

A METAMODEL FOR EVALUATING NEW KEY PERFORMANCE INDEXES ON TOP PRODUCTS SELLING IN RETAIL FASHION: METHODOLOGY AND CASE STUDY.

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Abstract. the concept of enterprise resource management, evolved in its larger extents of ECC and SOA, is nowadays very popular, and most of medium-large companies in the world have implemented an integrated information system to manage operations and data. One of the targets of such companies is to improve their performances in terms of revenues, costs, competitiveness on the market through the integration of such information systems. But for the retail-fashion companies (especially luxury brands) is not so easy to evaluate the earnings and savings deriving from such costly operations as implementing a new enterprise management system, because traditional literature of KPIs do not offer a very exhaustive cockpit of indexes for retail fashion to keep in control business and its development, mostly for evaluating typical fashion-related effects, such as seasonal products impact, must-have effects, special requirements from customers etc.

Based on a series of requests coming from some possible ERP customers in the fashion area, that are making a software selection, the Authors have created some models to evaluate and forecast specific retail-fashion effects, in order to be implemented in the ECC system and to be integrated with materials management and production planning applications.

1 Introduction

System integration projects are always complex and time consuming: many efforts can be wasted if the main targets and goals of the project are misunderstood. In the past this led to a mistrust of potential customers in effectiveness and opportunity of Enterprise Resource Management systems, and in System Integrators who had the difficult goal of leading enterprises to successful changes in Business Process Reorganization and Re-engineering without consuming excessive time and money.

In this framework, anyway, the main problem has been revealed to be the uncertainty of priorities, targets and goals of enterprises themselves, which changed their plans during the project development in order to include factors never considered before, or in some cases, for an error in initial evaluation of priorities.

For this reason, also in system integration projects, has now become very popular the use of Key Performance Indexes (KPIs): with them it is possible in an easy and quick way to determine the effectiveness of a proposed solution. The 7 basic rules to define an effective KPI are in fact:

- Reflect Company's goals
- Be decided and supported by management
- Be linked to a context
- Be able to impact on all organization levels
- Be based on reliable/certified data
- Be "easy-to-understand"
- Be linked to a subsequent action

2 KPI In Retail

A very significant definition of Performance measurement is "Quantifying the efficiency and effectiveness of an action" (Neely, 1995). Obviously KPIs have been applied first in some fields that are not merely strategic, but mostly tangible for top management: finance, controlling return of investments and so on, then the second step was the creation of tools able to maintain in control these parameters, such as business intelligence systems and cockpits.

The most recent need, due to the economical conjuncture that is now beginning to affect negatively also profits of retail, is to extend the concept of KPIs also to performances of marketing and merchandising actions related to customer behaviour: a good or wrong choice in assortment planning could lead to significant differences in profits, and especially in fashion and luxury goods, where raw materials and transformation operations have a significant cost, it is very important to plan carefully what to sell in shops and in which moment.

Some researches made by the authors in the past for food retail showed that in over 80% of the cases, customers do not substitute a quality brand product with another, if the first is missing. They simply do not buy. But if the

product has a very high cost, it is also important not to have overstock: unsold products create immobilization, decrease rotation indexes of warehouses, depreciate rapidly.

For this reason, some important players in the retail fashion, already in the phase of software selection, ask the system integrators if the ERP that they are proposing offers the possibilities of defining some specific performance indexes, that were not present in traditional KPI literature.

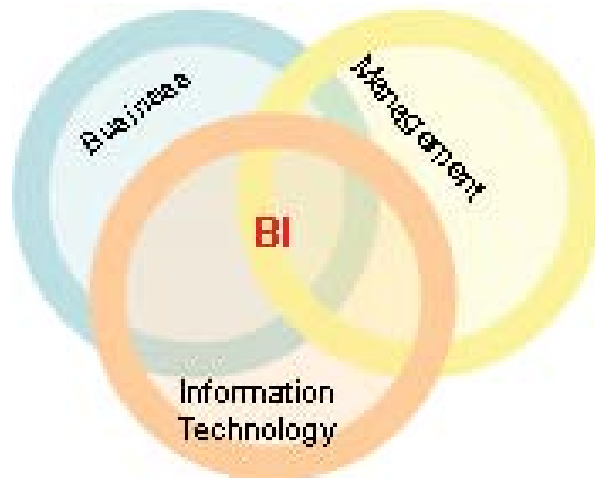


Figure 1. the strategic position of Business Intelligence.

2.1 The Search for Innovation

Due to the fact that the Authors operate in this field since long time, they tried to get together experience and efforts in order to define such KPIs. The first phase was a survey on the state of the art of KPIs and Retail Management.

At the moment the most used indexes in retail fashion are Trend on Returns, Top Products by Returns, Top Stores by Returning Customers Portlets, with metrics such as Number of Customers, Number of Repeat Customers, Advertising Effectiveness, Loyalty Rates, Revenue per Customer, Gross Margin, Returns per Customer.

The common opinion is nowadays that all the indicators should be detailed for point of sales area/cluster, or in some cases referred to number of employees or surface of the shop (such as to calculate direct and indirect costs).

But this was not enough for the aims of the fashion players nowadays, so the Authors tried to define something ad-hoc.

2.2 The Search for Innovation

In Retail is very important to understand that the concept of Supply Chain is to be upgraded with the concept of EXTENDED ENTERPRISE (EE), that means higher integration than in traditional supply chain.

For this reason, some of the fashion players asked for specific problem-solving, based on the experience they had in management of good flows and logistics, in customer relationships and expectation satisfaction, and in marketing solutions return of investments. This could affect also the software selection from its beginning.

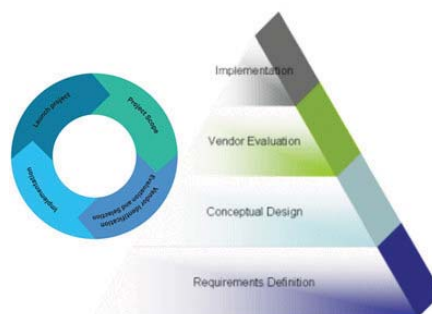


Figure 2. phases of the software selection process.

The problems to be solved have been identified by the Authors, based on Subject Matter Experts requests, as follows:

1. Depreciation of goods and stocks: does it lead to possible additional selling?
2. Success of particular items: is it worth-while to transform some seasonal best-sellers in continuative items?

To answer correctly these questions, it is necessary to abandon subjective and qualitative considerations, and, if possible, to define some scientific, quantitative metrics.

2.3 Depreciation and Selling: the “Depreciation-Motivation”

Due to the economical conjuncture, not so plenty, many customers are discouraged to buy fashion products even if considered status symbol, best quality, trendy etc. but the depreciation due to obsolescence and necessity to change seasonal collections in shops - traduced in discounts - leads to an increase of selling.

Obviously depreciation percentage should anyway be profitable, but being in many cases variable in function of obsolescence, it could be possible to define a break-even point between the most convenient depreciation value for obtaining more selling, and so more profit.

Many theories have been formulated on how to calculate break-even and depreciation scaling in function of time and obsolescence of products, and each fashion player has its own rules and policies, but not to measure the effect of those actions.

To measure such effect, it should be useful to compare selling of a particular item code in the normal period and during sales time, defining a ratio.

Defining a ratio.

$$(1) Dm = \frac{\sum_{j=1}^m P_{1j} + \sum_{l=1}^q P_{2l} + \dots + \sum_{w=1}^u P_{Kw}}{\sum_{i=1}^n N_i}$$

Where:

$$(2) \sum_{j=1}^m P_{1j}$$

Represents the sum of sales made from day 1 to day m with the Promotion 1 (discount type 1)

$$(3) \sum_{w=1}^u P_{Kw}$$

Represents the sum of sales made from day 1 to day u with the Promotion K (discount type K)

$$(4) \sum_{i=1}^n N_i$$

Represents the sum of sales made from day 1 to day n, when the product had no discounts (normal sales)

To obtain the effectiveness of each discount percentage, it is possible to disaggregate the sums, even if in this case the results should be weighted by the remaining items at the beginning of the period: stock decreases during promotional actions, and at the end the most hard discounts are made when a very few items remains.

The indexes should in this case be referred to time and residual assortment of size / colour of the item in order to avoid errors of evaluation. It could be useful to consider each combination of size and colour as a different item, in order to evaluate more precisely the effect of the action: i.e. a black, medium size shirt of model XY is commonly more easily sold, even at full price, than a acid green extra-small size shirt of the same model XY: this should not be forgot, because in Authors experience, scarce evaluation of such phenomenon lead in problems of mixed packaging management in supermarket retail.

2.4 The “Highlander” Must-Have Effect

With this picturesque but effective expression, the Authors mean to identify the psychological behaviour of such customers that must have the limited-edition items most celebrated by marketing. It is very easy that no one can remain in shops in a very few time, let’s think about the phenomenon of some very famous, low cost, coloured plastic Swiss watches that more than 15 years ago became a really “cult object”.

In this case the Authors analyze the possibility of having one or more items that should last just one season, but that are so appreciated and successful to become must-have bestsellers and to become a continuative product.

It is necessary to evaluate if the above mentioned operation is worth-while or not. And this is not so easy.

The success of an item in fact should be determined by measurable factors (such as the quality/price ratio) but also by non-tangible effects (i.e. advertisement, innovation, trendiness, VIPs wearing publicly the item etc.)

The proposal is: as long as it's possible to depurate the selling from subjective data (applying for instance correction factors given by subject matter experts), the KPI is a profit figure actualised, given by the trend on request applied to revenues, minus the costs for item production (considering scaling factors in acquiring lots of raw material).

$$\begin{aligned}
 Y_i &= (\beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \dots + \beta_p X_{ip} + \varepsilon_i) - \\
 & (C_0 + N_1 C_1 + N_2 C_2 + \dots + N_k C_k) \\
 (5) \quad & i = 1, \dots, n
 \end{aligned}$$

Where:

$$(6) \quad (\beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \dots + \beta_p X_{ip} + \varepsilon_i)$$

Is the regression to determine trend factors and

$$(7) \quad (C_0 + N_1 C_1 + N_2 C_2 + \dots + N_k C_k)$$

Is the computation of costs.

In this case it's not merely an application of break-even theories to merchandise and assortment planning, because the determination of beta factors is affected by the necessity of depuration from all subjective data, question that is still under investigation with subject matter experts..

3 Conclusions and Future Work

Even if many tools and solutions propose now KPIs for MAP, the majority of them does not integrate the information in an "extended enterprise" context: the 7° rule of KPIs is unattended because no action is consequent to them.

Last year, the annual convention of USA National Retail Federation (NRF) in New York, made an interesting digression from traditional supply chain management topics, to focalise on the possibility of giving to customers something more, in order to understand trends and needs:

1. *"experience" the item in the most realistic way as possible*
2. *Give suggestions and indications for future trends and needs*

In this framework is located the research of the Authors for new KPIs to answer retail fashion problems and needs: future research will be devoted to determine quantitatively the most subjective effects influencing proposed KPIs, and to the practical application of such theories in a system integration project for at least one of the fashion players that stimulated the research itself.

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