



CATEGORY MANAGEMENT: Artificial Intelligence Powered

Tools that make Category Management better.

AUTOMATING FIELD OPERATIONS TO INCREASE EACH
SHELVES PROFITABILITY AND SALES PER LINEAL FOOT



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INTRODUCTION

Without a strong merchandising strategy, manufacturers cannot have timely information of how their products are displayed on store shelves. The implications of the lack of visibility, not optimized displays or even out-of-stocks are directly related to the customer not finding all the products, thus buying from a competitor.

An optimal and timely display strategy execution can increase sales up to 12% and avoid a 6% of sales decrease that will go to your competitors.

Unfortunately, many manufacturers today still have manual or semi automatic, time-consuming processes for point of sale analytical data gathering that is generally under the responsibility of Field Sales teams. The consequence is that the Field Sales

personnel is tied up on information gathering activities that is critical for the Category Management teams but that limits their precious time that could be spent on new field visits.

- What if a typical 12 minute field visit could be **optimized for 5 minutes** while gathering the critical analytical data?
- What if you could have more KPIs on real time?
- What if you could define real time strategies that could beat your competitors by receiving notifications based on business rules?



The wonderful news are that new technologies enable Category Management deliver its strategic objective of maximizing sales and booting profits.



MARKET DRIVERS

Inventory Distortion at brick and mortar stores, which is a combination of Out-of-stocks by 56% and Overstocks by 44%, can drive consumers to shop online, and equates to \$1.1 Trillion worldwide (or 7.3% of Global Retail Sales)¹.

If a retailer does not have what a shopper is looking for, or the consumer does not find it easily, then she will find it with a competitor.

¹ Retail's Inventory Distortion Problem: Sizing it all up. IHL Whitepaper by Lee Holman and Greg Buzek.

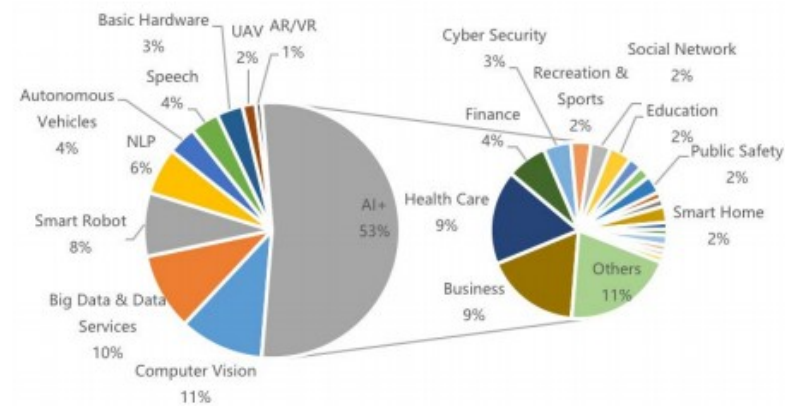
Generally the worldwide average out-of-stocks for retail is accepted on 8.2%, this translates to 1 product out of 13 in a shoppers basket; and this number has not varied in the last 22 years, even after Coca-Cola concluding that this was the awful truth and that targeting this problem would account for incremental sales gains. So, why has this incremental sale gain been clearly identified but not been achieved? It has nothing to do with not trying hard enough, huge investments in time, experience, projects and budgets have been assigned to solve this problem and to capture this huge and attractive "apparent" low hanging fruit.



New technologies have evolved both on hardware and in software, so what technology initially solved with DSD applications that introduced better controls for the Field Sales teams, but could not help achieve those Incremental Sales Gains, now can help solve that "awful truth" and not only bring in that 8.2% due to out-of-stocks, but also an additional 6.4% related to overstocks; a combined 14.6% of total Inventory Distortion.

Technology has made huge leaps on Artificial Intelligence (AI) committing between 2013 and 2018 11% the global AI investment for Computer Vision in accordance to a study from Gartner².

Fig. 5-1 Distribution of Numbers of Global AI Investment and Financing Projects (2013-2018 Q1)



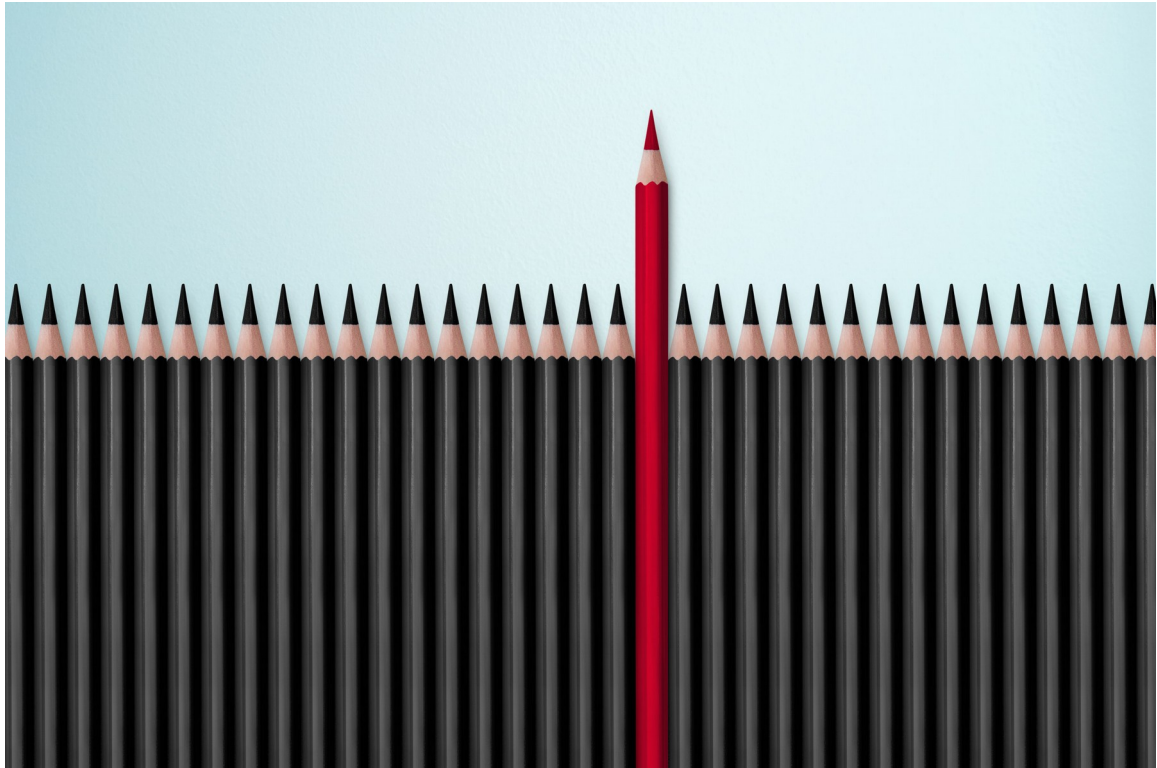
Source: CAICT (2018)

The same report it states that Intelligent retail (empowered by AI technology)

"drives the new market retail business ... optimizing resource allocation and efficiency across the entire industry chain from production to distribution to sales"

Global Intelligent Retail (GIR) is expected to grow from USD 13.07 billion in 2018 to USD 38.51 billion in 2023.

2 2018 World AI Industry Development Blue Book. Gartner. Research from CAICT.



PROBLEM: NO PLANOGRAM, 5 MAIN IMPLICATIONS

Planograms are schematic images of what your displays will look like on the point of sale, their objective is to help consumers find all the products of a single category, and its arrangement optimizes for profit, amount of sales or market share.

Studies show that the out-of-stock impact is costlier for products that have been promoted than non promoted products since the out-of-stock rates are higher on the promoted.

The size of the game is between \$7 and \$12 billion of sales at play in the supermarket industry, 25% of a retailer's loyal customer already shop at other stores.

In this research we will focus primarily on the effects of lack of Planogram compliance and out-of-stocks to the entire supply chain as related to the direct consumer response.

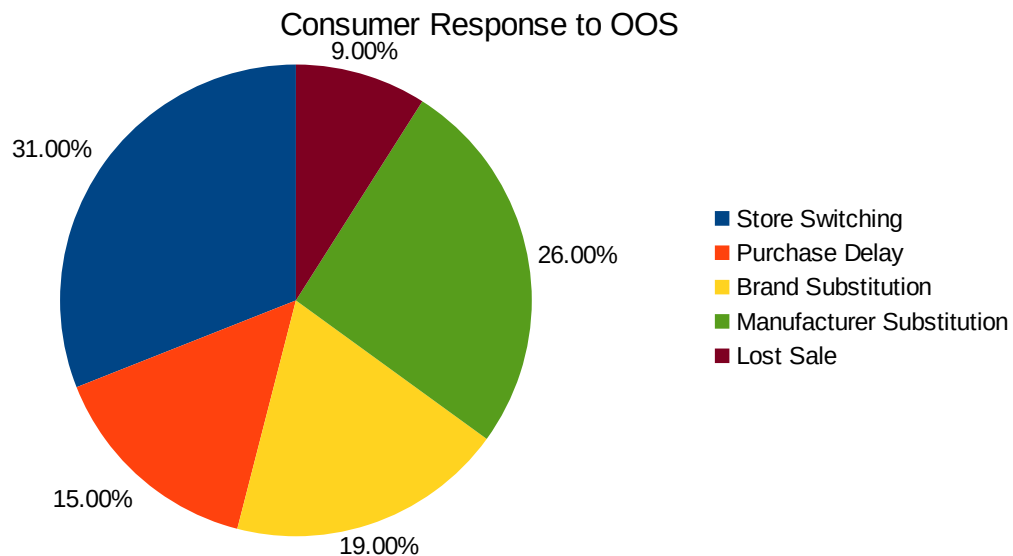
1. Store Switching

Consumers buy the item at another store. The psychological impact of repeated events affect the retailer chain after on average the third occurrence.

When shoppers permanently switch stores due to out-of-stock situations they will select a new preferred store that has lower out-of-stock levels, or lower out-of-stocks levels on items of greatest value. In summary, the store with a lower overall out-of-stocks level will lose fewer customers and gain customers from other stores.

2. Purchase Delay

Consumers delay the purchase but will buy later at the same store. The implications are larger inventory costs and larger dollar turnover.



3. Brand Substitution

Consumers substitute the brand for another one that belongs to the same manufacturer. This implies that the manufacturer's strategy for gaining greater market share, bigger profits or larger sales will be affected since the consumer will purchase the brands that are available on the shelves.

An additional impact for the manufacturer is that the promotional efforts for the unavailable brand will become useless for gaining profits, and can play against the manufacturer on the mind of the consumer that will have a negative idea regarding the availability of the product.

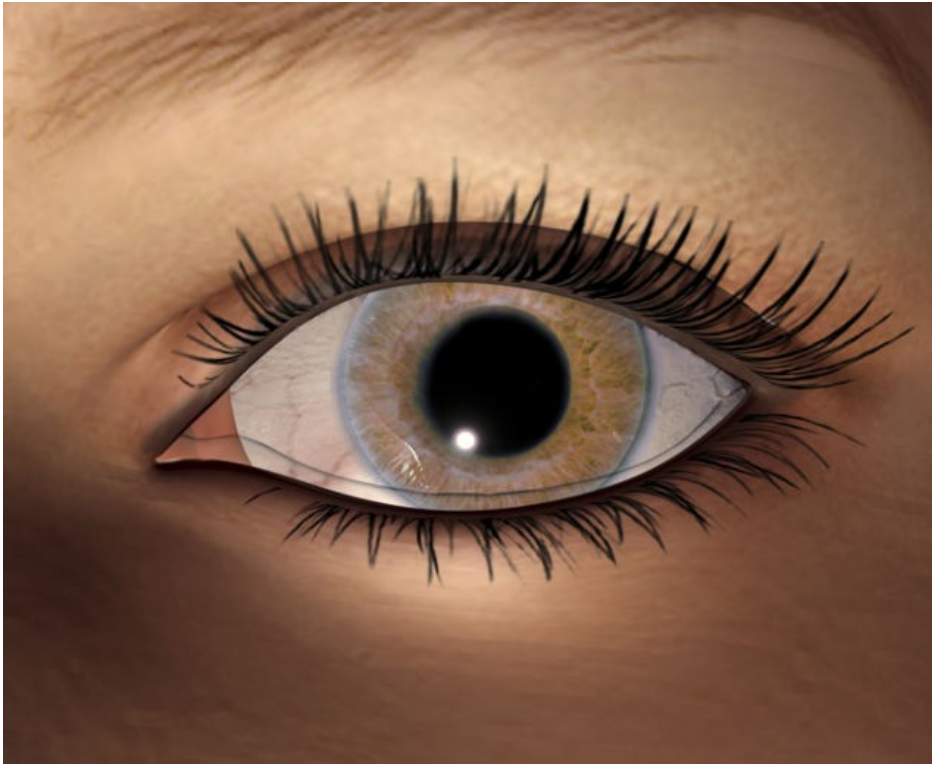
4. Manufacturer Substitution

Consumers switch to a competitor's brand within the category, not only for the immediate purchase but also future purchases. This negative implication can impact other brands of the same manufacturer.

5. Lost Sale

Consumers will not purchase the product and all the supply chain efforts are translated to zero.

There is a direct relation of about 0.01% change in out-of-stocks levels for every 1% change in planogram compliance, but this planogram compliance has to be constant through time in order to take effect.



THE ARTIFICIAL INTELLIGENCE SOLUTION

The relationship between product movement and sales performance have implications on forecasting, inventory (ordering and keeping backstock of fast moving items), and merchandising (allocation of shelf space to faster moving items).

The winner has to excel at the following

1. optimize on real time product ordering from warehouses,
2. optimize product forecasts from manufacturers,
3. and fill shelves with inventory already sitting in the store.

easy to say ... and easy to achieve if the correct tools are in place.

What is Artificial Intelligence

Artificial Intelligence (AI) is a branch of Computer Science that deals with the simulation of intelligent human behavior through computer software.

Such software is a flexible agent that perceives its environment, decides upon existing variables and decides upon a universe of possibilities which are the best actions that can maximize its success given a clear and measurable objective.

AI needs to be trained, all the training is stored in a format that is called *Artificial Intelligence Model (models)*.



What is Machine Vision

Machine Vision (Computer Vision) is an interdisciplinary scientific field that deals with how machines can be made to gain high-level understanding from digital images or videos.

The objective of Machine Vision is to enable automated identification, detection and interpretation of events, subjects of interest and generic situations that are depicted on digital images or videos.

Artificial Intelligence works best on task specialization, not on broad activities nor human like interpretation of situations. But since each of the three step solution we propose is a candidate for automation and is expected to maximize its specialization level, then AI is the best suit for each of them.

Gaining Incremental Sales

We suggest the next approach to Gain Incremental Sales

1. Optimize on real time product ordering from warehouses

Current applications and IT systems have evolved in order to perform inventory checks, given you provide the name of the item. So for a real time optimization on product ordering first you need to correctly identify the product, count the inventory, compare against the planogram, make a ordering decision and finally interact with current IT systems.

So first things first, you need an AI solution that identifies the product, count the inventory, compares against the planogram and can make an ordering decision based on your business rules.



2. Optimize product forecasts from manufacturers

Planograms are schematics that are designed based on strategies, that are conceived by analyzing data. But data generally comes in humongous or scarce quantities, so demand planning teams have to project data using statistical confidence levels. Usually these statistical analysis leave opportunity gaps at the aisle level, and by being able to analyze category and individual product performance against competitors and historical information will enable for customized optimizations.

The AI solution needs to take into account rolling week and month information so it can provide insights for just in time inventories in accordance to your business rules.

3. Fill shelves with inventory already sitting in the store

The easiest out-of-stock scenario is when the missing items in accordance to the planogram already exist in the store, the challenge is to detect this event and to act immediately.

The AI solution has to be able to identify planogram compliance within fractions of a second, with maximum accuracy and in front of the shelves, there is no time to send information to an external location because all the action takes place in the shelves.



SUMMARY: 5 ATTRIBUTES TO LOOK FOR

A complete *Intelligent Retail AI* must include the following

1. Greater than 90% accuracy in product identification.
2. Training of new product presentations has to be vendor-independent. You need to have full control when adding new products to the AI model. This will give you speed and will help you maximize your ROI.
3. Training of new product presentations has to be simple so that no technical background is needed in order to add new products to the AI model. This will

enable you to train the AI tool before the actual products are on the shelves, plus you can even include models for your competitors products.

4. All AI compute operations have to occur on site. When compute operations are executed on the cloud additional unnecessary challenges arise, such as
 - additional timing for identification,
 - less accuracy (since images need to be compressed due to communication challenges) that will translate in sub-optimal executions,
 - additional costs, you have already invested on your mobile field devices so there is no need to duplicate costs when processing can be done on your devices,
5. All analytical data has to be available to you. It's your data, not your software vendor data. Your Field Sales team is using the AI tool to generate valuable information that belongs only to you, having it and exploiting it is your business upper hand. Look for an AI software allows you to store all the data.



BRAINGINE: PLANOGRAM COMPLIANCE POWERED BY ARTIFICIAL INTELLIGENCE

Braingine is the Machine Vision Company, we understand the challenges that for 22+ years have prevented Manufacturers and Retailers to achieve gains that currently are lost to competitors.

You design your planogram based on your research, we help you achieve planogram compliance and while we do it we gather field analytical data that enables you to take better and real time decisions because you will have precise data of your product performance through time, regions, formats within the category ... and maybe most important, you can identify what your competitors are doing on the field.

This analytical data gathering takes less time than your current data gathering process, be it manual or semiautomatic.

Braingine complies with all 5 attributes of an Intelligent Retail AI software, with the added flexibility that your business requires.



1. Greater than 90% accuracy in product identification.
2. Training of new product presentations has to be vendor-independent.
3. Training of new product presentations has to be simple so that no technical background is needed in order to add new products to the AI model.
4. All AI compute operations have to occur on site.
5. All analytical data has to be available to you.

Multi Platform

Braingine runs on different devices and operating systems, so you do not get tied to a particular hardware vendor. You have already invested in current hardware and software for your Field Sales team, Braingine runs on Android, iOS, Windows, Linux and Unix.

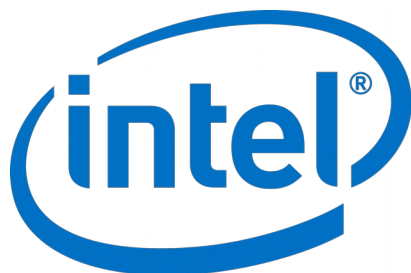
Intelligent Retail, powered by Intel

Braingine is powered by Intel that provides high performance at the edge, your consolidated data can be used with greater efficiency and value.

Intel® Internet of Things Solutions Alliance

Expertos en Sistemas is an Affiliate member of the Intel® Internet of Things Solutions Alliance, an ecosystem of more than 900 industry leaders. The Intel® IoT Solutions Alliance helps OEMs, ISVs, and service providers accelerate deployment of best-in-class solutions. The Alliance offers unique access to Intel technology, expertise, and go-to-market support, as well as opportunities to collaborate with Member companies from around the globe.

Learn more at: intel.com/iotsolutionsalliance



IoT Solutions
Alliance

Unlimited Planograms

Braingine enables you to have unlimited planograms, categories, regions and products. Other offers will try to limit the number of planograms and products you can configure, and you could end tied up with an additional recurrent and out of the budget cost related to professional services for new models, or increased subscription fees because of the limited number of possible configurations.

We understand that business is dynamic and requires the flexibility of unlimited configurations plus allowing you to easily train the Artificial Intelligence.



Mobile Application Integration

Timing is critical for each visit your Field Sales team executes, Braingine allows direct integration with your current mobile application, so that they do not have to switch between two or more Apps when during a visit.

Everything is in the same place, this optimizes time and reduces human errors.

About Braingine

To optimize your current Category Management process and have a better real time understanding of your shoppers visit www.braingine.app and Increment your Sales Gains today!