Perspective around deploying technology in Construction

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There are 10 Mn construction companies around the globe. It is a low barrier-to-entry segment, almost everyone finds work to do, but most end up getting stuck. However, there seem to be a clear learning curve in delivering projects. Once a company cracks the code, they do not drop the ball much after that point. Yet, the demand is largely fragmented and the sector is still under-organised. The question I keep asking myself is why it is so difficult to scale a construction company at a consistent pace.

I am Amit Bansal, co-founder and CEO of 91Squarefeet and Rdash. I am sharing my journey of building a design+build company focused on commercial fitouts. We scaled from scratch to USD 10Mn revenue in 3 years, without any prior background or network in the industry. I will specifically cover the role of technology in this journey for readers

to have some perspective around role of technology in scaling up my construction venture. If you are running a construction business, or responsible for delivering projects for your organisation, and you feel like you are stuck in an endless loop of making ad-hoc decisions in every moment, this is for you.

Let's start with some dig at the problem. Running a construction company feels like walking on a rope. You are always balancing the tricky equation between margins and cashflows. But it is the customer who is holding the rope, and pays you basis his experience and relationship. A small misstep can domino into a financial loss. Most leaders that I know, who are running a construction business, are of the firm belief that relationship is the only edge in construction. They are so much used to playing it close to the chest that they aren't even sure about the benefit of deploying technology and processes in the first place.

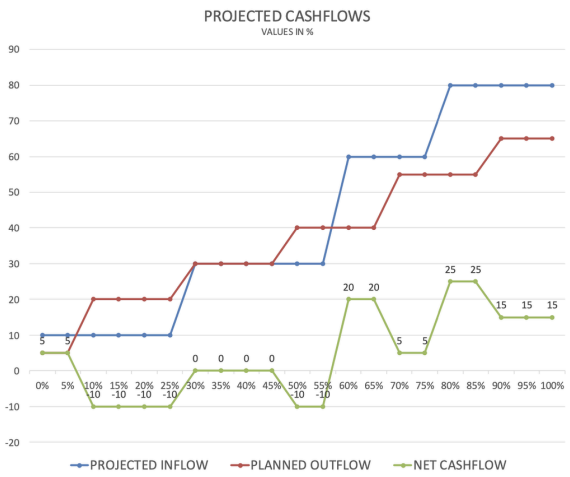
Let me share how it panned out for us. when we started with 91Squarefeet, we were an outsider to the industry. We wanted to build the best construction company ever and dreamed about all great things like robots doing the labour jobs, fully digitised material and production supply chain, fully automated project management and what not. And this lofty dream was the direction of technology we built in the initial days. We started with building a master catalogue of project elements thinking we would digitise the procurement behind it. We automated Site survey workflows to be faster in turning quotations around, built BIM like system to manage design files, digitised site reporting rituals to automate client reporting, and other things of similar nature. We were venture capital backed, so we had to run fast. We intended to grow fast, clocked revenue of $2Mn in the first year, aimed for 6Mn in the second, hired people ahead of the curve without fixing the overall construction lifecycle. We were fixing problems as an when an idea struck, digitising workflows in bits and pieces. We were bleeding margins on most projects, our working capital swelled to 90 days, and our customers were suffering. For all the tech differentiation we were trying to bring in the business, we weren't setting the right benchmarks.

We were so bent on bringing the differentiation in business, that we didn't fix the basics of the business. If I were to share a secret, We were even struggling to know what is the real margin we are making on a project for good 12-15 months. Vendor PO process was all over the place without any controls. The vendor invoices would come even after 3-6 months of closing the project. The payments to the suppliers was happening on gut feelings that wasn't working out neither for us nor our vendors. We would even delay on raising the client invoices due to our own oversight. Such a mess it was. Lucky for us that we were fortunate to have the investor support to pursue it deeper.

When nothing was working out and the company was at its most vulnerable situation, an idea started to take form. We crystallised our focus on one thing i.e. Cashflows. All technology effort and leadership bandwidth must be spent on fixing cashflows directly. We realised their is a glaring hole in our system which is getting bigger as we are growing. The management layer especially project managers are gradually loosing ownership and syncing into hopelessness. For a Project Manager to be effective on the job, he must have a control over receivables and payables. Let alone the control, he didn't have the live visibility of the incoming and outgoing cashflows at times. We decided, the project managers needs to be shaped as project P&L leaders if we have to go anywhere form that state of business. The question is how do we do that ? How do we make a project manager accountable for the net cashflow ? Is it a technology problem or an organisation structure issue ? Where do we start ?

For this initiative to be successful, we had to find a way to sync everyone in the company with Project Manager, improve their authority in money matters, and build systems to safeguard the company while the PMs are still under grooming. After a couple of iterations, we finally found an elegant solution to all our problem: i.e. BOQ centric execution. We created a central place to manage BOQ and Change orders, built mobile app workflows to report installed progress on this BOQ, and made this 'Installed Progress' as the primary truth of projects when it comes to cashflow planning. At the start of the project, we created a cashflow projection graph which tells how the project

cashflow should be at every stage of project progress, took buy-in from all teams concerned, and made the PM an owner of this cashflow projection sheet



ACTUAL CASHFLOWS (RDASH OUTPUT)
Ties Installed progress to Cashflows and Plots how Cashflows are moving MOM

Running Cashflows

Running Cashflows	Total	2025-07	2025-06	2025-05
Project Value	2,278,485,111	2,278,485,111	1,223,618,053	1,115,941,958
Installed Value	603,056,354	603,056,354	603,056,354	495,381,159
Billed Value	95,474,006	0	95,474,006	0
Collected	128,854,973	0	128,854,973	0
Vendor Payments	59,458,975	2,802,203	56,651,772	5,000
Imprest	3,578,552	0	1,271,744	2,306,808
Outflow Total	63,037,527	2,802,203	57,923,516	2,311,808
Net Cashflow	65,817,446	-2,802,203	70,931,457	-2,311,808

Planning construction cashflows on installed progress

But this was not enough. The teething issues of Finance team working on ERP tool and Projects team working on our in-house system was coming in the way of implementing this co-accountable method of projects delivery where the project manager is at the driving seat. We tried solving it with integration and dashboards, but it was still very difficult to bring finance and PM on the same page. That's when the idea of digitisation took the final form. We realised, this is probably the core issue in construction. Finance and Project teams are not on the same page as they work on discrete systems. We decided to build all financial processes concerned with project management inside RDash. Also this time around when we thought about technology, we weren't thinking about a new features, we were obsessed about business workflows. We figured there are workflows in construction which runs across departments and needs to be solved at a single interface. E.g. look at the order raising workflow: The project supervisor will initiate a Purchase Request from RDash Application > it will get converted into an Order

by central procurement > The approval hierarchy will be triggered where PM will be a part of the approval chain > finally finance will do its due dilligence and provide final approval > the PO will be auto created, logged in the ERP and sent to Vendor. This was still an intuitive one. Let me share some slightly more nuanced workflows cutting across multiple departments. A project manager creates and expanse request to buy some material locally as the original vendor who is supposed to do it is delaying > The expanse request is tagged to the vendor order > the materials are GRN to site from the expanse request > An auto debit is logged to the vendor order on approval of this request > the GRN material moves the installed progress at site > it gets reported to the client and the site gets closer to next billing milestone. Let's break down one more workflow of accepting final invoice from the vendor. We made it mandatory for project managers to cross verify the vendor invoice document with the order elements punched on Rdash. The project manager then triggers an invoice acceptance request which goes through approval hierarchy. We understood that we were adding extra steps, so in order to make things faster, we brought the approval flow on mobile via what'sapp so that people can approve on the go. Finance person became the final approver on every order, invoice, or payment request. This workflow improved about 2% of margin and helped us stagger vendor payouts.

We realised that we can unlock a better coordinated effort amongst our team by connecting the information bridges. E.g. We were using an ERP system to log, approve, and settle the expense request from our site team. My finance person had to map these requests to a project which was a time taking work for him and this would result in slow turn-around of imprest requests because of which the site folks would hesitate in making even small payments for labour and material during the last few days of the project. By bringing the imprest payment workflows close to project management on a single software made this whole process faster and resulted in better support from ground team around spending out their own pocket for project handover.

The another equally important piece in the equation was the customer experience. Key workflows we worked on for this side were daily progress reporting, measuring Installed work progress, Managing activity schedule, Material Handling, Design Coordination, and Snag Management. Customer experience is way more delicate than the cashflow management. Let’s take Daily progress reporting workflow for an example. We were struggling to understand the real day-to-day progress of our sites. Our site supervisors were a little optimistic in reporting site progress and the photos they would send were not sufficient to understand the project in entirety. I had to dedicate different set of people (I called them CSMs) to take supervisor's update and give it a professional touch before sending it to the customer. But the whole process was noisy, laden with regular escalations and multiple versions of truths. We thought what if we provide a nice mobile app template to our supervisors to click site photographs from consistent angles, update manpower, and record blockers along with action plans for tomorrow; and send this to our customers as PDF on whatsapp, this will reduce a lot of reporting workload off our shoulders. My Sales Team advised me against it: They said the site supervisors do not understand the nuance of the relationship and they may write things which could do more damage than good. There must be a check point. I pushed through it anyway. My thought process was we can always train our people. To reduce the damage, we will keep the "Send to Customer" setting off for the first month. In this duration, the sales team will review and provide feedback on the DPRs submitted by our site supervisors. Once they are trained, then we will open it for customers, that too on a project to project basis. This turned out to be our best discovery. Our customers really appreciated the transparency of it as they know they are seeing the same thing as the contractor's management. If there is mis-reporting, they would call it out and it helped us improve our culture as well. Sometimes the practical way of doing things get in the way of making things simpler, it is then for the organisation to decide.

We then doubled down on making this workflow more mature. Now the DPR workflow has become a 360-degree project reporting process where the system automatically fetches Schedule Update, Material Movement, Installed Progress, Site View Point

photos and almost everything important on a project and push it out as a PDF to everyone on whats'app as soon as the project manager clicks on the submit button.

End-to-end workflow centric digitisation became the direction of our tech roadmap. Net impact of our efforts reflected in our business performance as well. In the FY23, the gross margins for that year stood at 9.6%. Also, we had a working capital cycle of 90 days. However, a year after in FY24, gross margins improved to 21.4% and working capital came down to 30 days. We close the FY 25 with 26.1% gross margins and positive working capital cycle.

Before we conclude things, I want to express my empathy for construction leaders. It is very difficult to keep a level head while operating a construction business. One day, you would be very positive on bringing a systematic change one day, and the other day I would be totally drenched on ad-hoc problems that bringing the systematic change feels like a pointless battle. I believe there must be some common set of problems that everyone face and some of our industry veterans have figured out a solution for most of them. Whats missing is awareness. To address this, we are assembling some relevant content pieces to assemble a toolkit for construction leaders. Please access it here: Link. Please do share if you have any relevant resources which should be added to this toolkit.

I hope that this article will help you pick some anchoring ideas, which will help sails you through shaky waters of professionalising your company even when you are standing on site, handling client escalation around the last phase of the delivery where no process or workflow seem to be helpful.