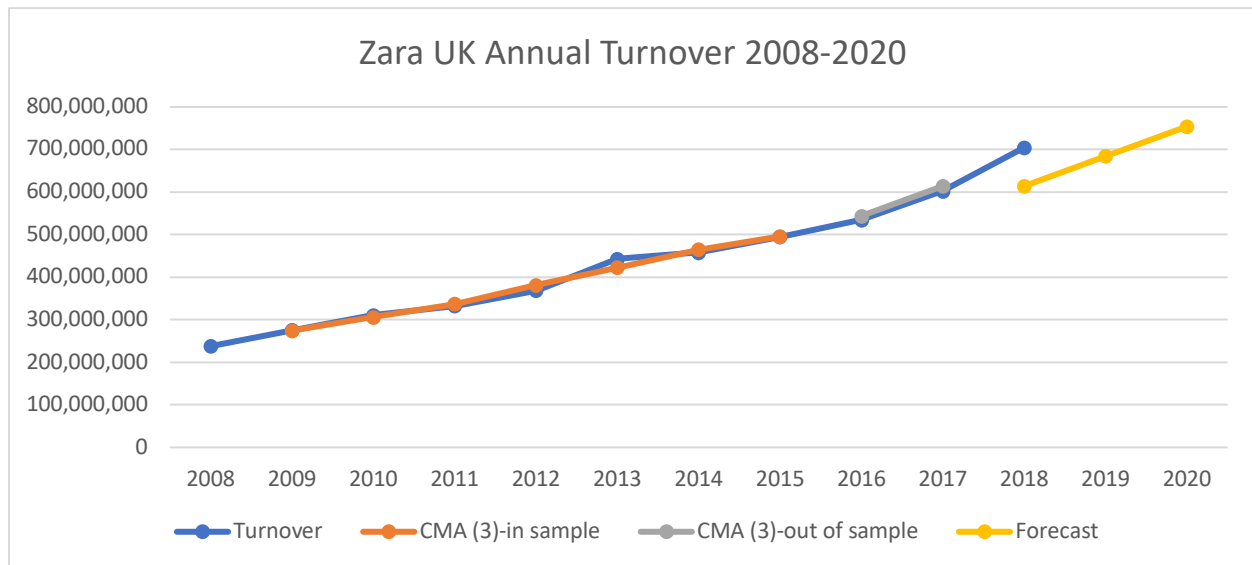


Figure 2 Zara UK Annual Turnover 2008-2020  
Source 1 (Fame 2019)

## Key Challenges

Forecasting is not as easy or as straight forward as it might look at first. Forecasting methods are not mutually exclusive, in fact, most resources and specialists encourage mixing and experimenting with the different forecasting techniques to produce a wider insight. It is a challenging endeavour to undertake when you have a global business such as Zara. Forecasting a new product means running a number of qualitative and quantitative forecasting, for a very huge number of customers across different markets. The amount of collected data for a single year will be huge for that scale of stores and customers. Which means that more and more technical resources and skills are required and will only increase as the data accumulate over time.

Also, as there is no best practice to forecasting as it is case dependent, it is challenging to regulate the forecasting process as different managers and divisions will create their own reliable mix of techniques. Kapoor (2015) call this “not-repeatable and non-comparable methods”, this is particularly challenging when each team of a huge division such as the designing division of Zara uses its own compilation of methods and techniques to forecast the new products, leading to unfair comparisons between teams forecasts.

A huge challenge of forecasting in a huge and widely spread company such as Zara, is the different data curators and miscommunication. As forecasting demand will require sales data,

customers feedback from stores, markets behaviour data from each regional market management, supply and manufacturing data from production management, inventory and logistics data from inventory management, and the list goes on to include almost every department and division across the global network of Zara, this makes communication very complex and challenging which will make the forecasting process more complicated.

Forecasting will give an idea about what to expect in the future in order to prepare for it properly, however, at the end of the day forecasting is dealing with uncertainty which by definition is unknown. This means that meeting the future prepared is not a guaranty that the exact forecasted future will happen. There are always missing variables that can arise and affect the forecasts. This can be noticed in new products that do not sell well despite excellent forecasts. And the exact opposite might happen as well, where a proposed design might get rejected during the designing phase, only to become a hit when introduced by a competitor.

## Conclusions and Recommendation

In conclusion, its fair to say that Zara is doing a good job with its adopted forecasting methods as it is clear by its annual growth in turnover and profit, and the success of its adopting marketing and product management strategies. Zara has developed a supply chain that is as unconventional as can be, it does not follow the best recommended practices and yet manages to work the shortcomings of its adopted practices to its full advantage making it a true entrepreneur and leader in its field. However, there is always the possibility to do better. In forecasting, it is recommended to have a solid and capable data management system. It is also advised to invest in analytical systems and expertise to fully employ the available data to its full capability. Predictive analytics and analytical systems can manage the forecasting across the different divisions and markets and use the available historical data across different markets. AI systems can also be employed to extract insights that have been missed otherwise. But mostly, it is highly recommended to mix and match the different forecasting techniques to come up with the best one as per each case, and to keep reviewing these techniques as the need to change it might arise according to the change in data patterns and seasonality.

## References

- Bhasin, H. (2019) *Marketing Mix Of Zara - Zara Marketing Mix And 4 Ps Of Zara Brand* [online] available from <<https://www.marketing91.com/marketing-mix-zara/>> [20 March 2019]
- Danziger, P. (2018) *Why Zara Succeeds: It Focuses On Pulling People In, Not Pushing Product Out* [online] available from <<https://www.forbes.com/sites/pamdanziger/2018/04/23/zaras-difference-pull-people-in-not-push-product-out/#1d93a0d023cb>> [20 March 2019]
- FAME (2019) ZARA U.K. LIMITED Bureau Van Dijk [online] available from <<https://fame4.bvdinfo.com/version-201937/fame/1/Companies/Report>> [19 March 2019]
- Forbes (2018) *Zara On The Forbes World's Most Valuable Brands List* [online] available from <<https://www.forbes.com/companies/zara/#2f4ccf917487>> [12 March 2019]
- Forbes (2019) *Amancio Ortega* [online] available from <<https://www.forbes.com/profile/amancio-ortega/#8269b63116cf>> [12 March 2019]
- Harbott, A. (2011) *Analysing Zara'S Business Model* [online] available from <<https://harbott.com/analysing-zaras-business-model-6ee755699a70>> [18 March 2019]
- Inditex (2019) *Our Story - Inditex.Com* [online] available from <<https://www.inditex.com/about-us/our-story>> [12 March 2019]
- Kapoor, A. (2015) *5 Common Challenges In Business Forecasting* [online] available from <<https://www.linkedin.com/pulse/5-common-challenges-business-forecasting-abhishek-kapoor/>> [20 March 2019]
- Loeb, W. (2013) *Zara's Secret To Success: The New Science Of Retailing* [online] available from <<https://www.forbes.com/sites/walterloeb/2013/10/14/zaras-secret-to-success-the-new-science-of-retailing-a-must-read/#44ba0233534f>> [18 March 2019]
- Ord, J., Fildes, R. and Kourentzes, N. (n.d.) *Principles Of Business Forecasting*. 2nd edn. New York: Wessex Press, Inc
- Sanders, N. (2017) *Forecasting Fundamentals*. 1st edn. New York: Business Expert Press
- STEVENSON, S. (2012) *Slate'S Use Of Your Data* [online] available from <<https://slate.com/culture/2012/06/zaras-fast-fashion-how-the-company-gets-new-styles-to-stores-so-quickly.html>> [18 March 2019]
- TradeGecko (2018) *Zara Supply Chain Analysis - The Secret Behind Zara's Retail Success* [online] available from <<https://www.tradegecko.com/blog/zara-supply-chain-its-secret-to-retail-success>> [19 March 2019]
- Winston, W. (2014) *Marketing Analytics*. Indianapolis, IN: John Wiley & Sons, Inc.
- Wisniewski, M. (2016) *Quantitative Methods For Decision Makers 6Th Edn*. 6th edn. Edinburgh: Pearson Education Limited

## Appendix 1 – Forecasting Calculations

Turnover data range: 2008 – 2018

As a first step in the forecasting the data is plotted to decide the data's behaviour and what forecasting method to use.

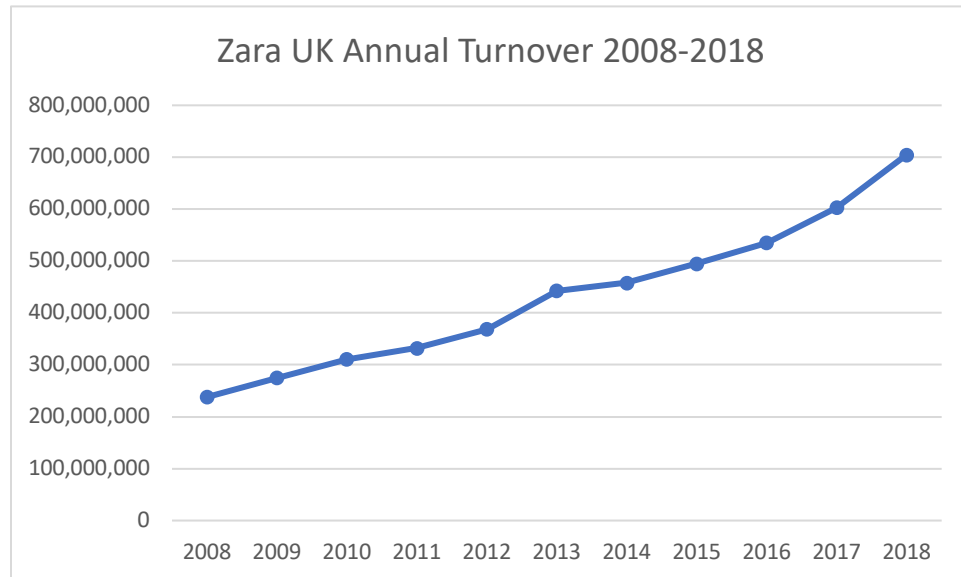


Figure 3 Zara UK Annual Turnover 2008-2018  
Source 2 (Fame 2019)

It is clear from the graph that the data is a time series, and it is not stationary or level data, it has trend, but there is no seasonality nor cycle in this time series. For such data forecasting will be done using the centered moving average.

In sample data: 2008-2016

Out of sample data (used to validate the devised forecasting model): 2017 – 2018

Forecasted years: 2019 -2020

Method: Centred Moving Average of 3

Table 1 Zara UK Annual Sales Forecasting for 2019-2020

Year	Turnover	CMA (3)-in sample	CMA (3)-out of sample	Forecast
2008	237,952,080			
2009	275,099,148	274,557,138		
2010	310,620,187	306,068,778		
2011	332,487,000	337,318,062		
2012	368,847,000	381,358,000		
2013	442,740,000	423,134,667		
2014	457,817,000	465,130,000		
2015	494,833,000	495,939,000		
2016	535,167,000		544,230,333	
2017	602,691,000		614,232,333	
2018	704,839,000			614,232,333
2019				684,234,333
2020				754,236,333

for forecasting, a simple linear model will be built from CMA(3) where  
Slope= 70002000  
Intercept = -140649803666.67  
 $F = \text{intercept} + \text{slope} * A$

Source 3 (Fame 2019)

Table 2 Evaluating Forecast Accuracy

Year	Turnover	error	e2	e	e %
2008	237,952,080				
2009	275,099,148	542009.6667	2.93774E+11	542009.6667	0.001970234
2010	310,620,187	4551408.667	2.07153E+13	4551408.667	0.014652649
2011	332,487,000	-4831062.333	2.33392E+13	4831062.333	0.014530079
2012	368,847,000	-12511000	1.56525E+14	12511000	0.033919213
2013	442,740,000	19605333.33	3.84369E+14	19605333.33	0.044281821
2014	457,817,000	-7313000	5.348E+13	7313000	0.015973631
2015	494,833,000	-1106000	1.22324E+12	1106000	0.002235097
2016	535,167,000	-9063333.333	8.2144E+13	9063333.333	0.016935524
2017	602,691,000	-11541333.33	1.33202E+14	11541333.33	0.019149669
2018	704,839,000				

Table 3 Evaluating Forecast Accuracy in/out of sample

error metrics summary	in sample	Out of sample
mean error (ME)	-151,759	-10,302,333
mean squared error (MSE)	91,420,811,387,062	107,673,193,111,112
mean absolute error (MAE)	7,208,545	10,302,333
root mean squared error (RMSE)	9,561,423	10,376,569
mean absolute percentage error (MAPE)	1.82%	1.80%

Evaluating the accuracy of the forecasting model using the out of sample data. The mean absolute percentage error of 1.80% which is considerably very low indicates that the forecasting model of CMA(3) is very good and expected result will have a very small possibility of being faulty.

To forecast for the next two years using the CMA(3) model, a linear model will be generated using the CMA(3) slope and intercept (Winston 2014:235).

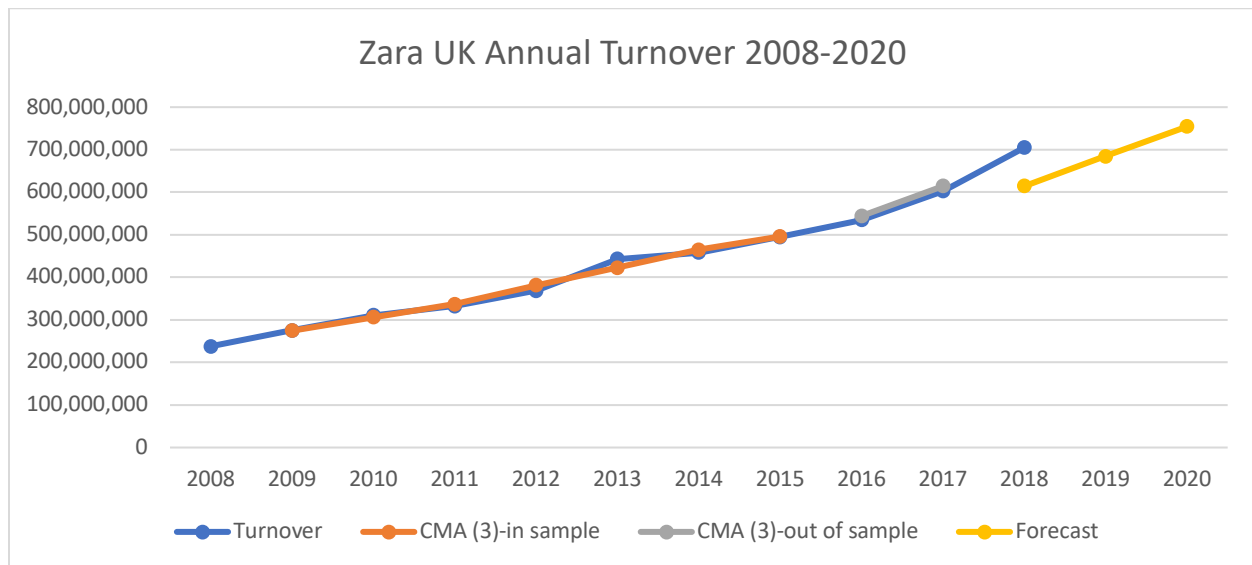


Figure 4 Zara UK Annual Turnover 2008 – 2020  
Source 4 (Fame 2019)

Simple Exponential smoothing has been also tested as a forecasting method, however the error margin was too high to be accepted.

Table 4 Forecasting using Simple Exponential Smoothing

Year	Turnover	SES	error	e2	e	e %
2008	237,952,080					
2009	275,099,148	237,952,080	37,147,068	1,379,904,660,996,620	37,147,068	13.50%
2010	310,620,187	245,381,494	65,238,693	4,256,087,116,539,200	65,238,693	21.00%
2011	332,487,000	258,429,232	74,057,768	5,484,552,959,669,470	74,057,768	22.27%
2012	368,847,000	273,240,786	95,606,214	9,140,548,189,067,180	95,606,214	25.92%
2013	442,740,000	292,362,029	150,377,971	22,613,534,264,574,500	150,377,971	33.97%
2014	457,817,000	322,437,623	135,379,377	18,327,575,736,576,000	135,379,377	29.57%
2015	494,833,000	349,513,498	145,319,502	21,117,757,562,162,000	145,319,502	29.37%
2016	535,167,000	378,577,399	156,589,601	24,520,303,243,588,900	156,589,601	29.26%
2017	602,691,000	409,895,319	192,795,681	37,170,174,635,848,700	192,795,681	31.99%
2018	704,839,000	448,454,455	256,384,545	65,733,034,837,404,900	256,384,545	36.37%

Table 5 Evaluating Forecast Accuracy in/out of sample

Error Metrics Summary	in sample	out of sample
mean error (ME)	100,446,656	224,590,113
mean squared error (MSE)	11,759,994,355,655,000	51,451,604,736,626,800
mean absolute error (MAE)	100,446,656	224,590,113
root mean squared error (RMSE)	108,443,508	226,829,462
mean absolute percentage error (MAPE)	25.09%	34.18%

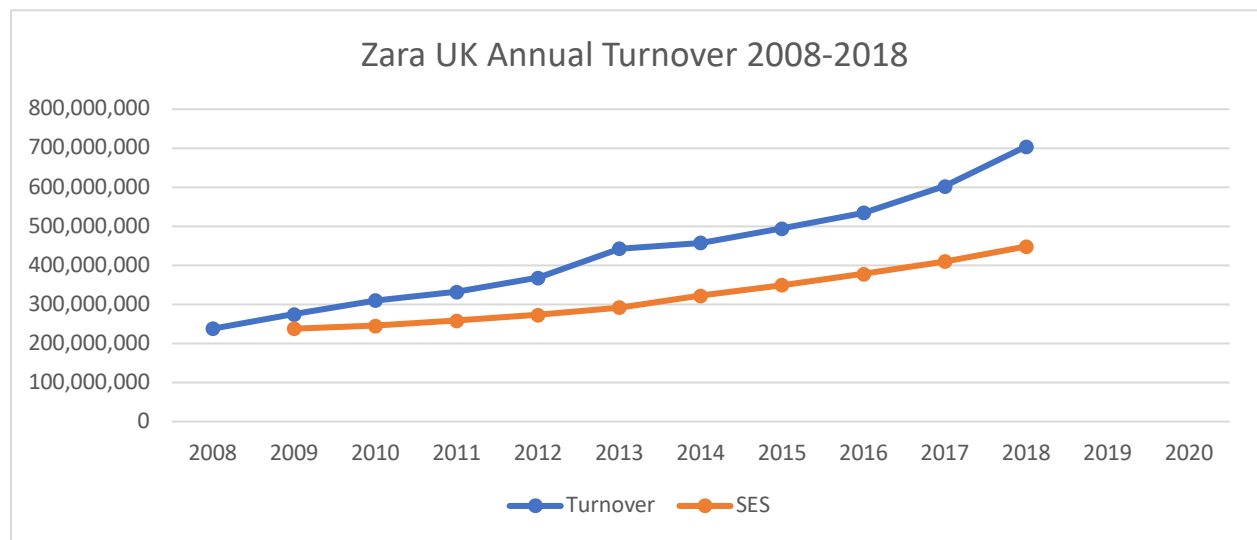


Figure 5 Zara UK Annual Turnover 2008-2018 (SES)