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mEI (Evolution Index-mature products) - Redefined for Pharmaceutical Business Analytics

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ABSTRACT: The need for market assessment techniques and tools to analyse the product sales is increasing every day. Patents, along with gold standard therapies, play a critical role in the pharmaceutical industry in determining product sales. However, once genericized, the existence of multiple products for same molecule is a situation unique to the pharmaceutical industry.

With the growing need for new methods of evaluations for mature products (Products with generic competition), the Evolution Index which is used to determine the performance of the product needs to be redefined and customised. Extrinsic factors like market dynamics influence company profitability and hence there is need for a heuristic approach to evaluate its performance. Considering the effect of competition on product performance in relation to market factors provides an optimized indicator to design an effective strategy.

The newly constructed formula eliminates bias by incorporating molecule level growth and its influence on the overall portfolio of a company, especially for mature products.

The new evolution index "*m*EI" serves the realistic picture of current market scenario and enables the companies to take a better decision based on existing competition.

KEYWORDS: mEI, Evolution Index-mature products, Pharmaceutical Business Analytics.

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1 INTRODUCTION

In the current era of genericization, product performance is no longer dependent on a single variable but is a multi-factorial outcome. The performance is affected by competition, molecule and market. Various studies have proved the positive relationship between market share and profitability (1). Product performance is measured through simple parameters like sales, growth and share. These parameters are of less importance in the absence of a reference scale for comparison.The conventional evolution index considers only product performance in the market. As a result, the link between market and molecule is ignored

Applying exploratory approach in developing novel strategies and updated metrics has redefined the existing evolution index. This provides a comparative view for product performance which is a measure of the growth of a product with reference to its market.

$$\textit{Evolution Index (EI)} = \frac{\textit{(1+ Product Growth rate)}}{\textit{(1+ Market Growth rate)}}$$

EI below 100 indicates product performance is less than market performance
EI above 100 indicates product performance is better than market performance

The presence of multiple manufacturers is a crucial factor influencing market share and product growth. Before the patent expiry, product performance is a factor of only the product and its market performance. However, following patent expiry, multiple generics for the same molecule will be available. These products also have impact on brand, molecule and market performance. This factor was not considered in the conventional EI. Hence this cannot be universalized in applicability.

The persistence of recurring differences in rates of return often negates the micro-economic theory (2). Hence, the need for a holistic measure of profitability to determine a company's position in the market requires a reframing of the existing methodology to generate a novel evolution index.

2 METHODOLOGY

Various permutations and combinations, using key parameters like product growth, molecule growth, and market growth were evaluated and the best-fit equation was identified using multiple simulations as given below:

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KEY FEATURES OF THE NEW *M*EI:

- The restructured formula for evolution index perfectly suits the pharmaceutical industry
- This can be widely applied to analyse the impact of generic competition among molecules
- The calculations are more experiential and hence reflects ground reality

Various permutations and combinations, using key parameters like product growth, molecule growth, and market growth were evaluated and the best-fit equation was identified using multiple simulations as given below:

1 $$\text{Evolution Index (EI)} = \frac{(1+\text{Absolute Product Growth rate})}{(1+\text{Market Growth rate})} \times 100$$

Absolute growth = Product growth – molecule growth rate

2 $$\text{Evolution Index (EI)} = \frac{(1+\text{Relative Product Growth})}{(1+\text{Market Growth rate})} \times 100$$

Relative growth = Product growth/molecule growth rate

3 $$\text{Evolution Index (EI)} = \frac{\{((1+\text{Product GR})/(1+\text{Molecule GR}) \times 100) + ((1+\text{Molecule GR})/(1+\text{Class GR}) \times 100)\}}{2}$$

4 $$\text{Evolution Index (EI)} = \frac{\{((1+\text{Product GR})/(1+\text{Molecule GR}) \times 100) + ((1+\text{Product GR})/(1+\text{Class GR}) \times 100)\}}{2}$$

3 CASE STUDY

Illustrated below are the two possible cases for a product in terms of its performance compared to its molecule and market (or class). Applying the above equations to analyze these cases, the best fit equation can be derived.

Case 1

Category	Product	Molecule	Class
Growth rate	4%	4%	4%

No	Equation type	EI
1	EI using absolute product growth	96
2	EI using relative product growth	192
3	Factor of EI for product with molecule and EI for molecule with market (or class)	100
4	Factor of EI for product with molecule and EI for product with market (or class)	100

In this case, the product, molecule and market are having the same growth therefore EI should be 100. Formulas 1 and 2 are eliminated with this condition.

Case 2

Category	Product	Molecule	Class
Growth rate	4%	8%	4%

No	Equation type	EI
1	EI using absolute product growth	92
2	EI using relative product growth	144
3	Factor of EI for product with molecule and EI for molecule with market (or class)	100
4	Factor of EI for product with molecule and EI for product with market (or class)	98

In this case, product growth is less than molecule growth, while it is on-par with market growth rate. Therefore, EI should be less than 100. Formula 3 is also eliminated using this criterion.

From the data analyses and interpretation studies, the best fit formula is:

$$\textit{Evolution Index (EI)} = \frac{\{((1+\text{Product GR})/(1+\text{Molecule GR}) \times 100) + ((1+\text{Product GR})/(1+\text{Class GR}) \times 100)\}}{2}$$

From the above, it is evident that the best fit formula should encompass all the three parameters viz. product, molecule and market to find the relative position of a company in terms of growth compared to its competitors.

3.1 EVALUATION OF THE NEWLY CONSTRUCTED FORMULA:

Below are hypothetical scenarios designed to evaluate the existing formula in comparison to the newly developed *m*EI. We have Product X, Simvastatin, over all statins market, and conjectural values:

Scenario 1

Category	5Y CAGR	Conventional EI	*m*EI
Product X	15%	100	105
Simvastatin	10%		
Statins	15%		

Product X' growth is greater than the molecule (includes competing generics) and equal to the market. Using the conventional method, EI will be 100 indicating the product performance is equal to market.
*However, m*EI *measures at 105, indicating the performance is better than competition and market.*

Scenario 2

Category	5Y CAGR	Conventional EI	*m*EI
Product X	-5%	86	99
Simvastatin	-15%		
Statins	10%		

In this scenario, Product X' growth is less than the statins market but better than other products of the same molecule.
Conventional EI is 86, indicating the Product X performance is low compared to market. In this context, Product X is on a declining trend and its growth is above that of the molecule (including the competition).
The mEI measures at 99, indicates although Product X is performing better than the competition, its performance is low compared to its market

Scenario 3

Category	5Y CAGR	Conventional EI	*m*EI
Product X	15%	105	102
Simvastatin	15%		
Statins	10%		

In this scenario, Product X' growth is greater than the market but it is on par with its competition. Conventional EI is 105 indicating Product X is performing better than the market.
However, mEI measures at 102 indicating Product X is performing better than the market and also on par with its competitors

4 SALIENT FEATURES OF MEI

The conventional evolution index stands informative only in the absence of competition for a product. This completely ignores the competition despite its existence thereby generating inconclusive results impacting the decisions.

The restructured formula for *m*EI perfectly suits the pharmaceutical industry which is currently facing intense generic competition among major molecules.

This multifaceted approach gives a clearer picture of a product's performance and its position compared with competition and its market.

5 FUTURE RESEARCH

The formula can also be modified for future requirements by incorporating parameters like "competitive factors" which fall under tangible determinants.

This approach can additionally be utilized for evaluating a company's performance relative to the total market.

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