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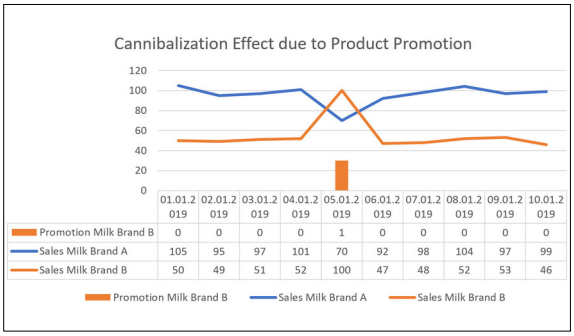
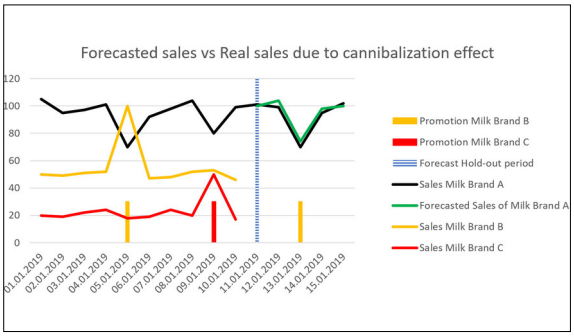
Subject Area	Innovation in Products, Processes and Materials - Business Engineering and Productions

Researching the cannibalization effects in the retail industry



	01.01.2019	02.01.2019	03.01.2019	04.01.2019	05.01.2019	06.01.2019	07.01.2019	08.01.2019	09.01.2019	10.01.2019
Promotion Milk Brand B	0	0	0	0	1	0	0	0	0	0
Sales Milk Brand A	105	95	97	101	70	92	98	104	97	99
Sales Milk Brand B	50	49	51	52	100	47	48	52	53	46

Cannibalization Effect due to Product Promotion
Own presentment



Forecasted sales vs Real sales due to cannibalization effect
Own presentment

Company logo
Own presentment

Problem: Retail companies face the challenge of dealing with the cannibalization effect. The cannibalization effect is the decrease in sales of a product due to a promotion of another product, which serves the same purpose as the cannibalized product.

SAP, an international software company specializing in ERP, CRM and SCM solutions, aims to improve their sales-forecasting algorithm by considering cannibalization effects. This study aims to find out which products are cannibalizers for a given product.

Approach: For the research, a given set of real data from a food-retailer was used. Based on a literature review, three main methods were identified to determine the cannibalization candidates within this data:
1) For runtime purposes, an initial pre-filtering of products was conducted.

2) The pre-filtered products were then inserted into a transactional dataset as "unsold products". The transactional dataset was used to generate substitution rules between products.

3) From substitution rules, a list of cannibalization candidates was extracted for each product.

Once identified, the candidates were fed into an existing Sales Forecast Model to verify a reduced forecast error due to the consideration of the cannibalization effect.

Result: The thesis work attempts to establish a procedure and algorithm to determine the cannibalizers of a given product. The results indicate that cannibalization effects are mainly observable during promotional periods of and between fast moving products (i.e. products selling in high quantities). Fast moving products consist of 15%-20% of products within a category of products. It has been observed that during promotional periods of these products, they cannibalize other fast moving products which are heavily similar to each other.

Moreover, a forecast model has been observed to help predict when a product may cannibalize another product. This allows for promotions to be better planned and therefore to reduce unnecessary waste and financial losses.

The cannibalization effect needs to be considered in order quantities. Since retail companies order in bulk sizes and these orders are delivered with pallets, the order quantity must only be reduced if the decrease in sales of a product due to cannibalization is greater than the carry capacity of a single pallet.