Barcode Scanner

Compact handheld product for small scale retailers

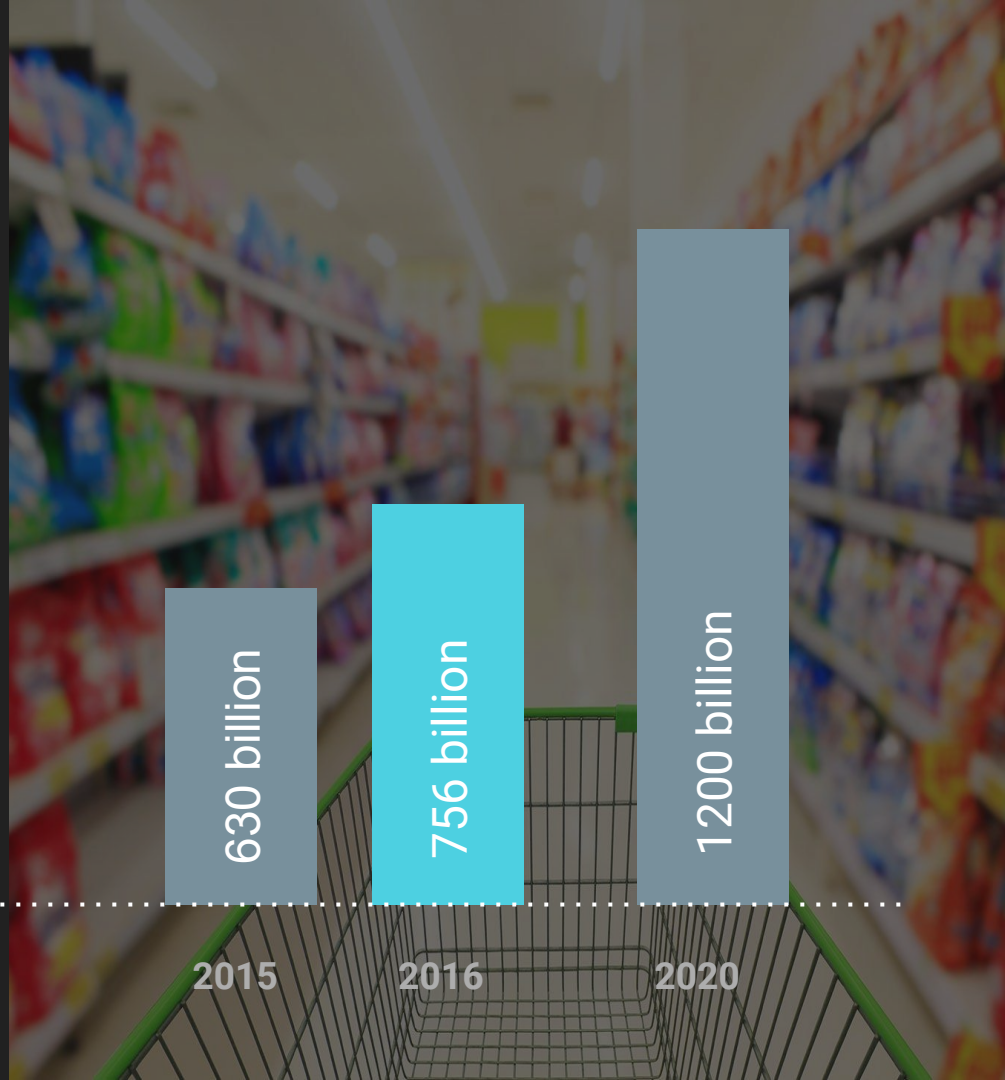
PRJ 127

Srajan 2017

Retail landscape in India

Out of the overall retail market in India which is estimated to be ~630 billion USD in 2015, 80-90% sector is unorganized which covers the small retailers and general stores.

Source : BCG Retail Report

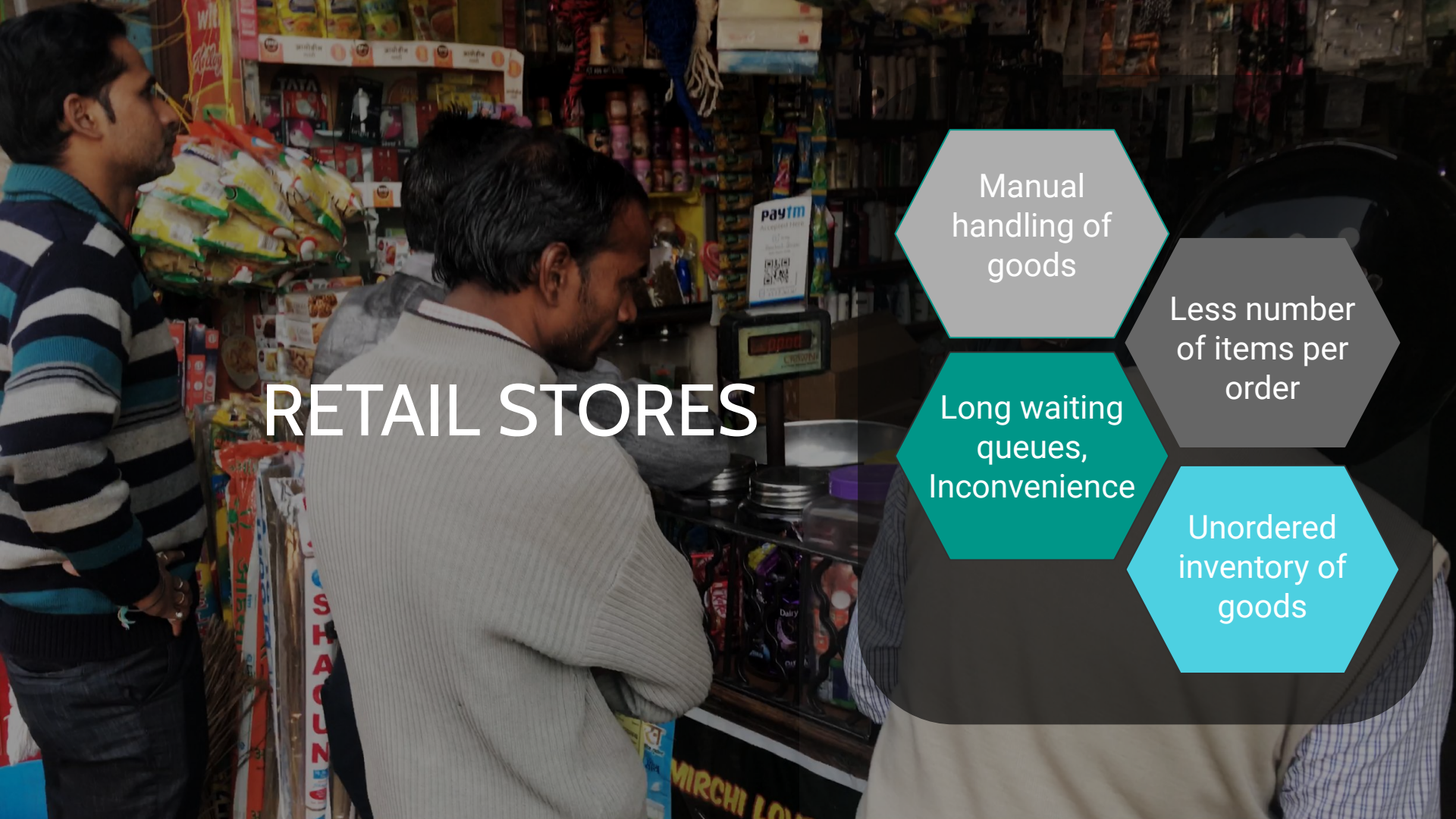


Retail market in India (estimate in USD)

Supermarkets vs General Stores


What makes supermarkets different than general stores?


SUPERMARKETS
Digitally connected customers
More number of items per order
High customer convenience
Ordered inventory of goods


RETAIL STORES
Manual handling of goods
Less number of items per order
Long waiting queues, Inconvenience
Unordered inventory of goods

Sector performance shaping factors

This is where unorganized retail sector i.e. local retailers lag behind the organized retailers i.e. supermarkets in its sales performance.


How can we make small retail stores equally competitive?

THE CHECKOUT PROCESS

Manual handling of goods leads to long queues at store and lack of convenience to customer as well as shopkeeper which results in less retail sale.

How we found a solution?

AUTOMATION

Step 1

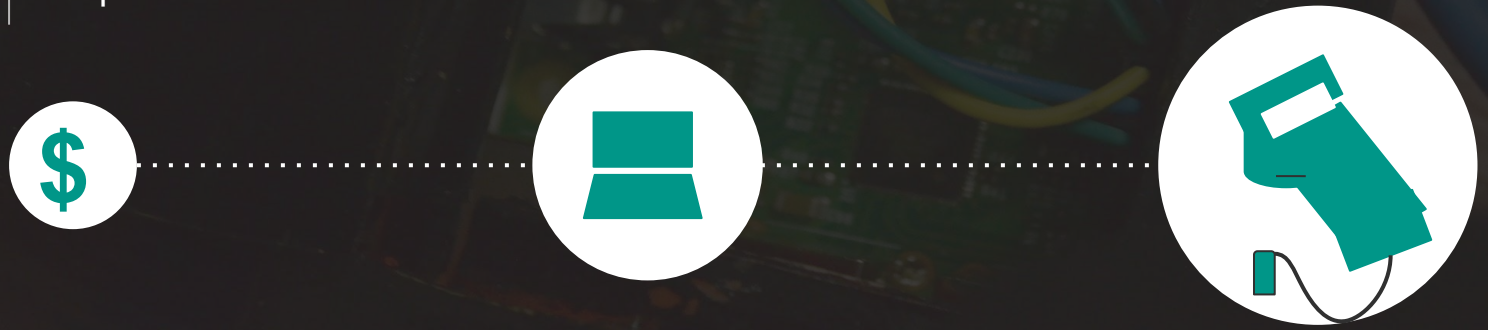
Reduce the cost of scanning system to make the product feasible

Step 2

Make the interface user-friendly so as to eliminate the requirement of computer operator

Step 3

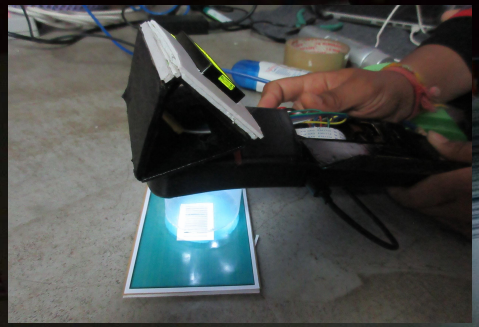
Present the whole product as a compact device with micro-usb power supply.

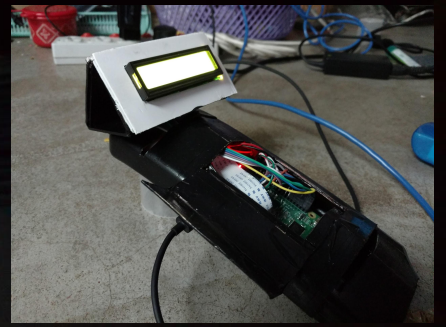


OUR PRODUCT

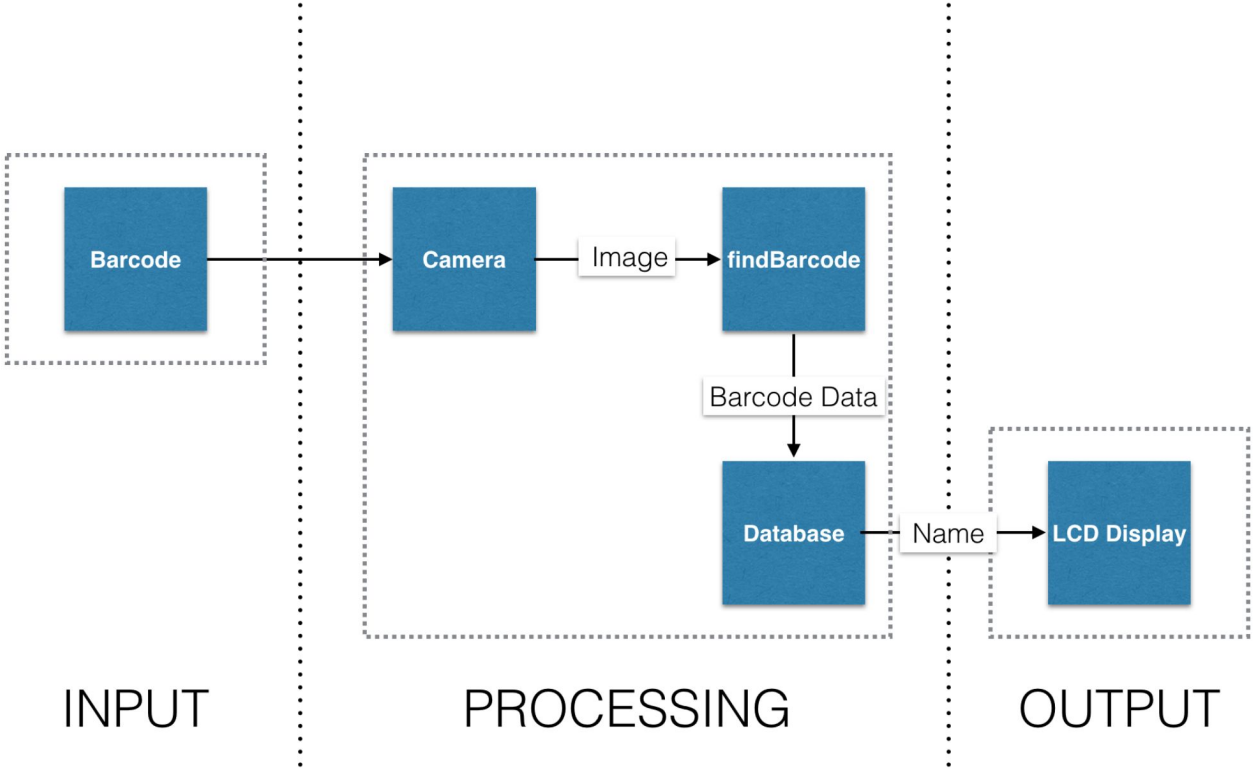
Barcode Scanner

A handheld device for small scale retailers

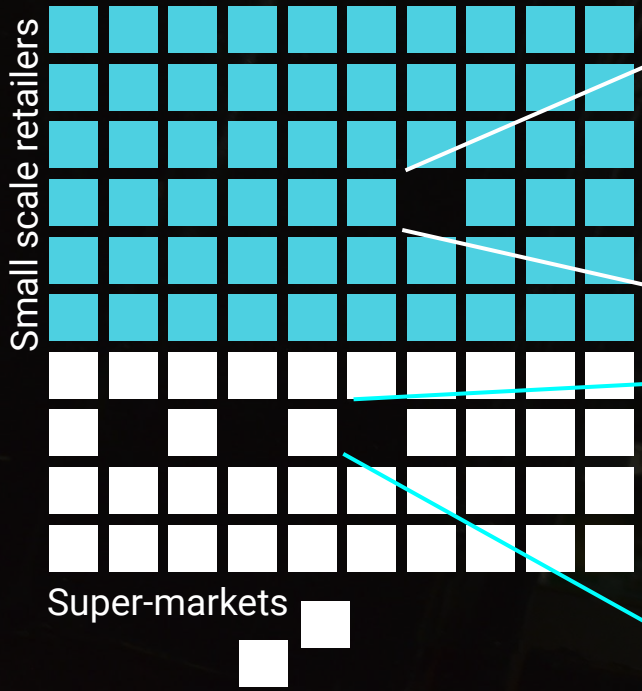


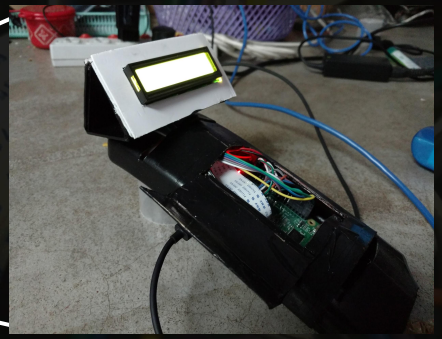


LOGICAL STRUCTURE



Laser scanner vs Our Product



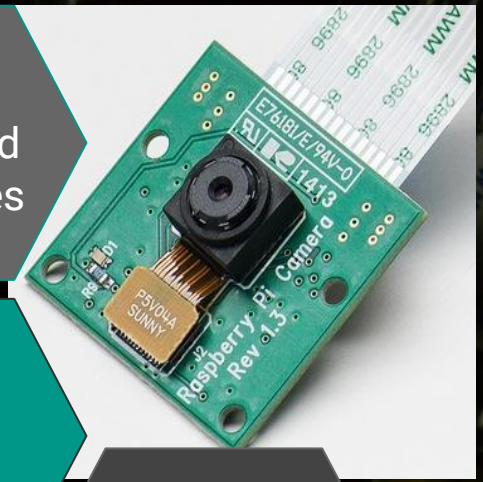


Scanner

Scanner
+
Assistive
computer system

Scanning Module

Raspberry Camera : 5MP sensor



Can scan both 1D and 2D barcodes

Less expensive

Easy Interfacing with hardware

vs

Laser Scanner

Only scan 1D barcodes

More expensive

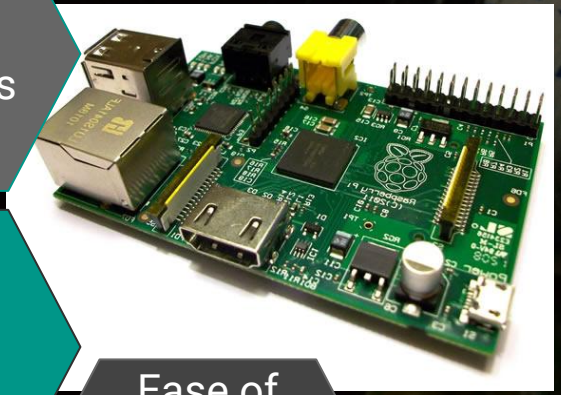
Complex Interfacing with hardware

Processing Module

Raspberry Pi Board : 1 GHz ARM, 1 GB RAM

Computer system

Can be altered to perform functions as per need



vs

Operator should know how to use separate devices

Less expensive

Ease of operability because of Simple User Interface

Skilled computer operator needed

More expensive

Power supply

Micro USB power supply

Raspberry Pi Board runs on 5V, 2A

Less power usage (0.1 to 0.5 W)

Only one supply needed to be plugged in

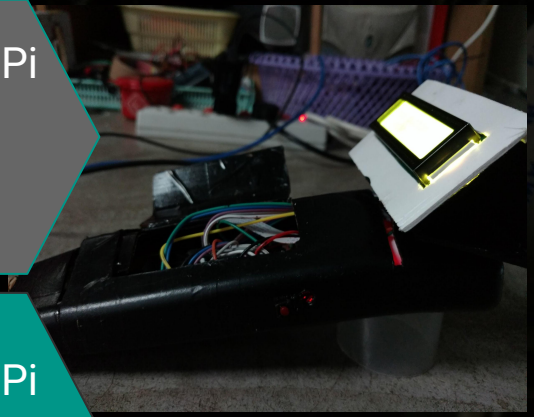
vs

More power usage (60 to 300 W)

Separate power plugs for all the peripherals

Overall installation cost

Rs. 5500



Raspberry Pi Board
Rs. 3000

Raspberry Pi Camera
Rs. 1500

Material and other costs
~Rs. 1000

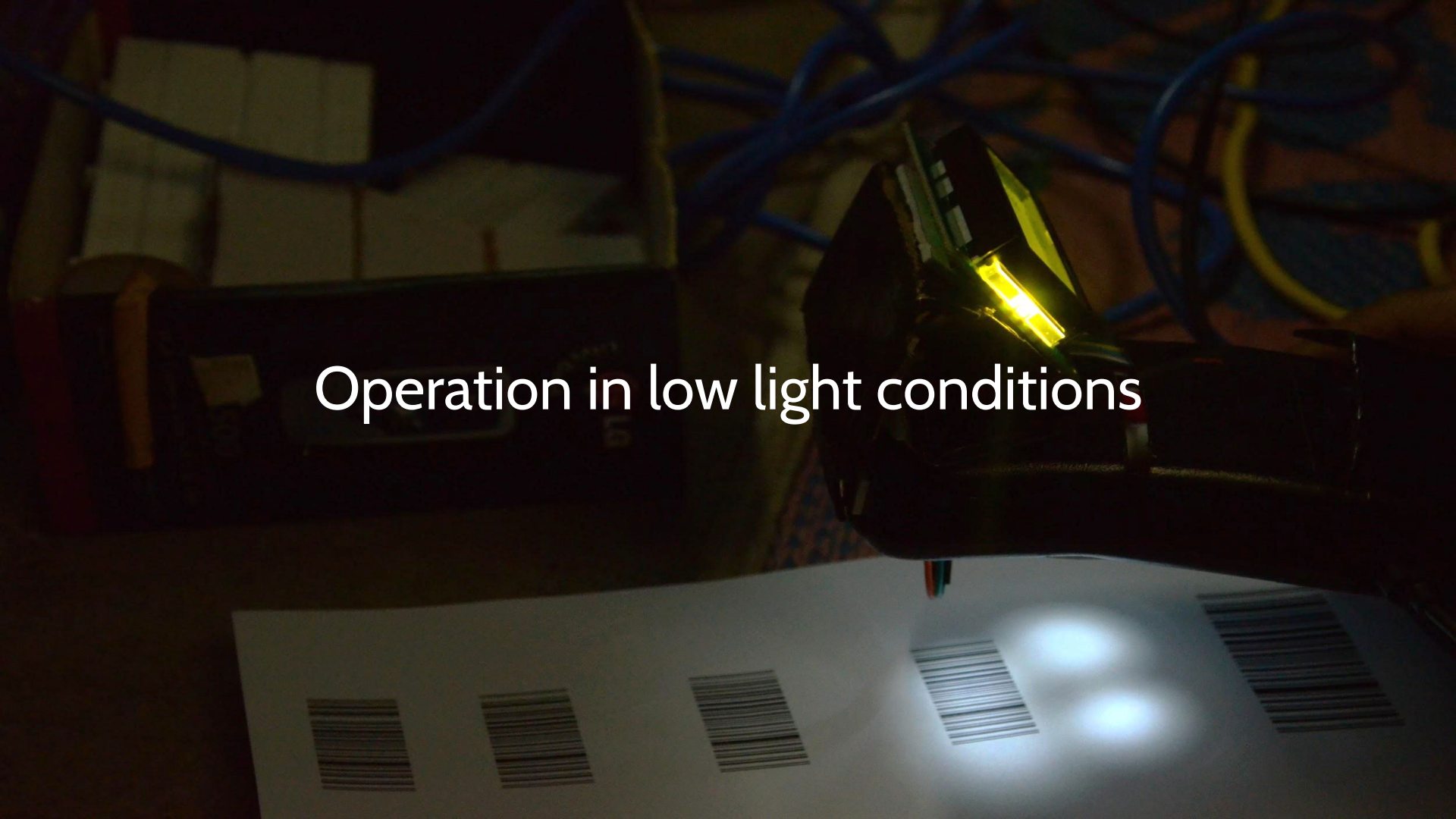
vs

Rs. ~40,000

Laser Scanner
Rs. 3500

Computer System
Rs. 35000

Computer Operator's salary
~Rs. 2000


Operation in low light conditions

Ergonomic design and button placement

CONCLUSION

We have designed a targeted product which:

- Is cheap and compact.
- Increases convenience of the customers at small retail stores.
- Does not require any special installation or operator.

THANK YOU

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SRJ 163

Final year

Electronics and Communication Engineering

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