

LEVIOTHAN

The Smart Aquarium Monitoring System

ABSTRACT

LevloThan, an innovative company specializing in IoT smart aquarium solutions, is exploring expansion into m-commerce and data-driven customer engagement. This transition requires a holistic transformation—impacting not only infrastructure, but also workflow, culture, management, and customer experience. By adopting mobile-first strategies, leveraging real-time feedback systems, and evolving cross-functional workflows (visualized as a body of water), LevloThan aims to improve operational efficiency, customer satisfaction, and long-term profitability in a competitive and tech-forward market.

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Current Flow: What's Kraken?

LevloThan is currently a smaller venture – but is more than ready to start expanding. The Kraken – currently the star product – can be found in specialty fish stores which are brick/mortar and through their own website. They do have a presence on their retailer's websites, but it requires a special order.

The company is relatively new, but has made waves in the hobby. The consumer base is widely spread out – first time aquarium owners who want a solid foundation, those looking to upgrade their tank, and experienced hobbyist who want to enjoy their tanks more than just doing maintenance all of the time. This also spans over fresh to saltwater.

LevloThan does have a website where The Kraken can be purchased, along with the add-ons (dosing station, automatic feeder, etc.), dry/frozen food, a variety of different chemicals, cleaning materials and cement, as well as some basic tools – tongs, tweezers, pipettes, etc. There are plans to expand the offerings in the near future – livestock anyone?! - as well as an expansion on the technology.

They have an app as well that works directly with the Kraken, but currently no m-commerce is offered. The company wanted to see how they did with their online presence first and have everything good and running through a few channels before adding on more. Being established to this point – they are now ready to expand and understand that a large part of commerce is done through mobile ordering.

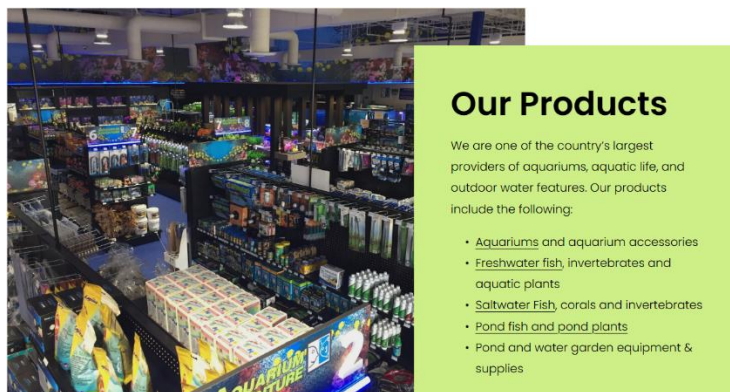


Figure 1- One of Our Specialty Retailers - Aquarium Adventure - Columbus, OH



Figure 2 - Seachem - One of our Trusted Partner

The Power of Simplicity: Consumers and Mobile Shopping

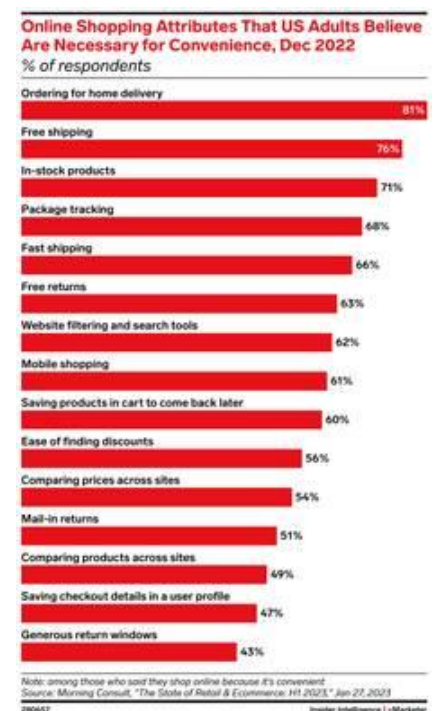
98% of Americans own a mobile phone (Bazen, 2023). 60% of US adults believe that mobile shopping is a necessity for convenience. This means that businesses are smart to create well-designed and easy-to use mobile websites. In 2024, US m-commerce sales surpassed \$543 billion, accounted for roughly 7.5% of total retail sales, and estimated to make up about 45% of total US retail e-commerce sales. (King) That is a whole lot of sales accounted for via mobile devices, which means that without m-commerce – that is a whole lot of sales that LevloThan is missing out on.

The growth of m-commerce is directly connected to how users are accessing the internet – smartphones are much more accessible, high-speed internet is no longer a premium infrastructure (in many countries), and users have started to ditch PCs in exchange for their smaller counterparts. LevloThan needs to be where the users are – not just under the sea – but rather embracing m-commerce.

There are several impactful ways that m-commerce simplifies the consumer experience. First, most people always have their phone with them, computers – not as much. They can shop 24/7 from their phone – this is extremely convenient and ideal for busy schedules or even impulse purchases. One-click purchasing, digital wallets, auto-filled forms, etc. make the purchase very simple and fast. No need to have to run to find your wallet, or dig in your bag for a card, etc. This means lower cart abandonment and more closed sales. M-Commerce often uses AI/Data to personalize recommendations, deals, content, etc. based on browsing/purchasing history – push notifications can alert consumers to what they actually care about and what is back in stock. There are location-based services that could be used – for example, in LevloThan’s case – if a consumer orders The Kraken, they get a deal on a package of frozen food from their local fish store that is a partner to LevloThan. M-commerce also makes tracking simple with real-time order updates and tracking. There are also loyalty and rewards programs that are a draw to consumers. This is all in the palm of your hand. Very convenient – especially since the commerce would be integrated into the same app that The Kraken, and future builds would be housed.

LevloThan can leverage m-commerce not just to sell The Kraken, but to support users, drive revenue, and deepen engagement with their consumers.

Figure 3- A chart showing the online shopping attributes that US adults believe are necessary for convenience, December 2022.(King)



We're Gonna Need a Bigger Boat: Expansion

There is a sea-world of possibilities for expansion. Directly through the app, consumers would be able to purchase the essentials – additives, food, accessories, new sensors, etc. Kraken-compatible add-on's could be a mobile exclusive – how about a new skin? If you don't like the all black design, what about ocean waves or a clownfish?

It would take The Kraken's suggestions and be able to alert you of them, and you can have a one-click buying option directly from the app, or an auto-ship when you are getting low on food/chemicals. There could be a dashboard for those who are monitoring multiple tanks that you can switch through and have separate ordering channels to keep everything streamlined. This also is along the lines of AI-driven suggestions. Push notifications could also be in place for app-only promotions and compatible feature drops.

LevloThan would be able to expand into subscription models, which we were interested in per our email for LevloThan's Enterprise System Workflows to Mr. Dawson Williams, CEO.

"We can utilize our partnerships for potential subscription services, giving customers access to specialized expert consultations, or even webinars, etc. Since The Kraken has a built-in camera, why not include Social Media/Content-sharing options in the app – go ahead and share your pictures, performance, create a virtual aquarium profile, etc. We can leverage our first-mover advantage by having passionate and well-regarded aquarium enthusiasts provide feedback on the current state, and what other features they would like to see, as "Betta Testers", which would help to build a loyal customer base early on." (McFall, 2025)

Subscription services could give consumers access to expert consultations, webinars, monthly skins or boxes with new foods, gear, etc., maintenance scheduling, and such. Consumers could rate, review, and recommend products with the app, user-generated content could be showcased, and a loyalty/rewards program could be implemented for purchases, maintenance streaks, content sharing, etc.

Since many people use social media – social ads that would link directly to in-app purchase options would be implemented. QR codes on packaging and in fish stores that could direct customers to product tutorials and reviews could be utilized, and eventually if all would go to plan, we could have somebody like George Mavrakis - @coralfish12g – review the product and have a promo code.

We could collaborate with well-known aquarium brands, Seachem, Red Sea or Fluval, for instance to bundle with their tanks.

Another big draw could be "Kraken-as-a-Service" or KaaS – this is a full setup + monitoring subscription as a premium user. Mobile-first signup could be another feature – Select the tank time, receive a custom Kraken bundle and goodies, get real-time setup help and continuous support via the app, and a premium subscription.



Figure 4- Expansion can be intimidating, but not with a bigger boat

We Work Hard So Our Fish Can Have Better Lives: Profitability

From a monitoring tool into a revenue-generating ecosystem – that’s what m-commerce could do for LevloThan.

Third-party cuts wouldn’t be applied if consumers bought directly through LevloThan/App, and the pricing, bundling, and promotions would boost the gross margin per unit. Direct-to-consumer sales generally yield higher margins.

The subscription services that would be offered would generate recurring revenue – it’s predictable and scalable through monthly plans, auto-ship consumables, and for premium app features. This would smooth out cash flow and increase customer lifetime value (CLTV).

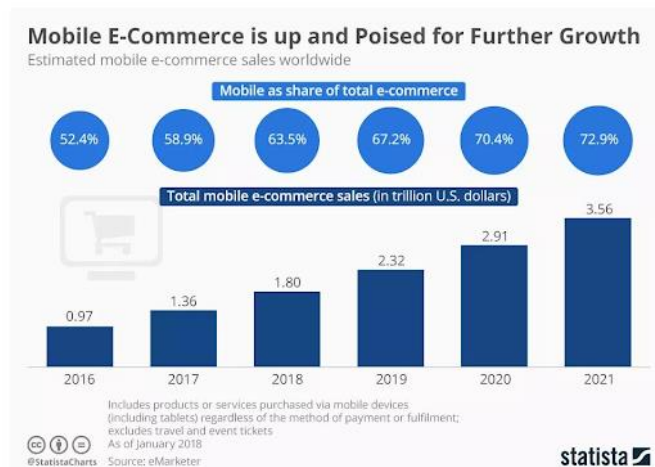
Use of real-time tank data would prompt relevant purchases – it increases average order value (AOV), and why not throw in another suggestion when checking out? Those impulse buys add up.

In-app specials prompt additional impulse sales as well – bundle deals such as the “reef ready pack” with cleaning pads and additives for coral, or the “Merry Fish-mas” special discounts available through the app. The convenience of the app sells over and over again through push notifications, banners, rewards, etc. It’s also faster – fewer steps, one-click buying, saved, payment methods – this all creates sales and higher revenue.



Figure 5- Raising the Bar of M-Commerce

Figure 6 - Let's Grow! More growth ahead



Go With the Workflow: Impacts on Current Systems

Mobility introduces both opportunities and pressure points in the existing workflow. Some aspects that could be impacted or require changes are scalability. The backend needs to be able to scale smoothly - cloud services, databases, APIs, etc. – because without this, we risk slow app performance, delays in sensor data syncing, or even downtime. Scalable cloud solutions and load balancers could be a couple of ways to help here.

Mobile access increases security risks, which could lead to loss of user trust and violation of data privacy regulations. Biometric logins, mobile app security audits, and encryption are a few solutions.

We have to be cognizant of device compatibility and app maintenance – there are so many different phones out there. Brands, multiple OS versions, devices, etc. This is especially important because the foundation of The Kraken is an app, and if only one type of mobile user is able to utilize the app – we have a major problem. Mobile CI/CD could be very helpful in this case. The Kraken needs to be able to sync reliably with mobile devices, in real-time – disruptions in connectivity, firmware mismatches, etc. can be extremely frustrating. Offline caching of key data and IoT messaging protocols need to be thought of. Other areas are support and operations and integration with M-Commerce Systems.

We know that specifically with LevloThan, BI, DevOps, CRMs, and SCMs were all implemented.

- Business Intelligence:
 - Increased data variety and volume – new app interactions, additional push notifications, purchases, and geolocation are all new streams of information that would be coming in. There are real-time expectations – BI needs to handle and visualize live sensor/app data quickly.
 - We need to make sure that the mobile-specific data syncs correctly with our BI tools
 - Real-time dashboards would be a must
 - Mobile analytics platforms integrated with existing BI stacks would be beneficial
- DevOps:
 - Users expect everything to be fast – especially frequent app updates
 - DevOps now has to manage both mobile apps and embedded firmware for OTA updates
 - The many OS versions, screen sizes, connectivity, etc. are difficult to support and increases testing complexity
 - Mobile-First CI/CD would need to be introduced
 - Automated mobile UI testing across various devices would need to be implemented
 - OTA firmware delivery pipelines should be in place
 - Monitoring tools to triage issues fast should be utilized
- Customer Relationship Management System
 - New customer touchpoints – usage, in-app messages, purchases – must now feed into CRMs
 - Behavioral Data becomes more actionable
 - Real-time personalization based on mobile behavior is now necessary

- Mobile app needs to be integrated with the CRMs
- Users to be segmented by mobile behavior
- Automated workflows to be triggered
- Supply Chain Management System
 - Real-time demand signals – can drive personalized restocking
 - Instant ordering via the app now changes demand forecasting and fulfillment dynamics
 - Inventory must now sync live with mobile in order to avoid overselling
 - SCMs needs to sync with the m-commerce platform for real-time inventory visibility
 - IoT Telemetry can be utilized to predict product consumption
 - Fulfillment tracking should be integrated back into the app

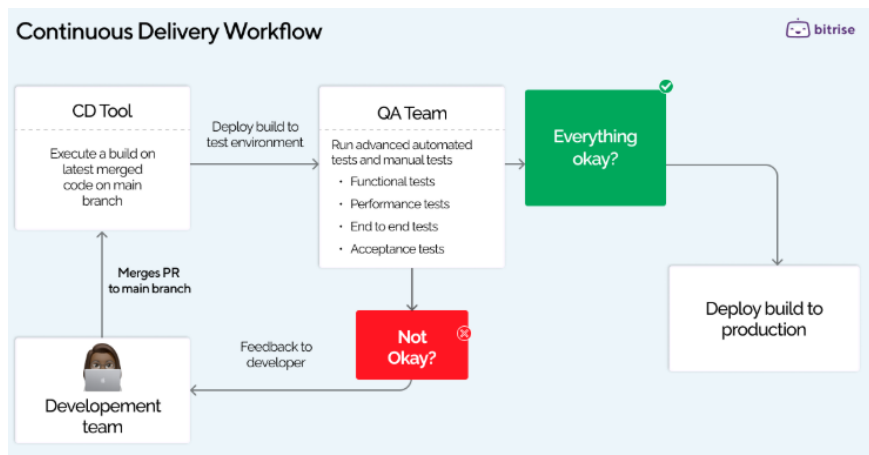
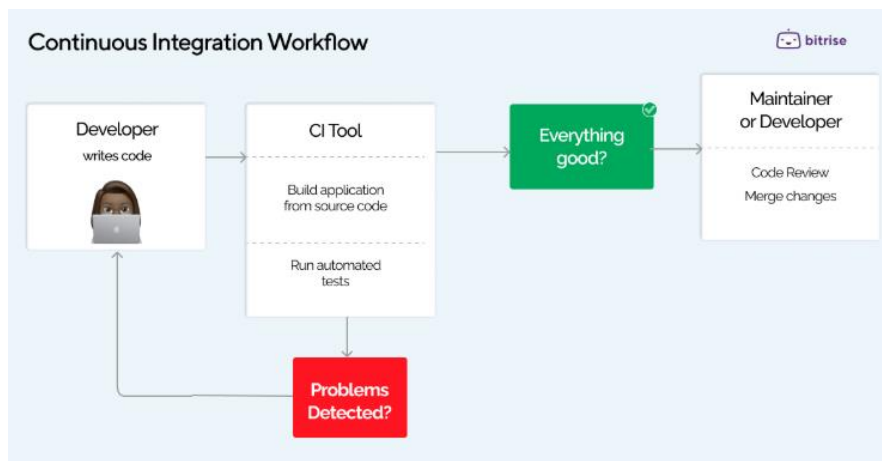


Figure 7- CI/CD Cycle

Pisciculture = (Fish) Culture

LevloThan has been an innovative company, that has done well with alliance strategy, and has always put the customer first. Between calls reaching a live person, personalized e-mails, and internally, we believe that they should be treated, the way we treat the tanks we so deeply care for-like family.

The internal teams have been prepared for an increase in sales, and with that growth in the company, additional staff, and some ebbs and flows in the company as we set off back to smooth sailing.

Because of the instant access that m-commerce allows for, we need to shift to a more real-time, reactive mindset. Teams will need to start trusting in the data, trusting in their teammates, and act. Take ownership of what needs to be done. This may be difficult in some situations, but employees should feel empowered to be able to do this, and respected for it. With that being said, work/life balance can blur – with the remote monitoring tools, slack, teams, email, and notifications – we don't want employees to risk burnout, even with the additional work coming in. This is where leadership needs to set clear boundaries on response times, after-hours work, etc. This is also why there needs to be appropriate staffing, because no single employee should feel like they are carrying the weight on their shoulders.

Speed will pick up – testing, updates, social media campaigns, feature releases, etc. Failing fast and iterating will happen. We develop, we learn, we launch, we learn, and then we improve. With the pace picking up and more personalized data coming in, product and marketing teams now own data-driven experimentation.

As this is a tech company, flexibility is a must. Would there still be an office space – yes, why not? Sometimes it's difficult for people to work remotely – other family members working from home, just want to get out of the house for a bit, want to throw ideas around with co-workers in person, or maybe just eat lunch with somebody...definitely encouraged. The office space should be comfortable though, offer perks to employees – lattes and unlimited snacks and drinks, as well as a few fish tanks! If you don't want to go into the office, or you are not close – remote work is fine! There are so many tools out there that allow for it and we have trust in our employees that if the work gets done, and done well, then we are absolutely flexible.

Mobility allows direct connection to users through the app – user-centric, experience-driven thinking. This moves us toward customer empathy and continuous improvement. Teams need to understand that there will be shifts from “product-led” to “experience-led” innovation.

Another shift will be the need to be security and compliance aware. Because of the new channels – the app, cloud APIs, payment integrations, etc. – there are more risks. Security-conscious behavior across all departments is now a priority.



Top of the (Fish) Food Chain: Management

Management, like the rest of the organization will have shifts. We don't want silos, but rather cross-functional teams. This is important because we want to encourage collaboration, even though there will be separate teams – Mobile, Devices, Customer Success, Marketing, HR, etc. Adding m-commerce into the mix (and with IoT) requires coordination between hardware, software, marketing, and support.

New roles will be introduced – mobile experience lead, mobile DevOps lead, product growth lead – m-commerce, security and compliance lead for mobile/cloud, data and insights lead, etc. These are important because the bridge mobile, data, and user experience.

Management will need to empower and trust their teams – lower-level teams will need more autonomy to act quickly.

Leadership will need to define LevloThan's vision and have a high-level road map of where we are, where we want to be, and phases. Openness and transparency, along with not changing everything all at once shows employees respect. As with any organizational change, current roles need to be evaluated – who can grow into a new role, who can be taught some new skills, who wants to move, what new talent do we need? Again – transparency and communication – Q&A's, open office hours, company meeting to keep everybody in the loop of what is going on. This helps to build buy-in and reduces anxiety, and feedback from employees helps. Goals should then be re-aligned across the new structures, not just departments. There will be some confusion, some bumps – but this is to be expected, and built into the planning. Being prepared for that won't leave us shocked if something doesn't pan out just right at first. In order to make sure the roll-outs are going smoothly and to fine-tune any bumps, short retrospectives every few weeks can be extremely beneficial.

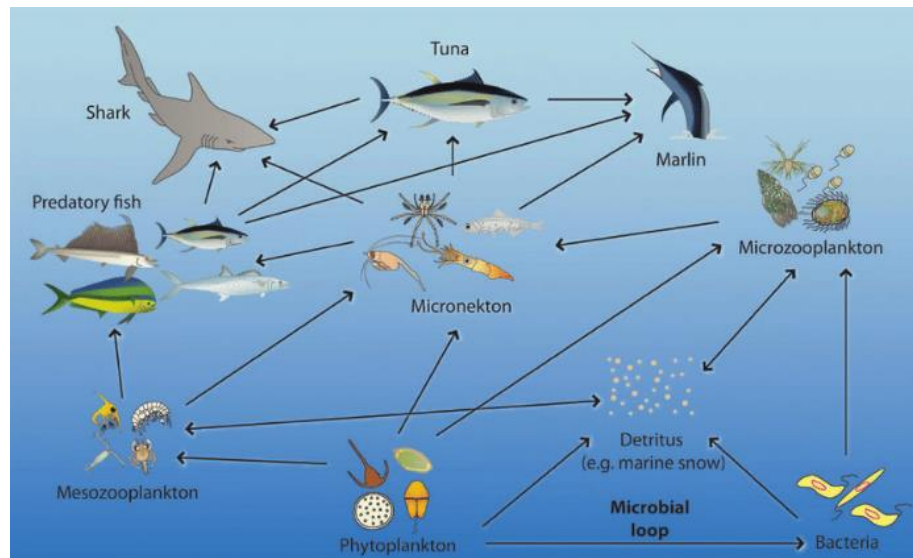


Figure 8- Food Chain, or org chart?

Crashing Waves: Other Impacts of the Business

With the addition of m-commerce, yes, we will likely have more sales here, but our brick and mortar partners could see an uptick in sales as well. We could have specials with them, have a team head to the store and do demonstrations and give aways, and some people just want to see the product in person prior to buying. They may not purchase in the store and may purchase online after thinking about it, but this still drives traffic to our partner stores.



The Fish Who Keeps on Swimming – Is the First to Chill Upstream: Advertising Strategies

Push notifications would allow for real-time, contextual engagement. These wouldn't just be reminders for cleaning pad changes, or "pH levels are off – time to dose!", we could send them reminders to check their virtual aquarium, have The Kraken take a random picture each day and have a notification sent to them about that, or even fun facts about a customer's fish type. We want to build trust and be helpful!

Targeted mobile advertising via Google Ads, Facebook, Instagram, TikTok, etc. towards aquarium enthusiasts, and re-targeting towards those who viewed, but did not buy. Even though this is a higher-end product, the advertising would need to be catchy and not pushy. For instance, seasonal campaigns could be a lot of fun – "Spring Clean Your Tank!", "It's almost Christmas-Wrasse! Give your fish the gift of crystal clear glass", "I'm dreaming of a White Christmas Tree Worm!", "Let it Snow-flake eel!", "You'll be Sea-ing Stars this Fourth of July..." Possibilities are endless and the ads are less interruptive, and more intentional. Banner ads can promote tutorials, tips, and discounts as well.

Mobile analytics are a great thing – we can track where consumers drop off in the app, which alerts are ignored, what they are shopping for, and what content they read. When we pay attention to this – we can fine-tune the ads, frequency, format, etc. to where it is more personalized and data-driven.

Inside the app, consumers would be able to chat with support, give feedback, leave reviews inside the app, and we could send out a very brief emoji-based poll randomly about a notification and such asking if it was helpful. This encourages a dialogue, we understand our consumer better and can personalize more, and starts to really build that customer loyalty.

We want to build long-term relationships, so why just push our product? Why not show short-educational videos, AR tank walkthroughs, and add the game "tank health scores" within the app – the brand is then not just associated with the gear, but with knowledge and experience as well

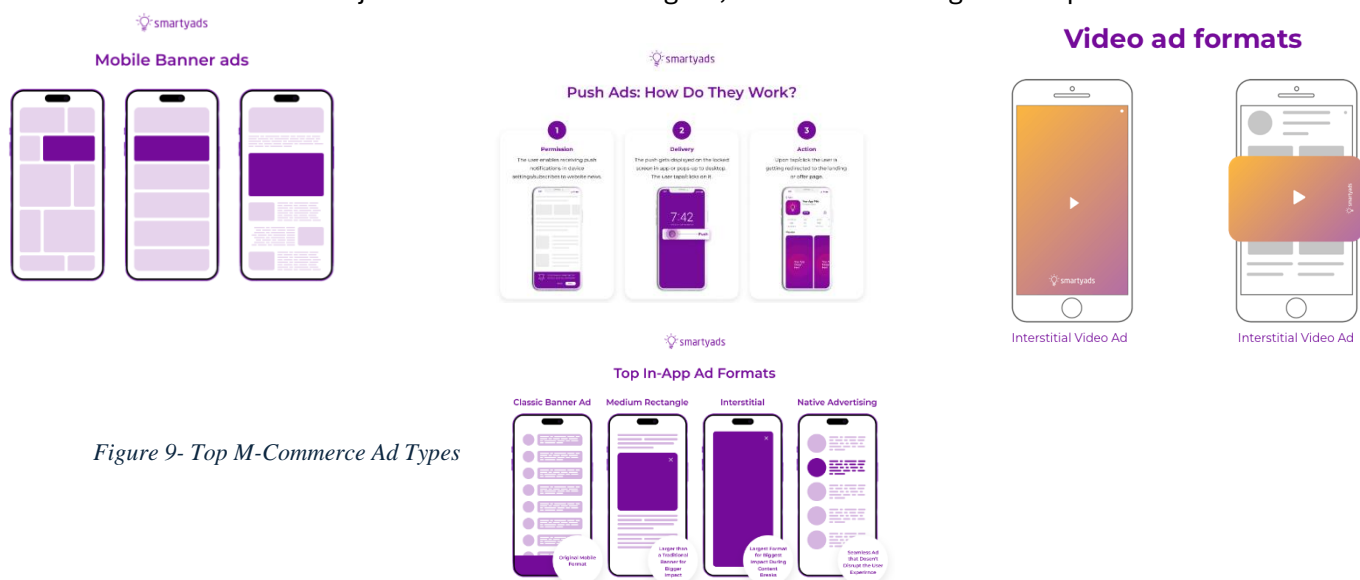


Figure 9- Top M-Commerce Ad Types

Gold Star-Fish: Managing Reviews

There are tools to track reviews across platforms -real-time monitoring– this is very valuable. If any low score reviews or key words that are negative are flagged – email alerts can be sent to our customer experience, marketing, DevOps, and product management teams to respond and tackle instantly. The team leaders can review and own their parts.

Reviews should be turned into actions. They should be reviewed and prioritized – they can be separated into Fix Immediately, Minor but still needs fixed, feature requests, etc. We understand what is going on with actual customers, not just from our internal view.

Reviews should be replied to proactively and authentically. Consumers should be thanked – positive or negative, because from that negative – we learn what we can do better. Forget the generic generated responses, real humans will be responding. Keep replying – to somebody who left a review about a bug – “Hi! Thanks for the heads up! We’re looking into this and will keep you updated” ... “Hi Dawson! Thanks again for the feedback –with your help, we fixed the issue in V1.2.3. Check it out, and let us know what you think now!” Consumers feel heard and appreciated – these all build brand loyalty.

Reviews shouldn’t all just be negative – we can have review prompts triggered after successful experiences – successfully completing setup, resolving an alert, having a positive purchase/restock experience.



Figure 10- The Starfish Model

Deep Sea Diving: Other Aspects to Consider

Review ratings aren't the only thing we should be looking at. We need to look at the volume of reviews, how many were actually responded to, what features are trending, what else is trending, etc. This keeps the internal leaders accountable and engaged in public brand perceptions.

This goes along with what our leaders need – we need to help train them and get into the mobile mindset about the analytics platforms, review tools, customer experience metrics, etc. and how to respond appropriately. This ensures that just because we are in a mobile landscape, managers need to be able to lead in a customer-facing view.



Figure 11- Increasing Positive Reviews

Let's Get Kraken and Take Some Action

The move toward mobility and m-commerce isn't just a technical upgrade—it's a strategic evolution. It transforms how LevloThan connects with customers, manages internal processes, and reacts to market needs. This shift demands an adaptive leadership structure, investment in mobile tools and training, and a culture that embraces real-time feedback. When managed thoughtfully, this transition positions LevloThan for sustainable growth, deeper engagement, and smarter product development.

Actions:

1. Tech & Infrastructure

- Upgrade cloud services to handle mobile + IoT data streams
- Integrate mobile analytics and review monitoring tools (e.g., Firebase, AppFollow)

2. Workflow Optimization

- Implement agile, cross-functional squads with shared product goals
- Use visual metaphors (like the body-of-water workflow map) to align teams on process flow and friction points

3. Customer Engagement

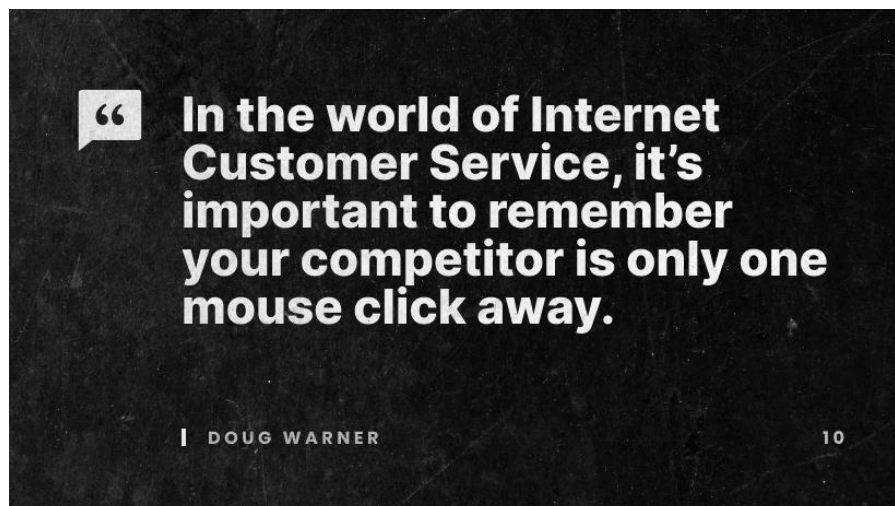
- Build in-app support, push notifications, and education flows
- Develop a review response playbook for timely, human-centered interactions

4. Marketing & Monetization

- Launch mobile-first ad campaigns tied to seasonal or behavioral triggers
- Introduce recurring revenue models (subscriptions for refills or diagnostics)

5. Change Management

- Restructure leadership into agile units with decentralized decision-making
- Host internal training on mobile strategies, m-commerce KPIs, and customer sentiment analysis



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