Competitors

Food Chain System

-    By Cornelius Lungu, www.freshfood-zero-waste.de -

A 9)   Who are your main competitors and why are you better?

FCS competitors can be found all over the world, so I just must compare them with some of the better-known ones. After several days of research on the internet, I am convinced that FCS is the solution of the future, with waste reduction at its core.

Firstly, the food trade must not harm the environment by creating waste. I remember in the late 1970s in Italy, after a gust of wind, seeing a real storm of plastic bags from a supermarket, flying like kites, the clearest image of a packaging cycle open to nature, characteristic of the manual system so widespread today. With FCS, this is practically impossible, because even the smallest piece of plastic film remains inside the Slave Cook, from where it is automatically returned by shuttle trolley to its emitter, the Fresh Food & Service Center, (FFC) the master unit of the FCS system. Here, without the influence of human hands, a closed circuit of automatic machines has been created that does not allow any waste to be emitted outside the FCS system.

Legislation is already in place to address this. However, it cannot be fully effective.

FCS fulfils the following conditions better than other distribution solutions

a) It does not produce food waste or its derivatives.

b) It produces no packaging waste, no microplastics, no pollution, no nutritional diseases.

c) It quickly covers most of the food's journey from production to your plate.

d) It does not just cook, but also does other household chores.

To support this statement, I will use Table 1, which shows the main characteristics of seven types of retail systems, some of which are quite similar. I quote them only to underline the above statement, which is supported by the four arguments (a-d).

The financial advantage of FCS, which is about 30% better than any other system, has already been mentioned.

But probably the greatest advantage will be the very complex one of environmental protection, for which I recall a provisional calculation of €8,650,000,000 per year in the European Union.

Note:

Except for FCS, all other systems buy and distribute packaged food, which they deliver to the consumer in this condition. Even HelloFresh uses them and uses containers.

Competitors often claim to have the trade "fully automated", just because there is no checkout. But as long as hands fill shelves and boxes, do the packaging and deliver sealed or wrapped food, mankind still has a long way to go.

The main shortcoming of all current manual or semi-automated retail systems is

that they interrupt the path from the producer to the consumer's plate with various non-essential operations, such as multiple portioning, packaging, freezing. Those are necessary, precisely, just because all their operations take too long and therefore would have a negative impact on freshness.

Additionally, multiple portioning, packaging and repackaging for manual cooking require new identification, which cannot be done economically by automatic machines. This is where the losses in individual households come from. Here is another of the advantages of FCS.

The FCS, by contrast, has the advantage of identifying the food that arrives at the FFC in accordance with hygiene standards and is no longer touched by a hand. After being portioned according to the customer's wishes, it goes directly to the customer's kitchen, where it is processed in a short time and without losses by simple mechanisms and is placed on the plate.

This eliminates the need for sensory identification, the most expensive and most delicate element of automation. The elimination of these intermediate steps is possible due to the double automation of FCS, which is in principle very simple and is affordable for the customer.

To provide a clearer picture of the complexity of the food market, especially from an environmental point of view, I have made in Table 1 a 'coloured' comparison between FCS and the most modern systems known around the world, which nevertheless have the limitations I have described so far. This comparison is made in eight columns, which are briefly described below, together with the characteristics that I consider relevant.

Table 1: (Page 3)

Green stands for Green Value, yellow is neutral … up to positive, light blue shows that these solutions are less suitable even if they are sometimes called advanced or modern, which does not imply that in everyday use they are economical and productive.

2

Table 1: Appreciation criteria table of retail systems

Name	FCS	Usual Super Market.	Amazon Go	REWE Pick&Go	Yandex fast delivery<15'	Yandex Robo-Carts	Alibaba
Extent of operation	Large (production to plate)	Medium	Medium-low	Medium-low	Medium-low	Medium-low	Medium
Food wastage	Minimal	Very high (33%	Medium	Medium	Medium	Medium	Medium
Oecological impact	Highly positive	Very high, negative	----------	----------	Low, positive	Low, positive	Low, positive
Multiple portioning*	No	Yes	Yes	Yes	Yes	Yes	Yes
Shelf life	No	Yes	Yes	Yes	Yes	Yes	Yes
Technical sophistication	medium	Low	Very high	Very high	medium	High	High
Operation costs, energy	Low (no salesroom)	Very high	High	High	medium	medium	medium
Local Carts	No	Yes, many	No	----------	No	Robo-Carts	Robo-Carts
Hand actions	Not needed	Yes, many	Usual	Usual	Low	Low	Low
Delivery methods	All suitable	Individual	Individual	Individual	Bike	Robo- carts	Robo-Carts
Delivery speed,	High (under 5 ' is possible)	Low	High	High	Very high	High	High
Delivery area (nr. clients)	High	High	Medium	----------	Low	Medium	High
Human implications	Low	Medium-low	Medium	High	Medium	Low	Low
Nutritional advantages	Positive	neutral	neutral	neutral	neutral	neutral	neutral
Medical implications	Possible, positive	No	No	No	No	No	No
Delivery store	No	Yes, large	Yes, medium	Yes, medium	Yes, small	Yes, medium	Yes, large
Meal variety	Very high	medium	medium	medium	Small	Medium	Large
Packagings	No	yes	yes	yes	yes	yes	yes
Observations	Game Changer	Usual	Too complex	Too complex	Positive	Complex	Complex
Actual State	Project	Quasi-monopolist	falling use Data-critical	Experimental	In use	In use, positive	In use, positive

Here is a brief description of the 7 types of distribution from Table 1, from manual to automated:
Today, automation, culminating in robotics, is present wherever there is mass production or mass distribution. Unfortunately, it has only marginally spread to the large-scale food trade. The environmental consequences of the manual trade (discarded food that decomposes, packaging waste) have not yet been properly addressed (**Column 3**).

Most of the world's food is sold in supermarkets **(column 3),** which are in a position of an absolute dominance where, despite appearances, consumers' needs are least met, and where consumers have to spend a lot of time and manual effort to get the food on their plates.
We all are aware of these problems, statistics are analyzing them. But most of the existing solutions for improvement, of which we list six versions, are differing just marginally. Almost all attempts at automation involve not much more than the mobile phone.

Except FCS, all other systems purchase and distribute packaged food via the "manual" system, which they deliver to the consumer as state of the art (Column 3)

Column 4 describes Amazon Go, the most perfect system for monitoring consumer movements, with dozens of cameras mounted in the ceiling.

Let's take a look at the "Amazon Go" system, which was originally planned to be implemented in thousands of stores, but the number has now reached only 44, of which eight had to be closed. All the advanced computing and monitoring technology couldn't cope, massive human intervention was needed, probably for price reasons from India with about 1.000 employees. With that all, due to respect to the performance of the system, may I ask whether 40 cashiers for Amazon GO stores are not cheaper than 1.000 proofreaders in India... The old "KISS" (Keep It Simple, S…..) principle seems to have been forgotten... . Please see how Amazon Go is presented by Wikipedia, (excerpts)

The alternatives in details

Amazon Go (column 4)

Website   amazon.com/go

From Wikipedia, the free encyclopedia

The first Amazon Go location, at Day 1 in Seattle

Company type	Subsidiary
Industry	• Retail • Convenience stores
Founded	December 2016; 7 years ago Seattle, Washington, U.S.
Number of locations	22 (2024[1])

Amazon Go is a chain of convenience stores in the United States and the United Kingdom, operated by the online retailer Amazon. **The stores are cashierless, thus partially automated**, with customers able to purchase products without being checked out by a cashier or using a self-checkout station.[2][3] As of 2023, there are 43 open and announced store locations in Seattle, Chicago, London and New York City.[1]

Amazon Go stores **were conceptualized and tested by a team of Amazon executives,** who constructed a 15,000-square-foot mock supermarket in a rented warehouse in Seattle, before revealing the work to Amazon founder Jeff Bezos in 2015.[1] The first store, located in the company's Day 1 building, opened to employees on December 5, 2016, and to the public on January 22, 2018. The flagship store sells products such as prepared foods, meal kits, limited groceries and liquor.[4] A larger variant, Amazon Go Grocery, opened in Seattle's Capitol Hill neighborhood on February 25, 2020. The following month Amazon began to offer its technology to other retailers so that their customers could make purchases without the involvement of cashiers or Amazon accounts.[5]

Technology and implementation

Amazon described *Go stores to have used several technologies, including computer vision, deep learning algorithms, and sensor fusion for the purchase, checkout, and payment steps associated with a retail transaction which was later revealed to be done remotely by a team of people in India.[6] The store concept is seen as a revolutionary model that relies on the prevalence of smartphones and geofencing technology to streamline the customer experience, as well as supply chain and inventory management.[7] However, public rollout of the Seattle Amazon Go prototype location was delayed due to issues with the sensors' ability to track multiple users or objects*

within the store,[8] such as when children move items to other shelves or when multiple customers have a similar *body habitus*.[9]

The Amazon Go app for iOS and Android links to their Amazon account and is the primary method of paying for items at the store, alongside cash at certain locations. The app is required to enter the store, which has turnstiles that scan a QR code generated on the app.[10][11] The app allows users to add others to their Amazon account, so a family's purchases can be charged to the same bill.[12] The ceiling of the store has multiple cameras and store shelves have weight sensors, to detect which item(s) a customer took.[13] If a customer takes an item off the shelf, it will be added to the customer's virtual cart. Similarly, if a customer places an item back on the shelf, it is removed from the customer's virtual cart.

Stores   Interior of the first Amazon Go Grocery store in Seattle

Business Insider reported that they had seen internal Amazon documents detailing plans to open as many as 2,000 stores over the next ten years.[26] This was refuted by an Amazon spokesman, who insisted the company was still learning.[27][28]

In May 2018, *The Seattle Times* reported that Amazon was planning to open Amazon Go stores in Chicago and San Francisco;[35] and in September, it was confirmed that the company planned to open a store in New York City.[36] In September 2018, Amazon Go opened its first location outside of Seattle at the company's offices in the Chicago Loop.[37] That same month, *Bloomberg News* reported Amazon was considering plans to open as many as 3,000 Amazon Go locations across the US by 2021.[38]

An Amazon Go location was opened in San Francisco on October 23, 2018, at 98 Post Street.[39]

In response to potential discrimination against low-income people, San Francisco, Philadelphia, and New Jersey have passed legislation banning cashless stores and retailers.[40] A new Amazon Go store in New York City opened on May 7, 2019, with cash acceptance in response to previous criticism over the use of app-only purchases and its effects on the poor.[41] In response to the legislation, stores in San Francisco also accept cash, with an attendant at the front letting in and checking out customers if they do not have the app.[11]

On February 25, 2020, Amazon opened the first Amazon Go Grocery store in Seattle's Capitol Hill neighborhood. The Go Grocery store is significantly larger than other Go stores, at 10,400 ft² (970 m²), and offers 5,000 items, including fresh produce and baked goods.[42][43] A second Go Grocery location opened in September 2020 in the Overlake neighborhood of Redmond, Washington.[44][45]

In 2023, Amazon announced it would close eight Amazon Go stores in Seattle, New York City and San Francisco.[46]   On April 4, 2024, it was revealed that Amazon's "Just Walk Out" technology was supported by **1,000 Indian workers who manually reviewed transactions**. Despite claims of being fully automated through computer vision, a significant portion of transactions required this manual verification. Additionally, Amazon announced plans to replace the "Just Walk Out" technology with Dash Carts in Amazon Fresh stores, aiming to enhance customer experience.

REWE (Column 5)

Technically, the new REWE Pick&Go experimental stores are not very far from the Amazon Go solutions, here are some excerpts about them:

TEL AVIV, Israel & MUNICH--(BUSINESS WIRE)

Trigo, an Israel-based computer vision company that builds systems for autonomous checkout and retail analytics, has rolled out Germany's first fully-autonomous cashierless supermarket in partnership with German grocery giant REWE Group.

"REWE's new Pick&Go store in Munich is a major milestone in our mission to make frictionless shopping available to everyone, everywhere. REWE have placed their trust in Trigo's privacy-by-design architecture, and we look forward to bring this exciting technology to German grocery shoppers."

The new "Pick&Go" supermarket in the Bavarian capital Munich allows customers to walk in, select their items off the shelves, and leave without having to pay at checkout. Unlike self-checkout devices such as stationary or mobile scanners and digital carts, Pick&Go shoppers only scan once on their phones when they enter the store. When they leave they get the receipt automatically.

Trigo's computer vision algorithms --running off data produced by ceiling-mounted cameras and shelf sensors-- create a 3D "digital twin" of the store. The system logs shoppers' movements inside the store and correlates that with data on items they pick from the shelves. The algorithms can also be used to monitor inventory levels in real time and detect items that have been misplaced or stolen.

The German grocery giant, which operates over 3,700 stores in Germany, has already successfully trialed and opened two Trigo-powered "Pick&Go" grocery stores, first in Cologne and then Berlin. Whereas in those stores shoppers can also use conventional checkout if they wish, the Munich store is fully cashierless, making it Germany's first fully automated supermarket.

Michael Gabay, Trigo co-founder and CEO said: "REWE's new Pick&Go store in Munich is a major milestone in our mission to make frictionless shopping available to everyone, everywhere. REWE have placed their trust in Trigo's privacy-by-design architecture, and we look forward to bringing this exciting technology to German grocery shoppers."

Furthermore, customers in the Munich store can pay for their purchases via Paypal, Google Pay, Apple Pay or credit card. The system does not use facial recognition or any other biometric features and complies with Germany's strict data protection rules. "The first fully autonomous REWE store marks the beginning of the second test phase of REWE Pick&Go, the company's innovation project. The two hybrid test markets have shown that autonomous shopping with REWE Pick&Go is an exciting, convenient, and time-saving alternative to traditional shopping," said Peter Maly, Managing Director.

Despite being fully automated, REWE's Munich Pick&Go store **will retain its full complement of 11 staff members,** who are tasked with answering customers' questions and guiding them through the experience, restocking shelves, approving age-limited items, and other customer-facing activities.

Yandex (Column 6)

The Yandex support points in Moscow offer an interesting experience with a rather narrow range of goods, mostly those that customers want to receive quickly in case of need, with a maximum delivery time of 15 minutes. The customer places an order by phone or smartphone, and the desired goods are delivered by a bicycle courier in no time.

Yandex (Column 7)

Yandex also offers delivery services for goods purchased in certain supermarkets using special battery-operated autonomous delivery vehicles ordered via smartphone. They have been operating for a long time in Moscow and several other large Russian cities, serving the population right to their doorsteps even during the harsh winters in these areas.

Alibaba Column 8)

Does Alibaba use robots? The use of robots in Alibaba's warehouses allows the company to process orders more quickly and accurately, reducing the need for manual labor. It also allows Alibaba to more easily scale its operations and respond to changing demand. However, the use of robots in warehouses is not without controversy.

Summary:

Column 2) FCS of the table looks very green and covers **the complete path** from wholesale to the plate. The last six columns show the current progress in different parts of the world. In my opinion this cannot be transferred to less developed countries nor outside urban areas. And, unlike FCS's "...complete path", they only punctually cover sales improvements.

If you want to have a picture of the likely future in China or of future supermarkets (called "Grandes surfaces" in France - champions of wasted space and energy), you can open this link:
https://www.zhsunyco.com/overview-of-automated-future-supermarket/ (Reimagine Shopping: A Look at Automated Future Supermarkets).
Unfortunately, in these visions of the future, there is no reference to their side effects, the waste of food and the increase of its very hurtful effects.

Important note: We have already mentioned that the FCS system can serve thousands of local customers every day, each of them with the portions they have ordered. Thousands of different portions can therefore be produced, individually cooked at the required time. Previously, this could only be achieved with thousands of cooks, a huge time commitment, or now with thousands of slave cooks. These are affordable 'pick, cook & place' mechanisms that will replace the kitchen appliances of the past. Existing individual cooking machines, a real rarity, cannot even be considered with their astronomical prices and too slow production cycles of tens of minutes. In conclusion, only the specific structure of the FCS, with its high-productivity master machines (cycle per portion of a few seconds, working perfectly but simply with many slave cooks), offers sufficient productivity to replace the cumbersome manual system, which has been proven all over the world to cause huge losses.

Detailed explanations of the FCS technology are available on request.

In this context, it is necessary to warn against the wrong directions that have been taken in the last decade*s* to solve minor problems caused by the "manual" sales system.
We see that the so-called "total automation" is nothing more than the introduction of incremental one-time improvements with large investments in the sales system, whose nature and main drawbacks (food waste, discarded packaging) are not reduced, and whose economic effects, if we can identify them, are marginal and achieved with disproportionate investments.
The wrong solution is to try to improve them with overly sophisticated technical methods that seem abstruse compared to the possibilities of the simple FCS method.
(… which, I agree, needs a turnaround in thinking and needs a turnaround for existing structures and in the personal behavior of the customers. But they will go with it, because it's helpful.)

Example: Let's take two cases: the questionable "success" of Amazon Go stores, as described above, and the great success of frozen pizza. These two very different examples still use packaging that no one eats but serves to increase sales at the expense of the consumer and the environment.

We assume that all consumers want fresh, tasty food on their plates without having the hassle. Despite the success of frozen pizzas in supermarkets (industrial pizzas), I for one prefer a pizza made fresh on the spot by a skilled pizzaiolo.
The industry has successfully transformed this art into a simple and effective industrial process with high productivity, automatically sprinkling the necessary ingredients on the dough and topping it.
To see how Oetker produces 1.5 million pizzas a day, visit: https://www.youtube.com/watch?v=caTnXs29X2U

With a similar, smaller and simpler machine costing less than100.000 €, pizzas can also be produced automatically.
(https://www.youtube.com/watch?v=rajNU2geIs0   "Pizzamatic Single Lane Pizza Line").

Alibaba sells 8.650 $ - automats that can deliver
different pizzas made ad hoc in about 2 minutes.
https://www.alibaba.com/product-detail/cheese-pizza-machines-automatic-fast-pizza_1600759832169.html?spm=a2700.galleryof
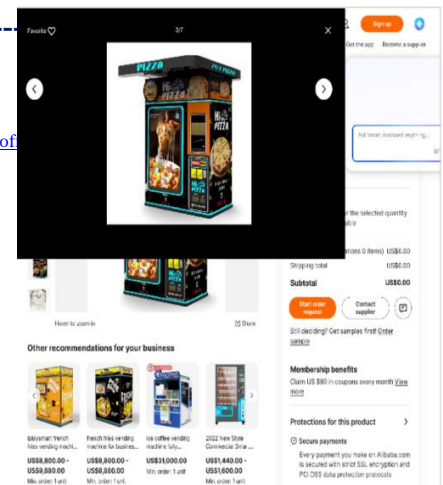
cheese pizza machines automatic fast pizza making machine
industrial price indoor pizza vending machine fully automatic
Most popular in Pizza Machine 1-9 units US$ 8,650.00
Baking time 1 min.
Guangzhou IPLAYSMART Network Technology Co., Ltd.
Custom manufacturer 5 yrs. CN

These are good examples of the appreciation of technology and the praise of productive simplicity.
We can speak here of a great industrial-commercial success with a relatively low degree of automation,
while frozen "industrial" pizzas are sold by a manual system with a great waste of food and packaging. The FCS system avoids this waste; it is simple, cost effective and environmentally friendly.