INDIAN LUNCHBOX SYSTEM: DELIVERED ON-TIME, EACH TIME

Overview

The Mumbai dabbawalas/tiffin model is the source of much fascination from around the world and I am no different. I have worked in Mumbai for two years and used the services of dabbawala to get my lunch box/dabba delivered from home to my office, which was about 44 miles away. Now, since I am studying Information systems, the fact fascinates me more that how without the use of any technology or digital resources this organizing system has been coordinating the delivery of home-cooked lunches to thousands of Indian office workers for over a century, charging just a small amount of $3-7 per month. The community of dabbawalas has been able to create value for its customers by optimizing and standardizing the principles of operations and devising an organizing system that is down to earth and human-centric.

What is being organized?

The **primary resources** in the dabbawala system are the lunch boxes/dabbas that are delivered at respective customer's offices and that are organized using a simple but flawless color coding system. The **secondary resource** is the workforce consisting of 5000-6000 people also known as dabbawalas who organize themselves and the supporting supply chain and logistics operations to deliver the dabbas at the right location and at the right time each day without failure. The dabbawala community, called as '*Mumbai Tiffin Box Suppliers Association (MTBSA)'* follows a flat organization structure, which makes it more interesting and successful as the motivation to perform consistently is a matter of personal drive and accountability.

Why is it being organized?

The primary reason people use the service of the dabbawalas is to eat a proper, home-prepared meal during lunch and a way to connect with their family while busy at work. These **interactions** supported by the dabbawala organizing system provides two significant benefits to the customers; one is managing budgets while eating healthy and second is leveraging time constraints. Most of the office-goers usually leave by 7 am to commute from suburbs of Mumbai and travel south to the main commercial area of Mumbai and return back home after 7 pm. The railway network during the peak hours is jam-packed with commuters hanging on the trains with one hand; therefore carrying one's lunch at that time is not feasible. Most of the commuters cannot afford to eat outside every day and eating on the roadside is unhealthy and unhygienic. In addition, catering to diverse

taste needs of employees related to food habits is very difficult to manage by office canteens. Thankfully, the dabbawala system solves all these problems with 100% customer satisfaction by delivering to each employee his lunch filled with food prepared at his home.
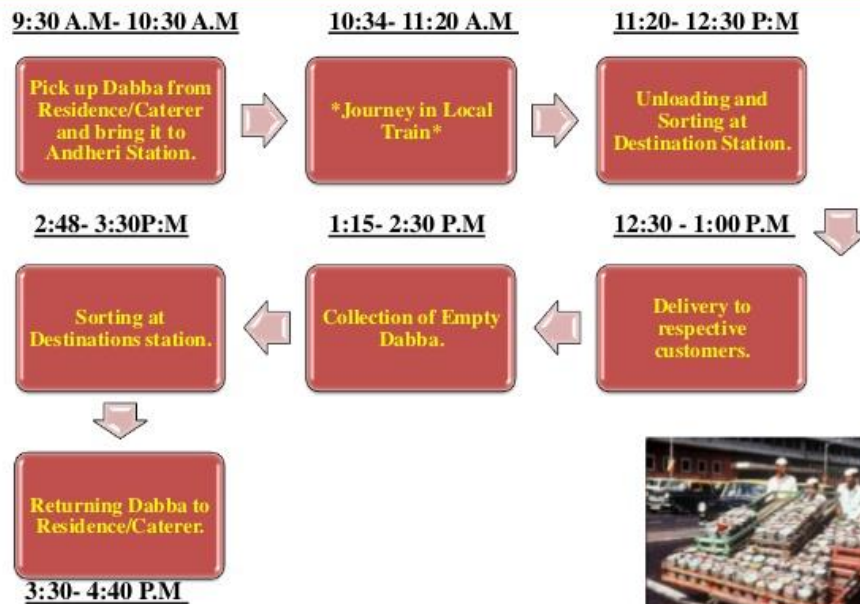
How much is it being organized?

The Mumbai lunch box system is a successful and a socially sustainable enterprise. The number of dabbas delivered per day to offices and back home is around 300,000, that means 600,000 transactions per day. Although the number of transactions is very large, each person handles a small subset of transactions at a time. **The scope of the organizing system and the scale of operations** pretty much remain consistent with the addition or deletion of few dabbas every month. Most interestingly, despite the lack of computers, mobile technology or any automated processes, a dabba goes astray only once every two months, making less than one mistake in every 6 million deliveries. Now that's efficiency! The system is able to achieve consistency in its operations because of successful implementation of some of the organizing principles. Firstly, containers used to house the lunch boxes are of same **standard shape and size**. Second, the color coding done on the dabbas incorporates high visual content and follows a **human-centric design approach**. Third, the sequence of transactions to deliver each dabba from its source to destination and back to source is **repeatable, predictable, systematic and iterative in nature**, enabling easy tracking and monitoring. Furthermore, **governance** within the community is achieved by instilling **ethics, values and principles** in employees and by holding employees accountable at all times.

When is it being organized?

The **interactions** between dabbawalas to deliver the dabbas follow a **'hub and spoke' process model**. During a dabba's journey from kitchen to consumer, it is handled by between three and twelve different deliverymen. The typical day for a dabbawala begins at 9:30 am and he spends about an hour to collect all the 25-30 dabbas from his pre-assigned set of homes in his designated area. The households are expected to have the lunch box ready when he goes for collection. When he is done with collection, he goes to the local train station and gathers with the other dabbawalas of his area. Next, the dabbas are sorted according to next train station and are handed off to the dabbawala who is responsible for that particular station for the delivery to final destination. At every departure station, the dabbas are shared out according to their next destinations. The same process is repeated when returning empty dabbas back to homes. The process model is shown below-

JOURNEY OF DABBAWALA

9:30 A.M- 10:30 A.M

Pick up Dabba from Residence/Caterer and bring it to Andheri Station.

10:34- 11:20 A.M

Journey in Local Train

11:20- 12:30 P:M

Unloading and Sorting at Destination Station.

2:48- 3:30P:M

Sorting at Destinations station.

1:15- 2:30 P.M

Collection of Empty Dabba.

12:30 - 1:00 P.M

Delivery to respective customers.

Returning Dabba to Residence/Caterer.

3:30- 4:40 P.M

How or by whom is it being organized?

The key to this successful lunchbox delivery management system is **color coding** done on dabbas. The dabbawalas use **simple design measures** such as '*signs', 'different colors', 'number's, 'dashes', 'dots', 'letters'* and simple symbols to indicate various parameters such as '*origination suburb', 'route to take', 'destination station', 'whose responsibility', 'the street', 'building', 'floor' etc*. As most of the dabbawals are illiterate the choice for using and implementing the syntax for markings is done in such a way to ensure it is easy to understand and implement. The **vocabulary** used to implement and describe markings on the dabbas follow a **standard and self-descriptive** process, thereby eliminating ambiguity and variability, and thus making the organizing system more effective. Since, only numbers and alphabets are used, the syntax for **description of the primary resource** (dabbas) is intentionally made to be independent of any local language, so that everyone can learn, understand and process without any confusion, bias or **information overload**. The below picture will help us to understand the coding system in a better way.
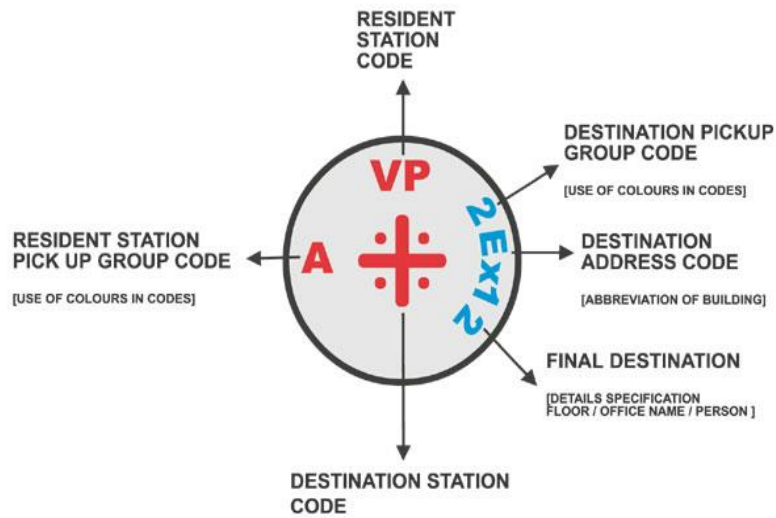
At each stage of the process, only one part of this code needs to be read, which works as a signal and thus allows picking up the right dabbas very quickly. It is also particularly efficient considering **traceability**, since any dabbawala seeing a dabba knows which path it has to take. In case a dabba is lost or forbidden somewhere, any dabbawala is able to put it back on the right track. There is no need for the structure of color coding to be **more granular** than described above as dabbawalas know the collection areas by heart. Furthermore, the process of **adding a new resource to the organizing** system is pretty straight forward and structured. If a new resource, that is, a new customer is added to the system, the dabbawala will do the complete journey to check the address of delivery and coordinate with other colleagues in the community to see who has a free place in his crate to add one more dabba. Once the sequence of delivery has been established and all the necessary stops for exchange decided, the address on the dabba is marked and it becomes part of the whole system.

Other considerations

It would be interesting to know if this delivery model can be used by other cities as the problem of longer commute and need for homemade food for lunch by office workers is always there in major cities. In my view, standardization of operations and understanding cultural and regional biases can provide opportunities for other cities to implement this model at the same time providing jobs to many semi-skilled workforces.

References

- Mumbai's Amazing Dabbawalas, www.rediff.com
- 'Thomke, Stefan H., and Mona Sinha. "The Dabbawala System: On-Time Delivery, Every Time." Harvard Business School Case 610-059, February 2010. (Revised January 2013.)"

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Overview

As supporting deliverables for my case study, I intend to first describe the **process model** for the organizing system I have chosen for the case study, which is 'Mumbai Dabbawala'. The process model will provide insights about the workflow, interactions supported by the organizing system and the structure and organization of operations that are carried out and are essential to the maintenance of the organizing system. Secondly, having described the process model for the system, I will compare it with a very famous and powerful Big data Algorithm known as **MapReduce** and then elaborate on the commonalities between both of them. It would be very interesting to learn how the Dabbawala organizing system that operates on fundamental human-centric organizing principles can share common themes with a highly complex parallel and distributed computing architecture. Had it not been the 202 course I wouldn't have understood the importance of learning underlying organizing principles and give it more emphasis while keeping aside the details for a while.

Process model and structure of interactions for the 'Mumbai dabbawala' organizing system
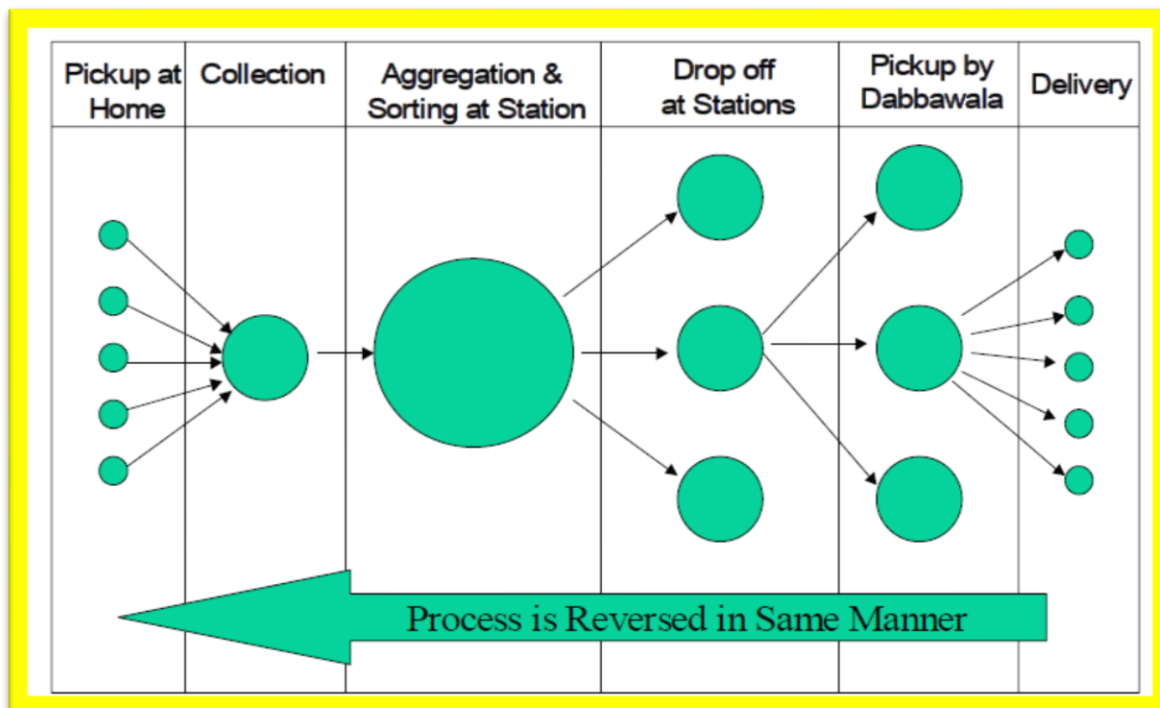
Process model for MapReduce framework for a simple word count program
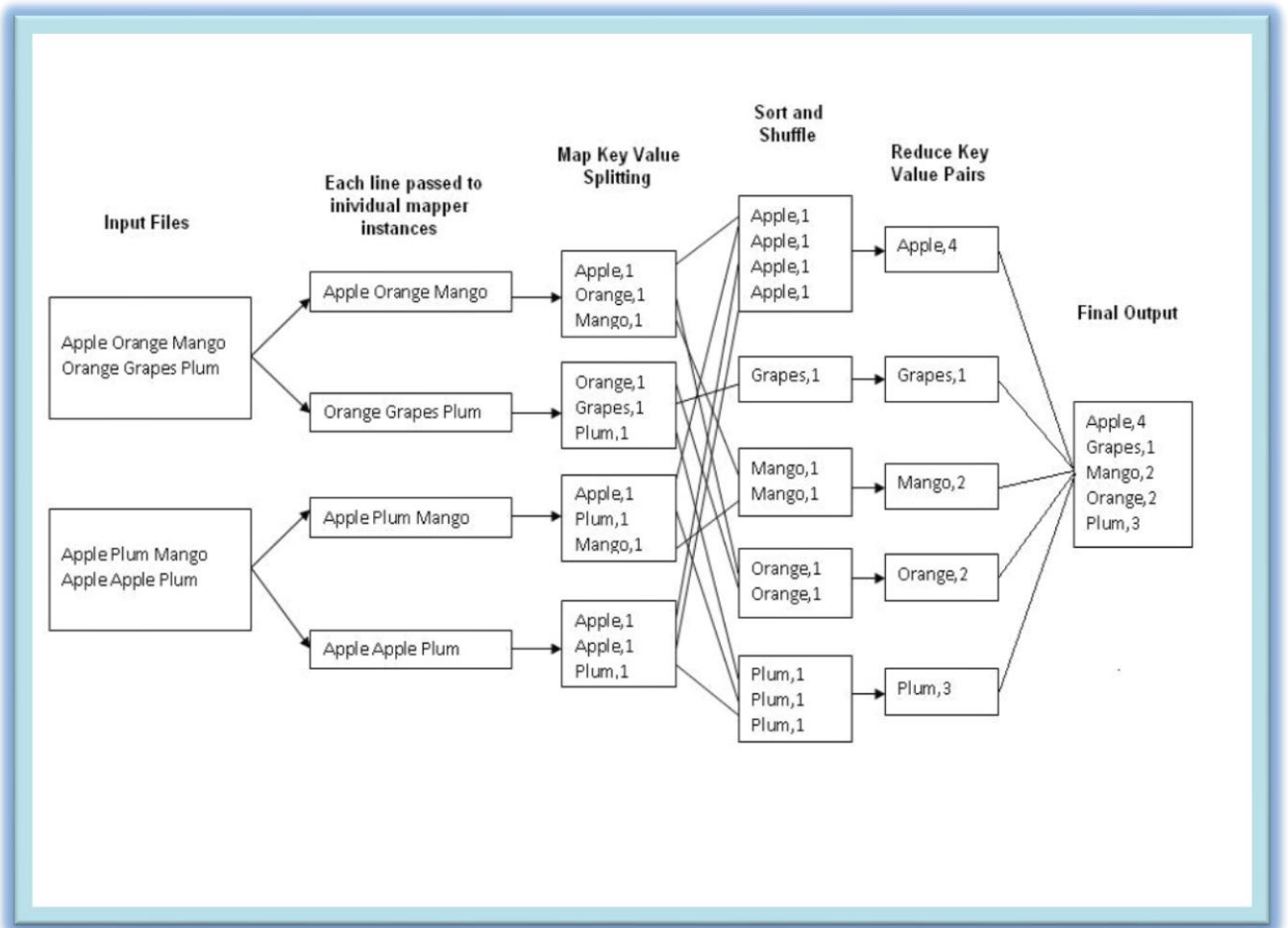
Comparing Mumbai dabbawla methodology with MapReduce Algorithm

- The MapReduce process chops and distributes the blocks of data to individual nodes; similarly each house provides the lunchbox to a particular Dabbawala.

- All the lunchboxes are collected at the common place for marking and tagging them and to put them into carriages with unique identifier codes. This is exactly what the **Mapper** in the MapReduce eco-system does.

- Next, depending on the color code, carriages that need to go to the common destination are sorted and on-boarded to the respective local trains. This is what we call the **Shuffle and Sort** phase in MapReduce.

- Finally, at each railway station, the Dabbawala picks up the carriage and delivers each box in that to respective customers. This is the **Reduce** phase.

This exercise relates to designing an organizing system in multi-dimensional space, which allows the concepts to transcend through various categories, allowing us to apply knowledge to new and unconventional domains.