



## World Series of Innovation (2025)

PayPal Opportunity for All Challenge (Chapter: WSI Impact League (ages 13-24))

# Bulkify



wxNAKBpN

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### Entrant details

How many members are on your team, including you? *Only 1 team member is needed to register per team.* 2

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### Entry details

**Are you associated with a NFTE partner?** No

<b>Did you participate in a NFTE Innovation Day with your class, school, or organization?</b>	No
<b>How many students are on your team?</b>	2
<b>Team Member 1 Name</b>	Tarun Batchu
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<b>Team Member 1 Age</b>	17
<b>Team Member 1 Parent or Guardian Email</b>	tarunbatchuprof@gmail.com
<b>Team Member 1 Gender</b>	Male
<b>Team Member 1 School/College (If currently not enrolled in school put N/A)</b>	Olentangy Liberty High School
<b>Team Member 1 Country</b>	United States
<b>Team Member 1: How would you describe your race, ethnicity, or cultural background?</b> (Select all that apply or choose 'Prefer not to answer.')	✓ Asian / Asian descent (e.g., East Asian, South Asian, Southeast Asian)
<b>Team Member 2 Name</b>	Tony Li
<b>Team Member 2 Email</b>	tli252007@gmail.com
<b>Team Member 2 Age</b>	18
<b>Team Member 2 Gender</b>	Male
<b>Team Member 2 School/College (If currently not enrolled in school put N/A)</b>	Vanderbilt University
<b>Team Member 2 Country</b>	United States
<b>Team Member 2: How would you describe your race, ethnicity, or cultural background?</b> (Select all that apply or choose 'Prefer not to answer.')	✓ Asian / Asian descent (e.g., East Asian, South Asian, Southeast Asian)

## What interests you most about this challenge?

What interests us most about this challenge is the opportunity to address a form of inequality that is often overlooked: the structural disadvantages small businesses face simply because they operate at a smaller scale. While entrepreneurship is frequently celebrated as a path to opportunity, many small and family-run businesses are locked into systems that make it harder for them to compete, grow, and sustain decent work—regardless of how hard they work or how long they have been in business.

This challenge resonates with us on a personal level. One of our families comes from a multigenerational history of running small convenience stores in India, where local businesses have served their communities for decades, sometimes centuries. Despite their importance to local economies, these businesses often operate on thin margins, pay higher prices for the same supplies as larger competitors, and have little leverage when negotiating with suppliers. Seeing how experience, dedication, and community trust are still not enough to overcome structural barriers made us deeply interested in finding solutions that create more equitable economic conditions.

The PayPal Opportunity for All Challenge stood out because it focuses not just on helping businesses survive, but on helping them access opportunity on fairer terms. It encourages solutions that foster inclusion, strengthen local economies, and enable growth without relying on debt or extractive models. We are especially drawn to the idea of empowering small businesses to grow through efficiency and collaboration rather than forcing them to compete in systems designed for large corporations.

What excites us most is the challenge's emphasis on scalable impact. Small businesses are the backbone of economies worldwide, employing the majority of the global workforce and anchoring local communities. Supporting their growth means supporting job creation, economic stability, and upward mobility—especially for immigrant founders, family-run enterprises, and entrepreneurs in underserved communities.

Ultimately, this challenge matters to us because it reframes economic growth as something that should be shared and accessible, not reserved for those with the most capital or bargaining power. It invites innovation that reshapes the rules of participation in the economy, and that is the kind of impact we are motivated to pursue.

## Who is experiencing the problem you are working to solve?

The group experiencing this problem is small and micro-business owners—especially cash-constrained, independent “Main Street” businesses (cafés, bakeries, convenience stores, salons, repair shops, small retailers, small manufacturers) who pay higher input and shipping costs because they buy alone and lack negotiating leverage.

United States:

In the U.S., this affects an enormous share of the economy: the U.S. has ~34.8 million small businesses and small businesses account for ~45.9% of private-sector employment (about 59 million people), according to the U.S. Small Business Administration (SBA) Office of Advocacy. These firms are highly exposed to rising supplier costs because many purchase in small batches and don't meet bulk-discount thresholds, meaning their margins compress faster than large chains' margins when prices rise. The problem is especially acute for very small firms (single-location businesses), new businesses without supplier relationships, and businesses in “low-density” areas where shipping and distributor options are limited.

This also disproportionately affects underserved founders—including immigrant, minority, and women entrepreneurs—because thin margins and limited working capital reduce their ability to buy inventory ahead of time, negotiate payment terms, or absorb price shocks. (The “scale disadvantage” becomes an inclusion issue because it blocks growth even when demand exists.)

Global:

Worldwide, the same issue hits even harder. MSMEs (micro, small, and medium enterprises) make up ~90% of businesses, provide 60–70% of employment, and generate ~50% of GDP globally, according to the United Nations and IFC (World Bank Group). The International Labour Organization also reports MSMEs account for ~70% of total

employment worldwide, and that MSME productivity is only about one-third of large firms—reflecting structural disadvantages in bargaining power, technology, and market access.

In many emerging markets, the challenge is compounded by informality and limited access to finance: the World Bank notes that ~40% of formal MSMEs are credit-constrained, which makes it even harder to buy in bulk or buffer volatile input prices. In crisis-affected regions (conflict, displacement, or climate shocks), supply disruptions and price spikes make small businesses even more vulnerable, because they can't secure stable contracts or diversify suppliers the way large companies can.

In short: the people experiencing the problem are the millions of small business owners—and the workers they employ—who are locked into a cost structure that penalizes them for being small, limiting growth, resilience, and opportunity.

### **What problem or need are you trying to solve for your customer?**

The core problem we are trying to solve is the structural cost disadvantage faced by small and micro-businesses, which limits their ability to grow, compete, and create stable economic opportunity—even when demand for their products or services exists.

For our customers—independent small business owners such as cafés, bakeries, convenience stores, local retailers, service providers, and small manufacturers—the issue is not effort, skill, or ambition. It is scale. Large companies secure lower prices for inputs because they buy in bulk, negotiate long-term contracts, and optimize logistics. Small businesses, by contrast, purchase alone, in smaller quantities, and often at unpredictable intervals. As a result, they consistently pay higher unit prices, higher shipping costs, worse payment terms, and face greater price volatility for the exact same goods.

This disadvantage compounds over time. Thin margins reduce a business's ability to hire, raise wages, invest in equipment, or withstand economic shocks such as inflation, supply disruptions, or seasonal downturns. Many small businesses respond by taking on debt, raising prices (which can drive customers away), or cutting labor—outcomes that undermine both business sustainability and decent work. For underserved founders, including immigrant, minority, and first-time entrepreneurs, this barrier is even higher due to limited access to capital and supplier networks.

Existing solutions do not adequately address this need. Discount platforms and chamber-based programs typically offer static, pre-negotiated deals that do not reflect real purchasing behavior, timing, or demand. Traditional cooperatives require long-term commitment, coordination, governance, and trust between businesses—costs that many owners simply do not have time or capacity to absorb. As a result, most small businesses continue to buy alone, even when collective action would clearly benefit them.

What small businesses need is access to purchasing power without added complexity. They need a way to lower costs and stabilize margins without taking on debt, changing suppliers, forming permanent cooperatives, or investing time in coordination. They also need solutions that adapt dynamically as their demand changes, rather than locking them into rigid agreements.

Our solution addresses this unmet need by enabling temporary, demand-driven collective purchasing that forms automatically around real buying behavior. Instead of asking businesses to organize themselves, the system identifies overlap in needs, optimizes timing and scale, and executes group purchases on their behalf—allowing small businesses to access bulk pricing while remaining independent. This turns purchasing from a structural disadvantage into a strategic advantage.

Ultimately, the problem we are solving is not just high prices, but unequal access to economic leverage. By lowering input costs and reducing volatility, our solution helps small businesses retain more value from their work, grow sustainably, and create more stable jobs. In doing so, it directly supports inclusive economic growth and advances the goals of SDG 8 by making opportunity more accessible to the businesses that form the backbone of local and global economies.

## **What is your innovative idea to solve the problem, and how will it work?**

Our innovative idea is an AI-powered collective purchasing platform that gives small businesses access to bulk buying power on demand, without requiring permanent cooperatives, long-term contracts, or manual coordination. The system is designed to remove the structural cost disadvantage small businesses face by turning fragmented, individual purchases into temporarily unified demand that can negotiate better prices, shipping, and terms.

At the core of the solution is the idea of ephemeral purchasing cooperatives. Instead of forming fixed groups or memberships, the platform uses AI to create short-lived buying groups that exist only for a specific product, quantity threshold, and time window. Once the purchase is complete, the group dissolves and can be reconfigured differently for the next opportunity. This avoids the governance, politics, and commitment that cause traditional cooperatives and group-buying programs to fail.

Technically, the platform works by analyzing real purchasing behavior (with user permission) through connected payment, accounting, or invoice data. The system learns what inputs businesses buy, how frequently, in what quantities, and where they are located. Using graph-based clustering models, the AI identifies groups of nearby businesses with overlapping needs—such as bakeries buying flour weekly or retailers sourcing similar packaging materials.

Once a potential group is identified, demand forecasting models predict near-term purchasing needs and evaluate whether waiting, accelerating, or resizing an order would unlock a better price tier. A price optimization engine then models supplier cost curves, bulk discount thresholds, and shipping costs to determine the most cost-effective group order configuration. Unlike static discount platforms, the system dynamically optimizes when and how much to buy, not just who buys.

The platform then initiates the opportunity by presenting each business with a clear, low-friction offer: expected savings, quantity, timing, and delivery details. Importantly, businesses do not need to communicate with each other or negotiate. A coordination layer handles payment splitting, supplier payment, invoicing, and logistics automatically, removing trust and time barriers that typically prevent collective action.

On the supplier side, the platform aggregates predictable demand into larger, cleaner orders, reducing volatility and enabling smaller or local suppliers to compete for business they would otherwise miss. Over time, a supplier performance model ranks reliability, fulfillment speed, and pricing behavior, improving outcomes for both buyers and sellers.

The result is a system that transforms purchasing from an individual, high-friction task into a data-driven optimization process. Small businesses retain their independence while gaining access to economies of scale normally reserved for large firms. By increasing margins without debt or price hikes, the platform enables more sustainable growth, job creation, and resilience—directly advancing inclusive economic opportunity under SDG 8.

## **What makes your innovation different or better than existing solutions?**

What makes our innovation different from existing solutions is that it does not simply distribute pre-negotiated discounts or replicate traditional group buying models. Instead, it creates new purchasing power dynamically by using AI to coordinate demand in ways that are not feasible through manual organization, memberships, or static programs.

Most existing solutions for small business purchasing—such as chamber-of-commerce discounts, loyalty platforms, or services like LMBX—rely on fixed supplier deals that are negotiated in advance and offered broadly to members. While helpful, these approaches are limited: they do not adapt to real purchasing behavior, timing, or scale, and they do not change the underlying cost structure small businesses face. Traditional purchasing cooperatives go a step further but require long-term commitments, governance, trust between members, and significant coordination, which many small business owners simply do not have the time or capacity to manage.

Our innovation is fundamentally different because it is built around ephemeral, AI-formed purchasing cooperatives. Buying groups are created automatically, exist only for a specific order or time window, and dissolve immediately

after. There is no permanence, no membership obligation, and no bureaucracy. This removes the single largest barrier to collective action: the friction of organization.

Another key differentiator is that the system is AI-initiated rather than user-initiated. Existing platforms require business owners to search for deals, opt into programs, or manually coordinate with others. Our platform proactively identifies opportunities by analyzing real purchasing patterns (with permission), detecting overlap across businesses, and initiating group offers before owners even realize coordination is possible. This shifts the burden of effort away from small business owners—who are already time-constrained—and onto the system.

The platform also introduces demand-aware timing and scale optimization, which is rarely addressed by current solutions. Rather than offering static discounts, our AI models evaluate when to place an order, how long to wait to reach a better pricing tier, and how order size affects unit cost and shipping efficiency. Purchasing becomes an optimization problem rather than a one-size-fits-all deal.

Importantly, our solution requires zero social coordination and zero trust between businesses. Participants never need to communicate with one another, share sensitive information, or negotiate. The platform handles payment splitting, supplier negotiation, invoicing, and logistics automatically. This makes the system far more accessible to immigrant founders, first-time entrepreneurs, and informal or underserved businesses who may lack networks or feel uncomfortable engaging in traditional cooperatives.

Finally, our innovation prioritizes margin-first growth rather than debt-driven growth. Many existing tools for small businesses focus on loans, credit, or revenue expansion. Our approach lowers costs directly, increasing margins and stability without pushing businesses to borrow, raise prices, or overextend. This directly supports sustainable growth, job creation, and resilience—core goals of SDG 8.

Together, these differences make our solution not just a better discount platform, but a new form of economic infrastructure that gives small businesses access to scale, efficiency, and opportunity on fairer terms.

### Upload your logo representing your innovation!

**BULKIFY**  
Buy Together. Save More.



[Download \(139 KiB download\)](#)

**What type of group or funder would best fit to support your idea?**

For-Profit Business

### How would your solution remain sustainable?

Bulkify is designed to be sustainable because its impact and business model reinforce each other. The platform creates value by lowering costs for small businesses through market-based coordination rather than subsidies, ensuring it can scale, adapt, and persist over time without reliance on grants or one-time funding.

Financial sustainability comes from Bulkify's for-profit, value-aligned model. Small businesses save money on every purchase by accessing bulk pricing they could not reach alone, while Bulkify captures a small portion of the value created through transaction fees or supplier-side incentives. Because savings are generated through efficiency—not debt or price increases—businesses have a clear, ongoing reason to continue using the platform. As more

businesses participate, the system becomes more valuable: larger purchasing clusters unlock better pricing, attracting more users and suppliers in a virtuous cycle.

Operational sustainability is driven by automation and AI. Traditional cooperatives and purchasing programs rely on human coordination, which is costly, slow, and fragile. Bulkify replaces that overhead with algorithms that dynamically form temporary buying groups, optimize timing and scale, and dissolve once orders are complete. This allows the platform to operate continuously across many products, locations, and business types without proportional increases in staffing or complexity. The system improves over time as models learn from historical purchasing and supplier performance data.

Market sustainability is strengthened by Bulkify's supplier-side benefits. By aggregating predictable demand, the platform reduces order volatility and logistics inefficiencies for suppliers, making participation economically attractive. This opens opportunities for smaller, local, and minority-owned suppliers to compete for larger contracts, creating a more resilient and inclusive supply ecosystem. Because suppliers also benefit, Bulkify does not depend on constant renegotiation of discounts to survive.

Social sustainability is embedded in the design. Bulkify lowers structural barriers for immigrant founders, family-run businesses, and cash-constrained entrepreneurs by improving margins without requiring loans, long-term contracts, or social coordination. By focusing on margin stability rather than rapid expansion, the platform supports business survival, job retention, and wage stability—key components of decent work under SDG 8.

Finally, scalability ensures longevity. Bulkify can expand across regions, industries, and economic conditions without changing how businesses operate. It integrates with existing purchasing behavior rather than forcing adoption of new workflows, which increases long-term retention and trust.

Together, these factors ensure Bulkify is not a short-term intervention, but a self-sustaining economic infrastructure that grows by continuously creating fairer access to opportunity for small businesses.

### **In one sentence, describe your business innovation.**

Bulkify is an AI-powered platform that creates temporary, on-demand buying groups so small businesses can access bulk pricing, reduce costs, and grow sustainably without debt, long-term commitments, or manual coordination.

### **How did working on this challenge change how you see the world or how you approach problems?**

Working on this challenge fundamentally reshaped how we think about economic inequality, markets, and the role of technology in solving real-world problems. It pushed us to move beyond surface-level explanations of success and failure and instead interrogate the structural mechanics that quietly shape who gets access to opportunity and who does not.

Initially, we approached small business challenges through familiar lenses—access to capital, marketing tools, or productivity software. These are common narratives in entrepreneurship, and they assume that if individuals are given the right tools or enough effort, outcomes will improve. Through this challenge, however, we began to question that assumption. We realized that many small businesses fail or stagnate not because they lack skill, ambition, or innovation, but because they operate within systems that systematically disadvantage them. The price a business pays for flour, packaging, or inventory is not a reflection of merit; it is a reflection of scale and bargaining power.

This realization led us to think more critically about markets as designed systems, not neutral environments. Economies of scale are often treated as a natural outcome of growth, but in practice they function as a gatekeeper—rewarding size early and making it difficult for smaller actors to ever catch up. Once we saw this, the problem shifted from “How do we help small businesses grow faster?” to “Why are small businesses required to grow before they are allowed to compete fairly?” That reframing opened up new solution spaces.

The challenge also changed how we approach innovation itself. Instead of defaulting to feature-heavy products or incremental improvements, we became more interested in leverage points—places where small changes in coordination or incentives could unlock outsized impact. Bulkify emerged from recognizing that collective purchasing power already exists within local economies, but remains inaccessible because coordination is costly, risky, and time-consuming for individuals. Using AI to remove that friction reframed technology for us: not as automation for its own sake, but as an enabler of collective action that humans struggle to organize on their own.

We also became more intellectually curious about inclusion as a systems problem. Traditional cooperative models, membership programs, and networking-based solutions often exclude the very people they aim to help—immigrant founders, informal businesses, or first-time entrepreneurs—because they require time, trust, social capital, or long-term commitment. Designing a solution that required none of those forced us to confront who is silently excluded by default and how thoughtful design can expand access without stigma or complexity.

Ultimately, this challenge changed how we see opportunity itself. We now view economic growth not as something that should depend on who has the most capital or leverage, but as something that can be embedded into infrastructure. It reinforced our belief that the most meaningful innovations are not those that redistribute value after the fact, but those that change the rules of participation so that opportunity is created more fairly from the start.

### **What is one thing you would explore more in your idea if given more time?**

If given more time, we would explore how dynamic collective purchasing can evolve into a broader resilience and opportunity infrastructure for small businesses, especially during periods of economic stress. While Bulkify is designed to lower costs through on-demand economies of scale, we believe its underlying coordination engine could play a much larger role in helping small businesses withstand shocks and plan for sustainable growth.

One area we would explore more deeply is adaptive response to volatility. Small businesses are often the first to feel the impact of inflation spikes, supply chain disruptions, or sudden demand drops, yet they have the least capacity to respond. With more time, we would expand Bulkify's models to detect early signals of stress—such as rising input prices or supply shortages—and proactively form purchasing groups that stabilize costs before crises escalate. This would shift Bulkify from a reactive savings tool to a preventive resilience system.

We would also invest in refining equity-aware optimization. Not all small businesses are equally positioned to participate in collective purchasing; newer, smaller, or cash-constrained businesses may need additional support to benefit fully. With more time, we would explore ways to weight recommendations so that those most vulnerable receive greater marginal benefit—without creating dependency or distorting incentives. This could include prioritizing access to savings opportunities or designing payment timing that better fits cash-flow realities.

Another area of exploration is supplier diversity and local economic development. While Bulkify already enables aggregated demand, deeper work could ensure that minority-owned, local, and smaller suppliers are surfaced more effectively and given fair access to collective orders. This would help ensure that value is not only captured by buyers, but also retained within local economies.

Finally, we would expand longitudinal impact measurement. With additional time, we would study how repeated participation affects business survival, job creation, wage stability, and community economic health over months and years. Understanding these longer-term effects would allow us to refine the platform and strengthen the evidence base for its role in advancing inclusive economic growth.

Exploring these areas would help Bulkify mature from a powerful cost-reduction tool into a systemic platform for small business resilience, inclusion, and opportunity.

### **Why is contributing to this challenge important to YOU?**

Contributing to this challenge is important to us because it speaks directly to how opportunity is created—or constrained—by the systems people operate within, rather than by individual effort alone. Small businesses are often celebrated as symbols of entrepreneurship and resilience, yet many are forced to compete in markets



structured around scale, leverage, and access that they were never designed to have. This challenge gave us the space to interrogate that contradiction and try to address it in a meaningful way.

On a personal level, this problem resonates because we have seen how family-run and community-based businesses can be deeply rooted, hardworking, and essential to local economies, yet still struggle due to factors entirely outside their control. Generations of experience, trust within a community, and long hours are often not enough to overcome higher input costs, thinner margins, and lack of bargaining power. Recognizing that these challenges are structural rather than personal failures made us want to focus on solutions that change the rules of participation rather than asking individuals to work harder within unfair systems.

This challenge is important to us because it reframes economic growth as something that should be accessible and inclusive, not reserved for those with the most capital or negotiating power. It pushes innovators to think beyond loans, subsidies, or short-term fixes and instead consider how technology can quietly rebalance power in markets. We were drawn to the idea that improving outcomes for small businesses does not require charity or redistribution, but smarter infrastructure that allows them to capture value that already exists.

Working on this challenge also reinforced our belief that technology is most impactful when it enables collective action. Many small businesses face the same problems at the same time, yet are isolated from one another by time constraints, competition, or lack of coordination. Designing a system that lowers costs without requiring social negotiation or long-term commitment felt like a way to expand opportunity without adding burden—especially for immigrant founders, first-time entrepreneurs, and businesses operating on the margins.

Ultimately, contributing to this challenge matters to us because it aligns with how we think about impact: creating durable, market-based solutions that improve fairness while remaining sustainable. It represents an opportunity to explore how thoughtful design and intelligent systems can make economic growth more equitable, strengthen local communities, and support the people whose businesses form the backbone of economies around the world.

I have read and understand the participation agreement

✓

**By checking this box, I acknowledge that I have carefully reviewed the NFTE AI Usage Guide and understand the following:**



**Proper Use of AI:** You agree to use AI tools and resources in accordance with the guidelines provided. This includes ensuring that any AI-generated content or assistance is used ethically and in alignment with the competition's rules.

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