

Visual Modernity and Operational Speed in POS Interfaces

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Abstract - Purpose – This study examines how a restaurant point-of-sale (POS) interface can be modernised without sacrificing the operating speed that restaurant staff depend on during peak service. It addresses a tension that surfaced repeatedly during a benchmark of leading platforms: the products that look most contemporary are not always the ones that bill fastest, and the products that bill fastest often look dated.

Design/methodology/approach – A benchmark-led design approach was adopted. Three established platforms were studied from official sources and verified review material: Petpooja and Posist/Restroworks in the Indian market, and Square for Restaurants as an international design reference. Findings were restricted to what could be confirmed from source material, with unverifiable interface details excluded rather than assumed. The verified patterns were translated into design principles, an information architecture, three user flows, and three competing wireframe directions for the order-taking screen.

Findings – Six patterns were shared across all three platforms: speed as the primary selling point, touch-first controls with large targets, single-screen or minimal-navigation layouts, colour used functionally rather than decoratively, offline capability, and companion applications for tableside ordering and kitchen display. The three wireframe directions produced a measurable trade-off between menu visibility and ticket stability, which is documented rather than resolved by assertion.

Practical implications – The study offers a method for design work carried out under restricted access to both end users and the live product, a common constraint in short industry engagements. It also demonstrates the value of documenting competing layout directions with explicit trade-offs rather than presenting a single solution as settled.

Originality/value – Most writing on POS design attends to the customer-facing transaction. This study addresses the staff-facing interface, where the operator is a trained repeat user working at speed. It also treats aggregator integration, specifically Swiggy and Zomato order handling, as a first-class design problem rather than an afterthought.

Keywords: Point-of-Sale Interface, Competitive Benchmarking, Restaurant Technology

1. Introduction

A restaurant billing counter is an unusual place to put an interface. The person operating it is not exploring the software; they are trying to finish a transaction while a customer waits and more orders queue behind them. They use the same screens

dozens of times a shift and know them well. Under those conditions the ordinary priorities of interface design shift. Discoverability matters less than predictability. Visual interest matters less than being able to complete a familiar sequence without looking twice.

Restro POS, developed by PairBytes Software Pvt. Ltd., is a point-of-sale product serving this environment. During an eight-week internship with the company I was asked to help modernise its interface. The brief came with a phrase that turned out to be the central question of the project: the founder wanted the product to look modern. What that meant in practice was not defined, and defining it became the first task.

Two constraints shaped the method. Access to restaurant staff using the system in live service was not available within the timeline, and access to the existing product was interrupted during the project. Guessing at what users wanted was not a serious option. Instead I looked at what the established platforms in this category had already converged on, working from sources that could be verified, and used those patterns as the evidence base for the redesign.

This produced a specific finding worth stating early. The leading Indian platforms sell on speed, not appearance. Petpooja leads with a claim of ten-times-faster billing and a three-click process. Square, the international reference for a modern POS interface, sells on new staff becoming proficient within minutes. None of them sell on beauty. The design problem was therefore not to make the product attractive but to make it look current without adding a single step to the billing sequence.

This paper documents that work: the benchmark and what it verified, the principles drawn from it, the resulting information architecture and user flows, and three competing wireframe directions for the order screen along with the trade-offs each carries.

2. Literature Review

2.1 The Point-of-Sale System as Operational Infrastructure

Point-of-sale systems have moved well beyond the electronic cash register. A contemporary restaurant platform handles table assignment, order modification, kitchen communication, split payments, tax calculation, inventory, and reporting, and increasingly synchronises with third-party delivery aggregators. This consolidation concentrates a large amount of functionality into interfaces that staff must navigate quickly and repeatedly, which makes arrangement and priority more consequential than feature count.

2.2 Usability and the Expert Repeat User

Nielsen and Molich (1990) established heuristic evaluation as a method for identifying usability problems against recognised principles, later refined by Nielsen (1994) into a widely applied set. Several of these heuristics bear directly on the POS context, particularly the emphasis on flexibility and efficiency of use, which holds that accelerators unseen by the novice user may speed up interaction for the expert. A restaurant cashier is precisely such an expert user. Interfaces optimised solely for first-time comprehension can penalise them.

2.3 Efficiency, Error, and Working Under Pressure

Norman (2013) argues that good design makes available actions visible, provides clear feedback, and anticipates error rather than merely penalising it. These concerns sharpen where the operator works at speed. Hassenzahl and Tractinsky (2006) note that user experience extends beyond task completion to the user's internal state and the context of use, which in this setting includes a waiting customer and a queue. Attention an interface demands is attention taken away from the service floor.

2.4 Competitive Benchmarking as Evidence

Comparative audits are used in applied practice to understand how established products resolve shared problems. Where several mature platforms converge on a similar solution, that convergence carries information: it reflects accumulated operational experience across large user bases. Cooper et al. (2014) observe that interface conventions carry learned expectations, so departing from them requires justification rather than being a neutral choice. Benchmarking is not a substitute for user research, but where user access is unavailable it provides a defensible evidence base, provided its claims are restricted to what sources actually verify.

2.5 Positioning of the Present Study

The literature establishes both the value and the limits of expert and comparative methods. Neither observes real users. The present study therefore treats its benchmark as evidence about category conventions rather than about the specific staff who would use this product, and presents the resulting design as a proposal to be tested rather than a validated outcome. Section 8 returns to this limitation.

3. Research Objectives

The study set out to address the following objectives:

1. To establish, from verifiable sources, what design conventions the leading restaurant POS platforms have converged on, and what “a modern POS interface” means in concrete terms.
2. To determine whether a contemporary visual treatment can be applied to a restaurant POS without increasing the number of steps required to complete a bill.
3. To translate the verified patterns into an information architecture, user flows, and wireframe directions for the order-taking screen, documenting the trade-offs each direction carries.

4. Method

The work proceeded in four stages: benchmark, principles, structure, and layout.

The benchmark examined three platforms selected for complementary reasons. Petpooja and Posist/Restroworks are established in the Indian restaurant market and share this product's operating context, including GST handling, aggregator integration, and multilingual requirements. Square for Restaurants was included as an international reference widely regarded for interface quality, studied for design approach rather than market-specific features.

A deliberate constraint governed this stage. Marketing websites describe features and design philosophy but do not reliably show the working interface. Claims were therefore recorded only where they could be confirmed from official sources or verified review material, and interface details that could not be confirmed were flagged for later verification rather than assumed. Nothing was inferred to fill a gap. This restricts what the benchmark can claim, but it means the claims it does make are traceable.

The verified findings were then consolidated into cross-platform patterns and translated into design principles. These informed an information architecture and a set of user flows, which established structure before any layout work began. Finally, three competing wireframe directions were developed for the order-taking screen, each a different resolution of the same underlying tension, together with variants covering takeaway, own-delivery, and aggregator orders.

5. Competitive Benchmark

Table 1 summarises the verified findings for each platform.

Table 1: UI and frontend benchmark of three leading POS platforms

Platform	Stated UX priority	Verified interface facts	Lesson for the redesign
Petpooja (India)	“10x faster billing”; “3-click billing”; all operations on a single screen	Keyboard and touchscreen views; offline capable; hardware-agnostic; 15+ Indian languages; multi-terminal billing; station-wise KOT printing	Speed and density, not visual polish. Fast task completion is the selling point for the Indian market.

Posist / Restroworks (India)	“Simple and clean UI” marketed as reducing training time	Server’s App for tableside ordering pushing directly to POS; built-in CRM; hardware-agnostic; used by large multi-outlet chains	A clean interface is itself a competitive selling point, not a cosmetic extra.
Square for Restaurants (USA)	Low learning curve; new staff proficient in minutes	iPad-based, touch-first; clean layout with large buttons; drag-and-drop colour-coded menu tiles; visual table map with real-time status colours	Sets the benchmark for a modern look: large touch targets, colour used functionally, generous spacing.

5.1 Patterns Shared Across Platforms

Six patterns appeared consistently across all three platforms:

- Speed is the primary claim. Petpooja markets ten-times-faster billing and a three-click process; Posist markets time saved at each step of order processing; Square markets staff proficiency within minutes. None of the three sells primarily on appearance.
- Controls are touch-first with large targets. A modern POS is tappable rather than densely clickable.
- Navigation is minimised. Petpooja states a single-screen philosophy explicitly; the shared goal is fewer taps to complete an order.
- Colour is functional. Square’s colour-coded menu tiles and table status colours carry information rather than decorating the screen.
- Offline capability is treated as essential, which matters particularly for Indian restaurants with unreliable connectivity.
- Companion applications are standard, including tableside ordering for waiting staff and a kitchen display system.

5.2 The Central Tension

Setting the Indian platforms alongside Square exposed a conflict rather than a consensus. Petpooja’s approach is built on density: everything on one screen, three clicks to a bill. Square’s approach is built on clarity: large tiles, generous spacing, colour-coded grouping, minimal learning curve. Generous spacing and large touch targets consume screen area, and screen

area is what density requires. The two positions pull against each other.

This reframed the design brief. The request for a modern look could not be treated as a visual exercise, because the most visible markers of a modern interface, namely spacing and target size, are the same properties that reduce the number of items visible at once and therefore risk adding steps. The problem became explicit: apply a contemporary visual treatment without increasing the step count of the billing sequence. Every subsequent decision was assessed against that constraint.

5.3 Learning from Documented Weaknesses

The benchmark also recorded criticisms of the reference platform, since a design benchmark that only catalogues strengths is of limited use. Reviewers of Square note that font size is not adjustable, that creating menu items is tedious even when duplicating an existing one, and that reporting drill-down stops at category level. The first and second of these informed decisions in this project: the menu management screens were given a bulk-edit path precisely to avoid the item-creation tedium reported by Square users.

6. Information Architecture

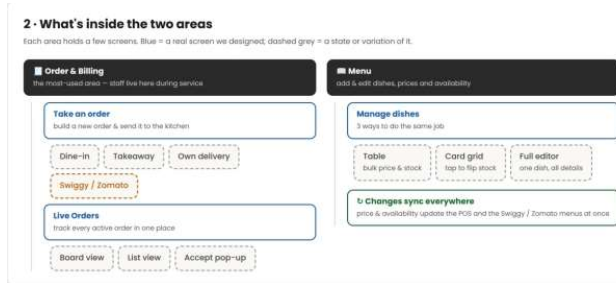
The platform was organised into seven top-level sections: Dashboard, Menu, Order and Billing, Customer, Table, Inventory, and Admin. Two of these were designed in full during the internship, selected on the basis of operational load rather than convenience. Order and Billing is where staff spend service hours, and Menu is where the daily availability changes originate. The remaining five were structured as placeholders.

Within Order and Billing, the architecture separates order taking from order tracking. Order taking covers dine-in, takeaway, own delivery, and aggregator orders; Live Orders provides board and list views of everything currently active, with an accept dialogue for incoming aggregator tickets. Within Menu, the same task is deliberately reachable three ways: a table view for bulk price and stock changes, a card grid for flipping availability with a single tap, and a full editor for detailed work on one dish. This reflects the observation that a manager marking a dish unavailable mid-service and a manager restructuring the menu after hours are performing the same operation under entirely different time pressures.

A single rule governs propagation: a price or availability change applies to the POS and the connected Swiggy and Zomato menus at once. Aggregator menus drifting out of step with the counter is a well-known operational failure, and treating synchronisation as automatic rather than as a separate task removes the opportunity for that drift.

Fig 1: Information architecture of the proposed POS





7. User Flows

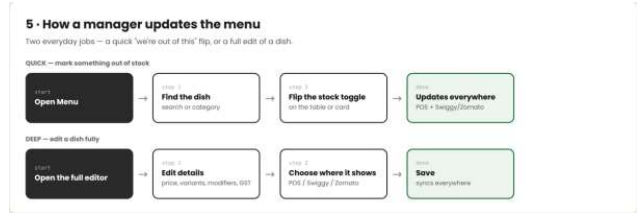
Three flows were mapped, covering the paths that account for most of a shift.

The dine-in flow runs from opening Order and Billing through selecting table, guest count, and waiter, adding dishes by tap or search with per-item notes, reviewing quantity, tax, and discount, sending the order to the kitchen, and taking payment by cash, UPI, card, or split.

The aggregator flow differs in an important respect: staff do not create these orders. A Swiggy or Zomato ticket arrives on its own with an alert and a countdown, and the staff task is to check it and accept it with a preparation time, which becomes the customer's estimated arrival. Items and notes are locked because they originate in the aggregator application, and the order is already paid. An own-delivery order follows the same path but staff enter the address and rider themselves and collect payment, since it is not prepaid. Modelling these as distinct flows rather than variations of one generic delivery path prevents the interface from asking for information it already has, or omitting information it does not.

The menu flow was split by urgency. The quick path handles marking a dish out of stock in three steps, since this happens mid-service when a kitchen runs out. The deep path covers full editing of price, variants, modifiers, tax, and channel visibility, and is used deliberately rather than under pressure.

Fig 2: User flows for dine-in, aggregator, and menu management



8. Wireframe Directions

Rather than presenting a single layout, three directions were developed for the order-taking screen. Each offers the same functions arranged differently, and each resolves the density-versus-clarity tension at a different point. Documenting them as alternatives with stated trade-offs allowed the choice to be made explicitly by the team rather than settled by assertion.

Table 2: Comparison of the three layout directions

Direction	Arrangement	Strength
1A Classic three-column	Categories left, menu grid centre, cart right	Most balanced easiest to read; select the default
1B Cart-left, wide menu	Cart and order setup left, large menu right	Highest menu vis (around 15 dishes); closest the cashier
1C Search-first dense list	Menu as a fast scannable list, cart right	Fastest for staff to know the menu (type press Enter); highest density

Direction 1A was proposed as the default. It is the most balanced arrangement and the easiest to read, and its cost, showing fewer items at once than 1B, is the least damaging of the three trade-offs. Direction 1C is notable for a different reason: it supports typing an item code followed by Enter, which for experienced staff is faster than any tap-based interaction. This is an accelerator in the sense Nielsen describes, invisible to a new user but valuable to a practised one, and it demonstrates that serving the expert user need not come at the novice's expense when both paths coexist on the same screen.

Fig 3a: Direction 1A — classic three-column layout

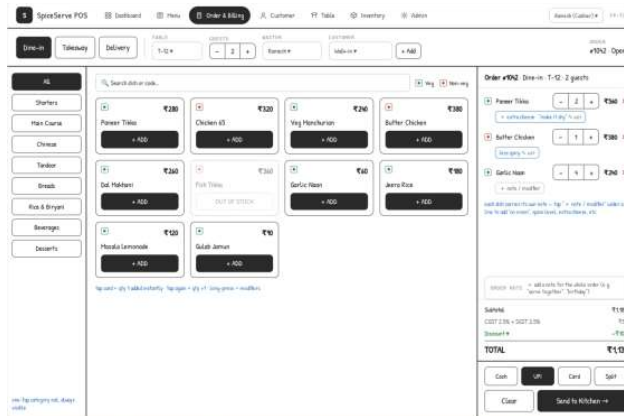
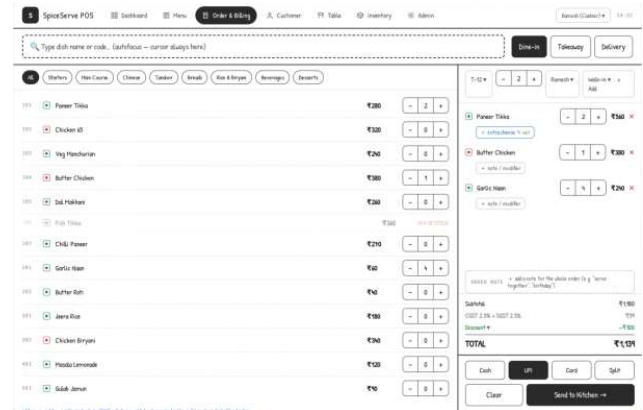


Fig 3b: Direction 1B — cart-left with

wide menu



8.1 Order-Type Variants

The selected layout was then adapted for the other order types, since each carries different information requirements. A takeaway order has no table or waiter but requires a pickup token and a ready-by time, adds a packing charge, and takes payment up front. An aggregator order locks its items and notes, shows as prepaid, and displays commission and payout alongside the bill. Several details that make an order type distinct, such as the pickup token or the commission line, exist in only one of them, which is why a single generic order screen would have served none of them well.

Fig 4a: Takeaway variant — pickup token,

ready-by time, packing charge

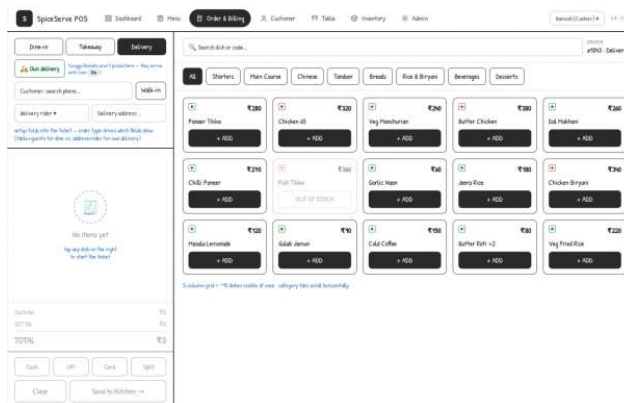


Fig 3c: Direction 1C — search-first dense list

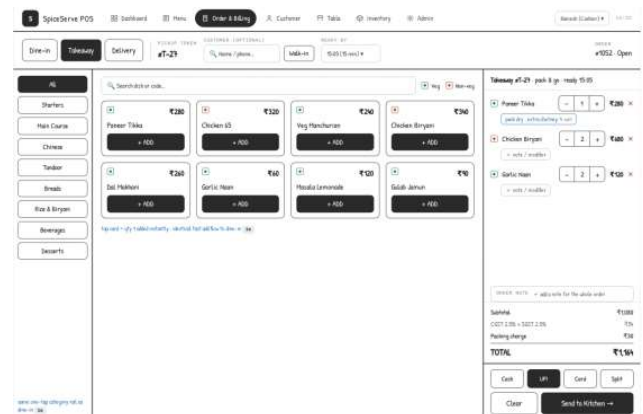
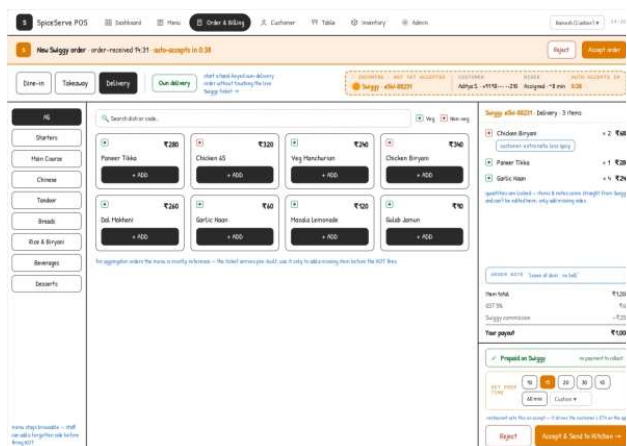


Fig 4b: Aggregator variant — locked items, prepaid, commission and payout



9. Discussion

The most useful outcome of this work was not a screen but a reframing. The initial brief asked for a modern interface, which reads as a visual request. The benchmark showed that in this product category the visual markers of modernity carry a direct operational cost, because spacing and target size consume the screen area that density requires. Once stated in those terms, the brief became a constraint that could be designed against and the resulting decisions could be defended on operational grounds rather than aesthetic preference.

The three-direction approach proved valuable for a related reason. Presenting a single layout invites a judgement about whether it is liked. Presenting three, each with its trade-off stated, invites a judgement about which cost the business is willing to carry. The second conversation is more productive and produces a decision the team owns.

The method also has an honest limitation, which the benchmark documented at the time it was compiled. Marketing sources describe design philosophy reliably but do not show the working interface, so several interface details were flagged for verification against product demonstrations rather than recorded as fact. Preserving that distinction constrains what the benchmark supports, but it prevents unverified claims entering the evidence base and being treated as settled by later work.

10. Conclusion

This study examined how a restaurant point-of-sale interface can be modernised without slowing the staff who depend on it. A benchmark of three leading platforms established that the category sells on speed rather than appearance, and identified six shared conventions covering touch targets, navigation depth, functional colour, offline capability, and companion applications. It also surfaced a genuine conflict between the density of the leading Indian platforms and the clarity of the international design reference.

That conflict became the organising constraint of the redesign: apply a contemporary visual treatment without adding a step to the billing sequence. The resulting work comprises an information architecture built around operational load, three user flows covering dine-in, aggregator, and menu management paths, and three wireframe directions for the order screen with their trade-offs stated rather than concealed.

The limitation is clear and worth stating plainly. These findings rest on competitive benchmarking, not on observing restaurant staff using the interface. Convergence across three mature platforms is meaningful evidence about category conventions, but it says nothing specific about the staff who would use this product. The proposed design is a considered proposal, not a validated solution.

Usability testing with restaurant staff under realistic service conditions would be the natural next step. Measuring the time and error rate for a standard billing sequence across the three layout directions would settle the density question with evidence rather than argument, and would establish whether the modern treatment succeeded in its central aim of costing nothing in speed. A wider benchmark taking in further Indian platforms would also strengthen the evidence base. This study establishes the groundwork for that evaluation.

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