



## **SOMA - Shop Owner's Management Assistant: Multi-disciplinary exploration towards a new ICT based solution**

Girish Prabhu, Vivek Singh  
HP Laboratories India  
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# **SOMA – Shop Owner’s Management Assistant**

Multi-disciplinary exploration towards a new ICT based solution

Girish Prabhu and Vivek Singh  
HP Labs, Bangalore, India

## **ABSTRACT**

There is a strong need to automate the retail businesses in the emerging markets. Many PC based solutions exist to address the issues involved in automating retail businesses. However, none of these information and communication technology (ICT) based solutions have been able to provide a simple, user friendly and a cost effective solution. We aim to build a low cost, easy-to-use appliance that can be used for automation in small and medium retail businesses. The architecture and design of this appliance is being developed using a multi-disciplinary approach where ethnographers, business researchers, designers and technologists work together to develop a solution that meets user needs. The aim of the project is to build a platform around which various specific instances of the SOMA appliances can be created for various other retail businesses. Apart from user needs for the particular domain, creation of product concepts have also taken into account frequent interruptions in electrical power supply, other environmental issues such as dust, pest-manifestation and customer’s resistance to high spending on consumables or as service charges. This paper focuses more on the user needs, business, and design considerations.

## ***Motivation***

Retail is world’s largest industry clocking sales of \$ 6.6 trillion in 1999 as against \$5.1 trillion for financial services and \$1.1 trillion for the electronics industry. There has been a wave of consolidation in retailing in various countries though the pace of consolidation has varied significantly. According to a study by McKinsey & Company India has only 2% of organized retail whereas in US and Europe it stands at 80-90% levels. Organized retailing in other areas of Asia remains also small with its contribution being below 20 % in Malaysia, Thailand and China. Over the past few years India is witnessing a rise of organized retailing due to factors such as changes in consumer preferences, increased reach of satellite TV, increasing incomes resulting in a greater need for convenience and variety, liberalization of consumer goods market, development of supply chain infrastructure, and change in outlook women and the family structure.

Consultancy firm KSA-Technopak has reiterated that the \$3-billion organized retail would double to \$7.1 billion by 2005 and attain a 4.3 per cent share of the retail pie. The remainder will be accounted by 11 million retail shops spread across India. These shops attract the customer’s through USPs such as personalized service, accepting informal credit purchases, proximity, home delivery and customer loyalty.

The main motivating factors for this research were:

- a) Sheer size of the segment
- b) Possible need for a different ICT based solution for this segment

Many PC based solutions do exist to address the issues involved in automating retail businesses. However, none of these solutions have been able to provide a simple, user friendly and a cost effective solution. A large number of people in the emerging markets are not PC literates and are not technology savvy. Further PCs are not equipped to deal with local languages of the user.

The SOMA project aims to build a low cost, easy-to-use appliance platform, directed towards small and medium scale retail businesses for their automation and computational requirements. The architecture and design of this appliance is being developed using a multi-disciplinary approach shown in Figure 1, called contextual invention (Greving and Frohlich, 2002, Prabhu et. al., 2004), where ethnographers, business researchers, designers and technologists have worked together to develop a solution that meets user needs.

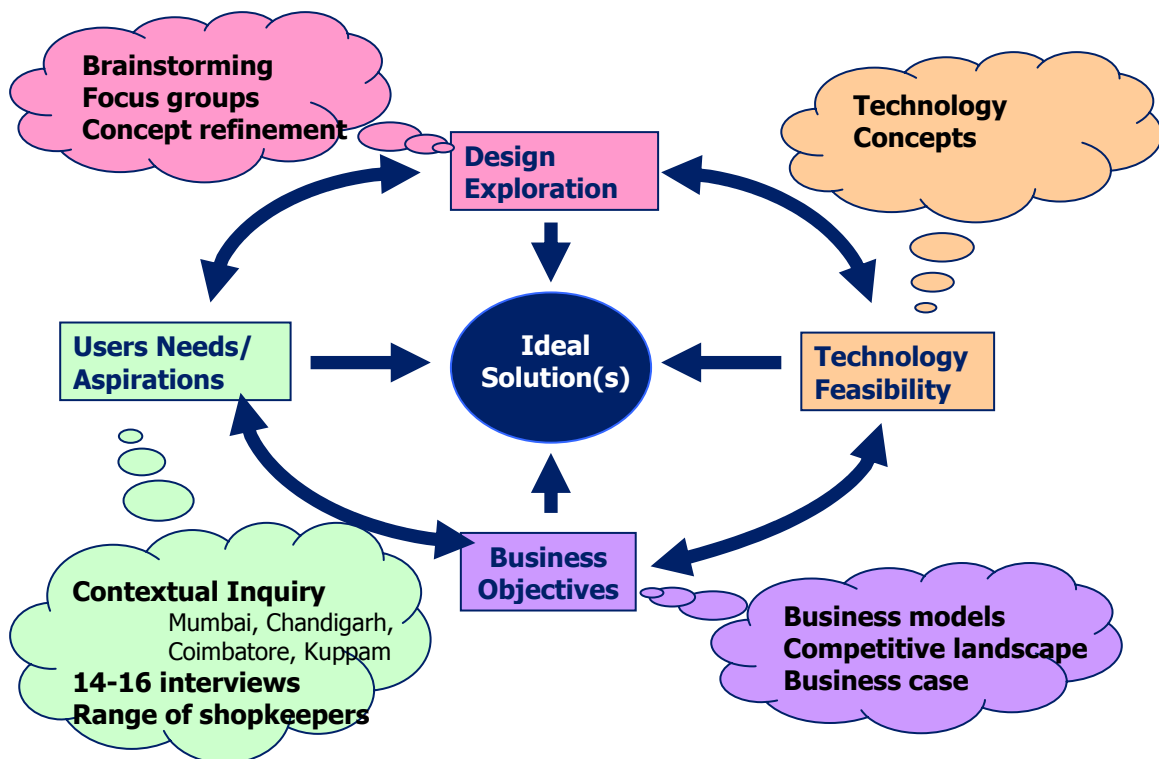


Figure 1 - Contextual Invention Process

Apart from user needs, creation of product concepts has taken into account other factors such as affordability of the solution, low power consumption and ability to

handle frequent interruptions in electrical power, multilingualism, ruggedness and ease of use

## ***Business Outlook on Retail***

As highlighted above, Indian situation is different from other nations. The country is dotted with over 11 million retail shops employing 35 million people. These shops are small, managed by people with low education levels, and with low dexterity for the *traditional* technology, high cost and complex solutions

Retail in India consists of following type of formats:

- **Grocery Stores** (250 square feet in size) sell primarily unbranded staples along with small range of branded personal care products in different sizes. Space constraints often limit the selection to no more than one or two brands.
- **General merchandise (*Kirana*) stores** (400-600 square feet) are somewhat larger than the small grocery stores and stock a wider range of cleaning and personal care products, as well as snack foods and confectionery. These stores form an ideal target for technological up gradation.
- **Convenience Stores** (50-150 square feet in area) are found on virtually every street corner. They are owned and operated by a single owner and sell cigarettes, soft drinks, confectionery, medicines apart from a restricted range of household & personal care products,.

**Independent Vendors** operate small booths or carts, or simply spread their products on the ground along every sidewalk. They usually sell a single product.

**Organized Shops** These are similar to the big malls present in other developed countries in US and Europe.

We believe that unorganized retailing in the long term will remain by far the largest segment in the country's retail scenario. This is based on the following broad factors.

- Organized retailing in India still faces numerous roadblocks namely:
  - High Real Estate Costs
  - Unplanned cities and poor infrastructure
  - Unfriendly Tax laws
  - And weak consumer laws

- Power of the Unorganized Sector:

Unorganized sector commands huge social and political power due to its size. Further they are in a fundamentally strong position as they can offer extremely personalized relationships built over in-depth customer knowledge, imbibed over decades of interaction.

The sheer landscape of the country and the significant income disparity among the masses provides a natural protection for the unorganized retail.

However, they lack scientific management tools and suffer from significant inefficiencies (intra shop management and supply chain) and an unleveraged pool of in-depth customer understanding.

Therefore, they need to take a few steps:

- **Improve In-store Operations** resulting increased margins and enhanced ability to offer larger variety to the customers.
- **Keep track of consumer purchases** and provide the customer a host of value-added customized service, increase sales by anticipating the customer needs, ensure sufficient stocks and strengthen the customer relationship.
- **Provide free home delivery**, which will be a great customer retention tool and a tough service for the bigger malls to replicate.
- **Selectively Expanding the Product Lines** to include only the needed brands and SKUs
- **Keep investments low in inventory and equipment.**

Research has been carried worldwide on the value of data synchronization mainly with focus on organized retail towards supply chain and distribution efficiencies (IBM BCS, 2003). We believe that in unorganized retail scenario there are other critical aspects that need to be considered. For example the existing infrastructure constraints can limit the value achieved by distribution gains and the overall feasibility of the solution. Hence one should include the ecosystem consisting of supplying enterprises and marketing agencies into the business model. The value to these entities can arise depending on how they view a small retail shop. For example the shop can be viewed from multiple perspectives ranging from it being viewed as a stocking and ordering point, customer interaction point or as a link to the end consumer. These can result in different business models and value propositions for the stakeholders.

## ***User Needs***

A total of 63 contextual interviews were conducted across four locations in India to cover urban/rural differences and also geographical differences as shown in

Table 1. The objective was to observe and analyze the key tasks performed by the shopkeepers, their interactions with the customers and suppliers, the shopkeeper's information needs and the work environment. The interviews were conducted in the local language and took approximately 3 hours. Apart from the contextual interviews, we also included a feed-forward technique (Frohlich and Prabhu, 2003), where concepts generated in one interview are substantiated in the following sets of interviews. The shop owners were compensated for their time with a gift of appreciation.

The focus areas for the contextual studies were typical tasks performed in the shop, interactions with the suppliers and the customers, various dependencies, inventory management and control, various artifacts used, work environment, need for connectedness, perceptions on ICT, handwriting activities, ballpark figures for turnover, daily sales, branded vs. non-branded items, profit margins, purchases, expenses, sales tax etc.

Type Of Business	Mumbai	Coimbatore	Chandigarh	Kuppam	
Chemist	1	3	3	3	10
Grocery Store	7	3	4	4	18
Food store	1	-	2	2	5
Hardware Store	-	2	1	2	5
Jeweler	1	-	1	-	2
Cosmetics	1	2	3	1	7
Stationary	1	2	2	3	8
Footwear	-	1	-	-	1
Salesman	1	1	1	1	4
Accountant	-	1	1	1	3
Total	13	15	18	17	63

Table 1 – Locations and business types for contextual interviews

These interviews provided us with an insight into typical retail shops. As shown in Figure 2, the typical neighborhood store is small and does not allow the consumer to choose and decide on a product.



Figure 2 – Typical retail environment

Often the crowd at the counter forces him to hurry the purchases. The shop deals in multiple products, even pharmaceutical shops not only store medicines and pharmaceutical products, but also cosmetics and food items like biscuits, chocolates and bread. Usually family members manage the shop, with no or very few employees in the shop.

Most of these shops use many paper notebooks, such as the ones shown in Figure 3 to keep records of their sales, stocks, short-supply item list, customer credit etc. The study also provided very good insights in work environment, and processes used in their day-to-day life. These interviews also provided us excellent insights into retailer's perceptions about information and communication technology in general and computer technology in specific. We found that phone is the most widely used instrument for communicating with the suppliers in local market as well as from other cities. Fax is used by many bookshops to order books from various publishers across India

Some of the revealing comments from the retailers are listed below:

1. *"No personal relationships can be maintained... you will loose the relationship 'anpanapan' with the customers."* – Grocery shop, Mumbai
2. *"PC will help in reducing the workload but cannot reduce my costs. I will still need an assistant to run this shop."*
3. *"It's very difficult to use PC for stock keeping as many customers return or replace the items purchased. How do I account for that?"* – Grocery shop, Coimbatore

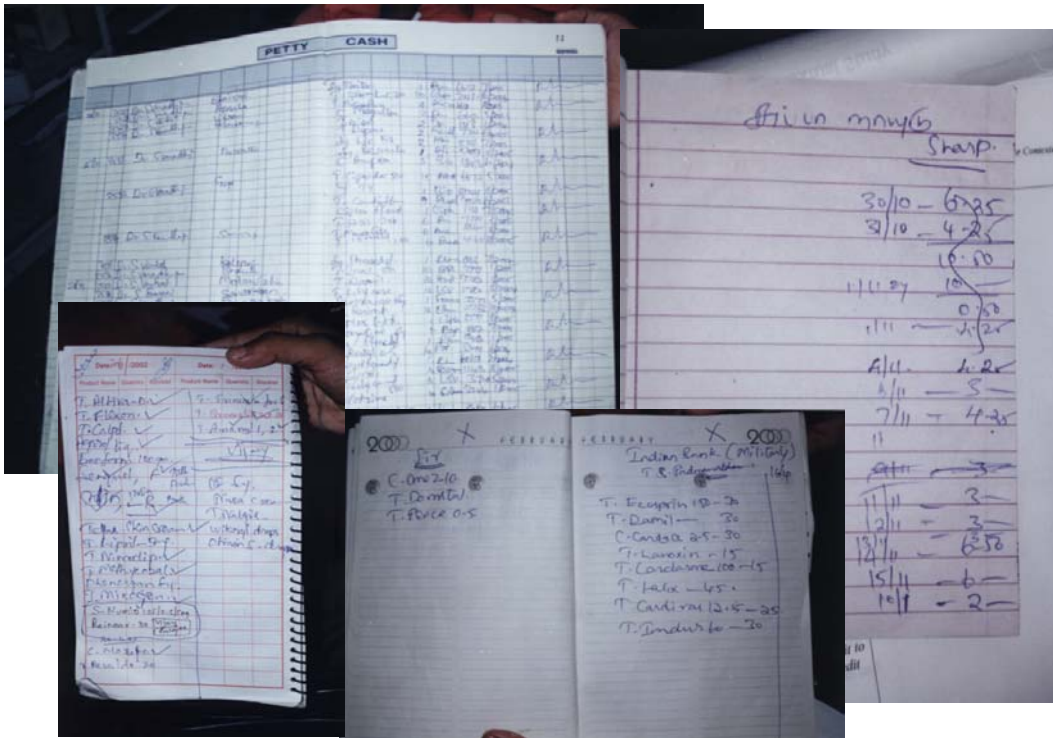


Figure 3 – Paper based artefacts used in a retail shop

4. *“Technology should be easy to use, I don’t have to train my assistants.”*
5. *“With help of PC, we can quickly get to know of the items running out of stock and reorder them well in advance. In fact the computer can send us an alert of low-stock!”*
6. *“Technology should be dependable and can be trusted very easily. It easily avoids errors in calculations, legibility of handwritten notes and variations in the discount offered”*
7. *“I should have a small machine that can help me keep records of day to day sales and purchases. Also, I should be able to carry it home so that I can do verification of all calculations peacefully at home. This machine may not help improve my business, but definitely help run it in a better manner”*

### **Design Exploration and Feedback**

Based on the findings from the user needs research and initial technological investigation, the design team developed/refined four product concepts for SOMA with software functionalities to help them run the retail business more efficiently as shown in Figure 4.



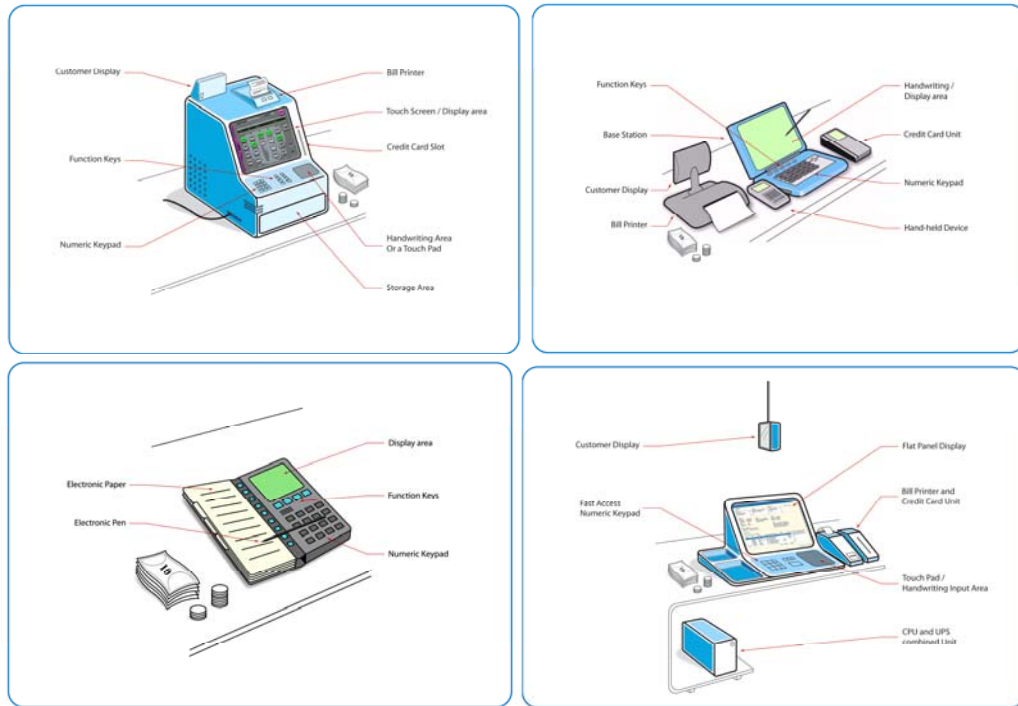


Figure 4 – Product concepts for focus groups

We conducted four focus groups containing 8-10 participants each with grocery and pharmacy shopkeepers to discuss these product ideas and understand their preferences. The purpose of these focus groups was to

- a) expose and accentuate both the similarities and the differences in the experiences, feelings and opinions of the shop owners while running a retail business
- b) capture and analyze user reactions to the proposed feature set of SOMA, and
- c) Identify user preferences for SOMA's form factor.

Each product concept and its features were explained to the participants. They were then asked to write down their comments and estimated price on the respective handouts. This was followed by a discussion on its perceived positive and negative aspects. Finally, a discussion was guided on comparison of all the four concepts. The analysis of data from the focus group indicate that following features related to form factor, product components, and product functionalities, are important for the retailer:

- Single compact unit (Cash register type)
- Facility to add components as required
- Component independence in case of failure of a product part
- Battery or UPS backup
- Dust protection and protection from pests
- Customer Side Display
- Bigger and High Contrast Shop Keeper Display

- Touch Screen Interface
- Bill Printer
- Report Printing
- Lockable Cash Storage Area
- Bar code scanners
- QWERTY Keyboard for Pharmacists
- Multiple Billing to Handle Customers Simultaneously
- EASY and Fast Method to Update and Edit the Inventory
- Ease of Servicing

## ***Next Steps***

The results from the focus groups drove the next technological manifestation of SOMA. We are currently in the process of interviewing with other parties such as FMCG companies, Pharma companies, Ad companies etc that may have interest in the SOMA appliance to develop and validate business models for ICT solutions based on SOMA appliance and create a sustainable eco-system.

## ***Conclusions***

Multidisciplinary approach towards finding solution for unorganized retail in India allowed the team to explore designs that not only fit the user needs but also have business value. Further, such an approach revealed that there are other participants in the ecosystem including enterprises which supply and advertise at these venues and they can be tapped to make the solution sustainable.

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**Girish Prabhu**, is a Research Manager for Contextual Design at HP Labs India. He joined Hewlett-Packard in December 2002 and is responsible to develop and manage the contextual design research portfolio. Prior to joining HP, he was a Technical Associate at Eastman Kodak Company at Rochester NY. At Kodak, he held various management positions in new business development, research, and product commercialization and was instrumental in implementing user-centered design processes in multiple product areas. Before Kodak, at he has worked with Kirloskar and WIPRO in software systems analysis, and during his Ph.D. worked with various multinational and US Federal agencies, designing and implementing user centric design based software products. He has published referred papers in international journals and holds 7 U.S. patents. He is a member of ACM-SIGCHI, British HCI, and HFES. He holds a Ph.D. and M.S. in Industrial Engineering (Human Factors) from the State University of New York at Buffalo and a B.E. in Mechanical Engineering from National Institute of Engineering, Mysore. His research interests include ethnographic design, business models, and product and software internationalization.



**Vivek Singh** is the Business Analyst at HP Labs India and has been associated with the Labs since January 2003. With an entrepreneurial bend of mind, Vivek is passionate about identifying trends and business opportunities in developing countries with a special inclination towards healthcare, retail and IT. He has consulted for various organizations including *Satyam Infoway (Sify)*, *Barista Coffee*, *REVA – the electriCity car* and *Wockhardt Pharmaceuticals*. He holds an MBA from IIM Bangalore with a dual major in Marketing & Strategy, B.Tech in Computer Science & Engineering from IIT – Guwahati.