

# Mumbai Tiffin(dabba) Express

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## Introduction

How would you move 175,000 containers, each with designated origin and destination, on a daily basis, in a reliable and affordable manner? How would you build in features to ensure that the delivery performance remains robust to disruptions in the distribution environment (breakdowns, no-show, new customers being introduced etc.)? Can you do it without using any IT infrastructural investment, and with a workforce that is illiterate? Lest one forgets, the system has to ensure an equivalent reverse flow of empty containers back to the owners every day.

The answers to the above depend on a variety of factors, including social-economical factors and availability of labor forces and conditions of transportation system. In addition to such region specific parameters, the density and relative locations of the origins and destinations, (sparse versus dense layout) also play a major role. For instance, in the postal mail delivery system, the origins and destinations of the mails are normally well spread out within the region. The most common delivery system developed seems to be a **hub and spoke system** - mails will be sent to a central sorting facility for consolidation, which will then be re-directed to the destinations. On the other hand, in most commercial delivery setting, items from a central warehouse need to be delivered to retailers (destinations) spread over the region. A popular way to organize the delivery activities is through the use of a **zoning system** - customers are grouped into zones, each served by a sub-delivery unit. The delivery unit either picks up the items from a designated area within the zone, or direct from the warehouse. The sorting is normally done near the origins (central warehouse).

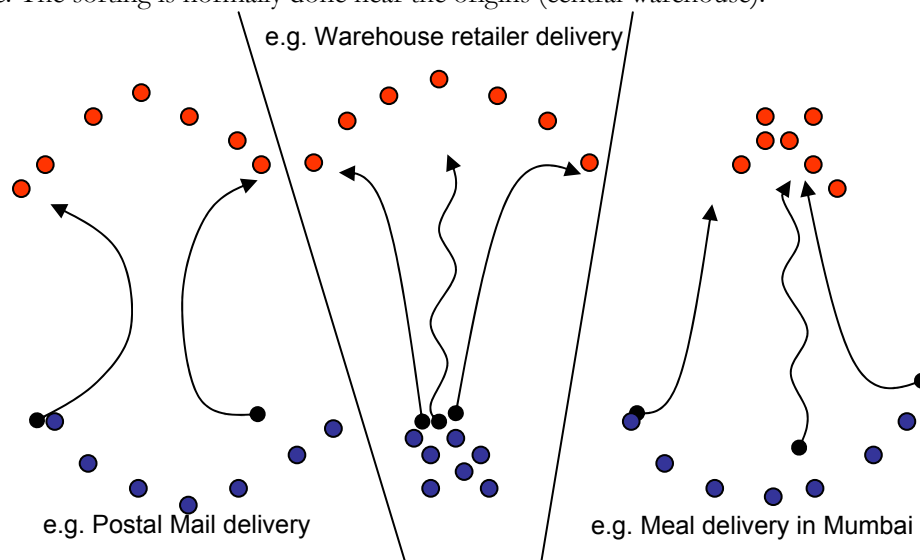


Figure 1: Sparsity/Density of Origins/Destinations affects the choice of delivery organization.

In this article, we take a close look at a third kind of delivery problem, where the origin is spread over a region, with 70% of the destinations clustering near a central area. This is a feature in a meal delivery system in the sprawling metropolis of Mumbai, where although many workers commute into the city to work, they still want to enjoy home-cooked meals for lunch. There is currently a highly

efficient and low cost delivery solution, the Dabbawallah System, (roughly translated as “dabba” – the container for carrying food and ‘wallah’ - the people, in this case the people who transport the containers) which has astounded the logistics professionals all over the world (Forbes, 2001). Such is the popularity of a system that it is as famous a tourist attraction as the Gateway of India in Mumbai. The system, which has been in operation for over 100 years, has been so impressive in its working, that a visit to see the Mumbai Tiffin Express in operation was specially requested for when Prince Charles visited Mumbai in 2003!

How do the dabbawallahs, a group of lowly educated Indians from the Pune region, build a world class distribution system to solve this delivery problem?

### **The system: how it operates**

The system operates around meticulous timing and coordinated teamwork. Figure 2 shows the time chart of a typical daily operation.

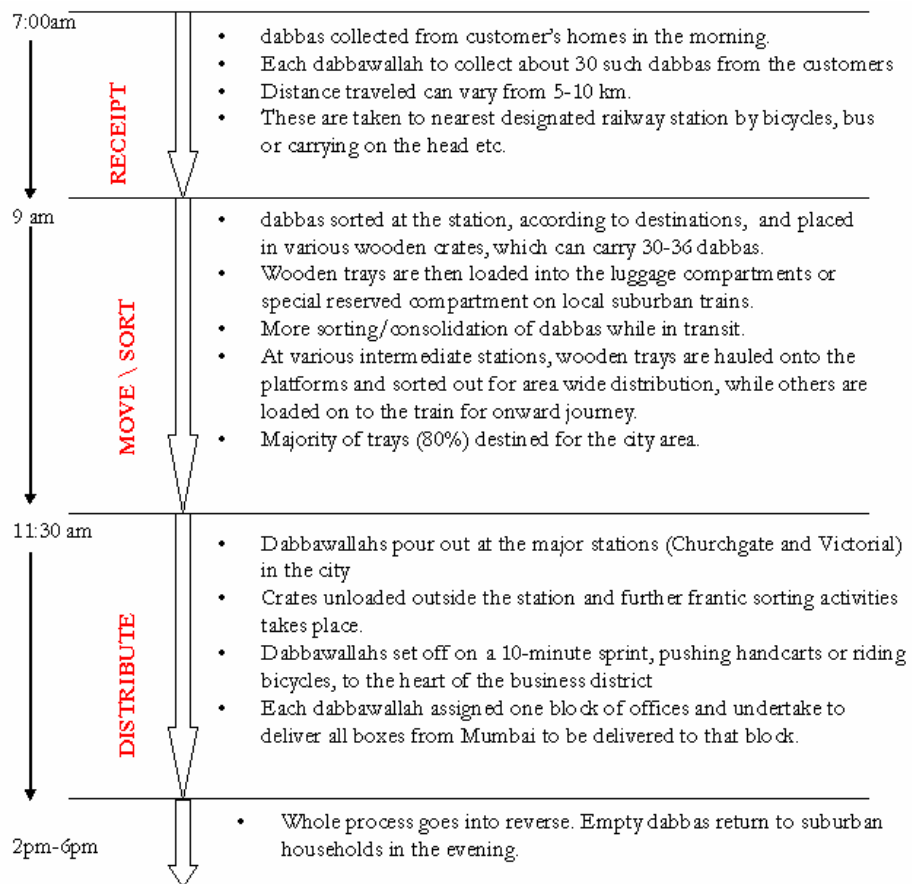


Figure 2: The time chart of the dabbawallah operations

The system operates using a zoning system approach. Each zone is served by a team of 20-25 dabbawallahs, each serving around 30 customers per day. Each team operates as a separate business unit, and the team leader (called mukadam) is responsible for the efficient coordinated functioning of the team. The teams are thus self-administered work units sharing common agenda with each other. The Dabbawallah System epitomizes a self-regulating decentralized delivery system, loosely organized as a cooperative system, under the *Nutan Tiffin Box Suppliers Association*. There are only 3 hierarchies of authority, making it a rather flat organization. This includes some 5000 workers, 800 mukadams,

and a small number of Executive Committee in the Association. The Executive Committee is primarily involved in conflict resolution, setting the agenda and administering the welfare activities.

Each customer is charged around 175 rupees (around US\$4) per month for the service. The customer only needs to invest upfront a token sum to purchase the dabba to store the meals. To subscribe to the service, one merely has to approach any dabbawallah and provide the home address where the service would be required. This information will be immediately disseminated to the team responsible for the delivery in the zone the customer resided in. Further negotiation of price and delivery timings will be done between the customer and the team leader.

After paying \$1.25 per crate and \$2.50 per man per month to the Western Railway for transport, the money collected from the customers by the dabbawallah goes into the cooperative pool that he belongs to. Out of the accumulated fund, he is paid a monthly salary of \$70. Of that sum collected from customers, \$0.25 goes to the parent association. The association, after minimal expenses, spends the rest of the \$1,000 every month to a charitable trust.

Figure 5 shows some estimates of dabbas flowing through several selected stations along the railway. The data was collected in early 2003.

### **The system: secrets of success**

Much of the success of the Dabbawallah System can be attributed to the **committed workforce**. 90% of the city's approximately 5,000 dabbawallahs come principally from the Pune region of the state of Maharashtra, several hours from Mumbai. All have left poor farming communities in search of a means to support their families. They share a common language and have **strong social bond**. They take great pride in what they do, and understand that their livelihood depends on their ability to deliver the meals efficiently, come what may. On the office wall of the Tiffin Carriers association hangs a list of 23 rules, a corporate code of conduct. One in particular sums up the dabbawallah's ethic: "No customer should go without food."

The delivery system builds around the **extensive commuter railway** system, the backbone of the Mumbai transport network, connecting the vast suburbs to the city areas. The timetable of the railway system and the common delivery deadline for the tiffins induce a natural **clockspeed** into the delivery operations. Every dabbawallah understands the need to race against time to reach his destined station to meet his badli (counterpart) who will board the local train with his quota at the precise hour at a given station. The effect of slip delivery is immediately discernable.

Much of the credits for the success must also go to the fact that the system seeks to evolve continuously to **adapt to local conditions**, rather than blindly following best-practices imported from elsewhere. This is evident, for instance, from the evolution of the **coding system** used in the system to track the flow of dabbas within the entire delivery network. While bar codes (RFID in the future?) are common to modern day delivery system, its high cost (relative to cost of the service) and the environment (manned by illiterate workers) meant that the system has to adapt a new approach to track the flow of dabbas. How do they do it? The dabbawallahs chose to evolve a coding system that "speaks" to its bunch of illiterate workers, fully recognizing the fact that its strength lies on its cheap labour and committed workforce. The code, which is painted on the dabba top, is restricted first by the size of the top itself – 6 inches in diameter. The code uses colour, dashes, crosses, dots and simple symbols to indicate the various parameters like originating suburb, route to take, destination- station, whose responsibility, the street, building, floor et al. The system by its simple structure ensures a smooth flow to and from destination, though a dabba might pass through as many as 6 persons in each direction of movement everyday. Since the system is operated by strictly controlled but loosely linked groups, each group has a certain amount of flexibility in personalizing the coding system. Thus the mukadam, the manager of each operating group, can personalize some colors etc to differentiate the dabbas pertaining to each of his group dabbawallah. Over the years, dashes and crosses have been replaced by simple text which is easy to read (See Figure 3).

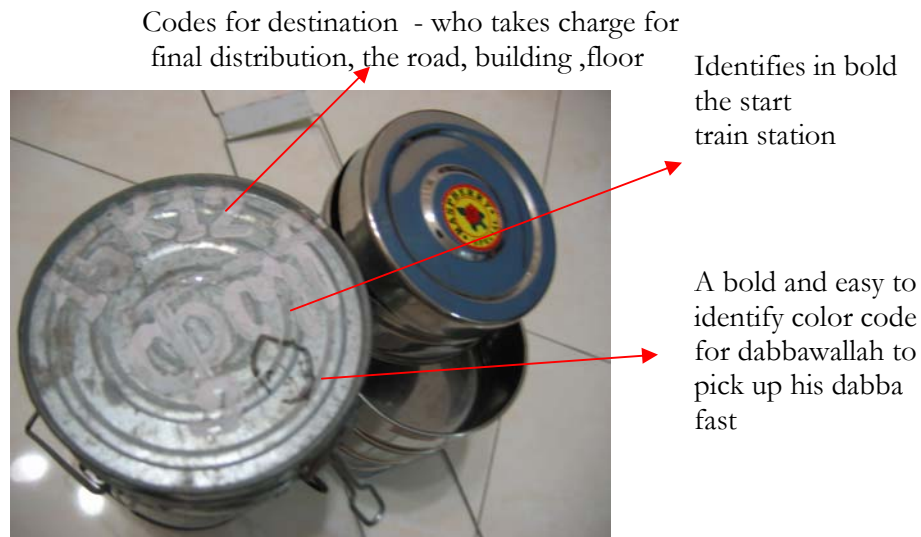


Figure 3: A common coding system in use

### **The new environment**

The business of the dabbawallahs had gone through several major upheavals in recent decades. A substantial chunk of business was lost with the closure of the textile mills in Mumbai, and when subsidized in-house canteens started to appear in schools and food coupon system in corporates. With changing times, Mumbai's young executives have also developed affluent life-styles with the wife holding another full time job. Further changes in the operating environment came about when business activities began to move to the new Mumbai business district inland over the last few years and thus complicating the already intricate distribution network.

The dabbawallahs have responded to each of these threats by constantly adapting their business practices. They have continuously innovated, offering new services, while riding on their core strength of on-time and reliable delivery services. To quote a few - a new express delivery service (pick-up at 11am) has been introduced in recent years; a linkage with groups of housewives to cook and supply dabbas for customers who prefer home-cooked food; they have even worked with marketing agents like the brand management team at Lowe Lintas, Mumbai, to distribute free Surf Excel-branded tablemats, along with the dabbas, to the offices.

A sign that the system is evolving is clearly displayed in figure 4: The standard dabbas used for the meal delivery have slowly given way to more elaborate and colorful packaging, and the system has cleverly evolved to accommodate the request of customers who want their meals to be delivered to them in a fancy and “appetizing” manner.



How long can this devotion to home cooked food remain among customers, no one can tell. But we can sure count on the dabbawallahs to continue to strive and evolve with the new economic conditions.

Figure 4: Dabbas with new designs

Figure 5

The inflow / outflow of dabbas in major suburbs - along the Mumbai Railway

