



NU402: Industry Practice Course

INDUSTRY PRACTICE AT BIGBASKET

END SEMESTER REPORT

Pragya Datt | BT17GCS077

Industry Practice Organization	BigBasket (Parent: Innovative Retail Concepts Private Limited)
Internship Duration	4th Jan'2021 - 3rd Jul'2021
On Campus Faculty Mentor	Deepika Prakash
Off Campus Faculty Mentor	Bipin Kumar
Industry Manager / Mentor	Shiwakant Bharti
Industry HR Contact	Swetha HS

Acknowledgement

I would like to express my sincere gratitude towards all the participating entities who have helped me successfully complete my Industry Practice course, NU-402. I feel privileged to have received constant guidance and support throughout this period from multiple individuals around me: my parents, who have been by my side at every step; my mentors and peers at the university, who have prepared me for the toughest and have helped me hone essential skills; and my mentors and colleagues at BigBasket who have shown confidence in me and have helped me develop my character as a professional.

First, I owe a big thank you to NIIT University for providing me with the opportunity of undertaking this Industry Practice course as a part of my academic curriculum. I would like to express my gratitude towards my university mentor, Mr. Bipin Sinha, for providing his valuable encouragement, support and guidance. Further, I would like to thank my mentor / reporting manager, Mr. Shiwakant Bharti, who has put his faith in me and assigned me with priority tasks thereby helping me grow and giving me the perfect start as a fresher.

Lastly, I would like to thank BigBasket for having me as an intern for the 6 month tenure, and my fellow colleagues in my team for their assistance and encouragement which has definitely left me with a lot more learnings - both on the technical front and the corporate front.

Sincerely,
Pragya Datt

Declaration

I, Pragya Datt, the author of this end semester report, assert and declare the following with respect to my industry practice at BigBasket from Jan - July '2021 :

1. This report has solely been written by me.
2. This report has only been submitted to NIIT University and the same has not received any academic credit from any other organization.

Endorsement by Company Mentor

This is to confirm that Pragya Datt, a bona fide student of NIIT University has successfully completed her internship at BigBasket for the duration Jan - Jul '2021.

The details of the project described by her have been done by her under my careful supervision and guidance. She is submitting this disquisition towards the fulfillment of her degree Bachelor of Technology in Computer Science and Engineering.

This disquisition has the requisite standard and to the best of our knowledge, no part of it has been reproduced from any other dissertation, monograph, report or book. This disquisition has not been submitted to any other university or institution for the award of any degree.

Shiwakant Bharti
Principal Engineer, BigBasket

Endorsement by University Mentor

This is to certify that Pragya Datt, student of NIIT University has worked under my guidance and supervision. She is submitting this report towards partial fulfillment of the requirements for the award of the degree of Bachelor of Technology in Computer Science and Engineering. This report has the requisite standard and to the best of our knowledge, no part of it has been reproduced from any other dissertation, monograph, report or book.

Bipin Sinha
Faculty, NIIT University

Abstract

This report delivers information about the nature of work done by the student, Pragya Datt, at BigBasket over a period of 24 weeks as a part of the NU-402 Industry Practice course at NIIT University, Neemrana, towards fulfillment of the degree of Bachelor of Technology. It details the tasks worked on, the objectives, analysis, challenges and the learnings during the tenure.

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TECHNICAL

About the Organization

BigBasket, India's largest online food and grocery delivery service, was founded in **December 2011** when e-commerce was still at a nascent stage in the country. The company essentially handles B2C but recently also launched a B2B segment. This line of business has very small profit margins since there are multiple middlemen involved in the pipeline that take their share of cuts however, BigBasket has still emerged as a **unicorn** company after the massive funding it has received. It is funded by 17 investors, Alibaba Group and CDC Group being the most recent ones. BigBasket's revenue as per FY19 is at \$386 M with about 4300+ employees.

Organization Head Office Location

BigBasket is headquartered in **Bangalore**, India and delivers to various cities in India such as Bangalore, Hyderabad, Mumbai, Pune, Chennai, Delhi, Noida, Mysore, Coimbatore, Vijayawada-Guntur, Kolkata, Ahmedabad-Gandhinagar, Lucknow-Kanpur, Gurgaon, Vadodara, Visakhapatnam, Surat, Nagpur, Patna, Indore and Chandigarh Tricity.

Head Office Location:

No. 7, Service Road, Off 100 ft. road, Indiranagar, Bengaluru, Karnataka, India - 560071

Head / CEO of the Company

Five friends, Hari Menon, Vipul Parekh, VS Ramesh, VS Sudhakar and Abhinay Choudhari, together founded the company FabMart in 1999 which was the first online ecommerce store in India. It later pivoted to a physical grocery chain called Fabmall, one of the pioneers in the retail space in India and was acquired by Aditya Birla Group and renamed More. These friends now are the co-founders of BigBasket. The current CEO of BigBasket is **Hari Menon**, an alumnus of BITS Pilani.

Mission and Vision

BigBasket believes in being smart, quick and efficient with same day and on time doorstep deliveries, making life as convenient as possible. Building a localised chain in a business like this is key, so the company shifts the focus from area expansion to deeper penetration. BigBasket has always kept customer satisfaction as priority with a no questions asked return policy, going to the extent of compensating a customer when a promise is not delivered. It has had a record of a 99.9% order fill rate which means, what the customer wants, must get. Today, it is the largest online grocery service in India and it further continues to scale. Essentially being a B2C business, BigBasket has also started to

transition into the B2B environment with a list of its own brands including Fresho, BB Popular, BB Royal and Tasties. Moreover, the company is continuously innovating, launching its own bakery in Bangalore, and offering unique products like recipe mixes. On the technology side, all work being done is in an agile flow, simultaneous and parallel work across teams with structured coordination on product updates and bug alerts. BigBasket has invented its version of models for location mapping, route optimization and stocks forecasting, giving maximum returns.

Core Values

BigBasket prides itself to follow four core values that have been imbibed by all of its employees right from the top management to the people working at the ground level, from policy making to execution.

1. Transparency
2. Integrity
3. Humility
4. Respect for People

Main Thrust Areas of the Company

- Customer Relations
- Warehousing Strategy
- 24x7 Service 'on-the-go' Service
- Product Variety
- Optimized Delivery Models

Organizational Hierarchy

BigBasket operates on a vertical organizational hierarchy, where every employee reports to the higher authority in-charge. Horizontally, there are about 10-12 teams handling separate domains in the company. BigBasket follows the **Agile Methodology** of project development and delivery, having sprints scheduled across the weeks and daily internal stand-ups called 'SCRUM'. These take place within the team to review progress, close assigned tasks and maintain overall clarity of every team member's tasks at hand and respective bandwidth to work on a new task. The flow is very systematic and linear because of the use of platforms like Slack and JIRA.

Core Areas of Work

BigBasket is India's largest online food and grocery store with a massive variety of products and brands in their catalogue to choose from. It primarily deals with constructing the right models to ensure optimized delivery of goods from the producer to the consumer. The

logistics involved in the process and the best combination of cost and time needs to be used to ensure smooth functioning and good returns.

BigBasket develops and modifies models like the newspaper model that first **forecasts** the product requirement that is to be stocked in the warehouses based on the city. This is essential since the products are perishable so many **inventory models** are applied to keep in mind that the requirement must neither overshoot nor be out of stock. The second factor is the order **fill rate** that needs to be satisfied for each customer, part of which is what the company relies on (the current fill rate is 99.9%). Geographical location and warehouse **mapping** is the third thing that the company works heavily on to ensure the same day and on-time deliveries. Finally, **route optimization** needs to be done to deliver the items to the end point.

Important Clients / Products of the Company

BigBasket's primary products are the BigBasket Android and IOS apps and the BigBasket website where the grocery orders are placed. Along with this few important products are:

- BBDaily, for everyday groceries like milk and bread
- BBInstant, IOT based temperature controlled vending machines
- BBStar, a premium membership programme
- Fresho, fruits and vegetables physical store

Objectives and Analysis

Objectives of the Work

Amongst all the tasks that I have done throughout my internship, the highlight of my entire experience has been the tasks that fell under the 'TDL (Tata Digital) Project' after the Tata - BigBasket merger. These tasks started for me in the 4th week of February. The changes that were required had visibility up to the CEO level of both Tata and BB. Massive member flow changes, profile changes, UI changes and backend changes were required across the company and are still going on. The first level of interaction began with the tata team when only 6 developers (including myself) were a part of this project. After we wrote a couple of APIs and made changes to a few of our services was when finally our BB clients began integrating the APIs which we wrote. These APIs are the core standing of the entire flow change of Tata-BB merger. Once integration with BB clients and tata clients began, I had to be present in almost every meeting with them, provide dev support and host KT sessions for them to make them understand the architecture and know what API to call when and at what stage. Multiple clients are still integrating and some are still in the process of integrating these APIs. I have been fortunate to be not only a core developer on these APIs

but also to deal with client side interactions, calculate change in scope, take up ad hoc requests, solution and discuss alternate approaches, and overall gain a holistic experience.

There is a standard SDLC (Software Development Cycle) followed across the industry:

Stage 1: Planning / Solutioning

Stage 2: Designing

Stage 3: Development

Stage 4: Prototyping

Stage 5: Unit Testing (QA)

Stage 6: Integration Testing (HQA)

Stage 7: Deployment to Production

- Stage 1 and Stage 2 are taken care of by the Product Manager.
- So once the flows are ready, we get to discuss with the PM what parts are technically feasible. This discussion was done between the PM and the tech lead on the project - Hari Sunkara.
- After all the designs and flows were finalized, my involvement came in Stage 3. I got assigned the responsibility of building a couple of APIs and bringing the flows together. This task required not only writing new apis but also modifying old ones to keep them backward compatible. Details on APIs and flows cannot be disclosed to honour company confidentiality.
- Stage 4 was also taken care of by me for the APIs that I built, a basic testing of the flows was done and green signal given for the same.
- Stage 5 is where the QA testers come in. Nikesh was the QA assigned from our team for this task. This also had some of my involvement to discuss or explain flows and test cases. Along with that some bugs that were caught on the QA side were also resolved. Clients also test all their frontend implemented code on qa and raise concerns / requests on the same.
- After QA, in stage 6, code is deployed to the HQA where another round of testing is done, integration testing. T-Bugs are raised at this point by the hqa team which need to be resolved and deployed as quickly as possible since they might act as blockers.
- Currently all the frontend backend code is still in HQA so stage 7 is yet to begin. Multiple testing to be done before final deployment.

I had my hand throughout this process and essentially the objective was to get all these TDL flows ready for release, along with other sprint wise assigned tasks and taking care of bugs.

Analysis of the Problem: Business End and Technological End

All work that has been assigned to me yet has had a mix of technical, business and managerial experience. The technical side of course has been backend work for me primarily. Business side being solutioning ideas, deciding what the consumer to see - this has majorly been when in discussion with the PMs. The managerial aspect has come into picture when I have been hosting multiple KT sessions with clients, explaining to them the TDL flows and providing them with dev support. One of the technical aspects of the problem that I experienced was 'scope changes'. Dealing with Tata as our clients was a lot of fresh experience for me, but along with it came huge amounts of change in scope and timelines. I eventually powered through them and learnt to juggle multiple ongoing items with fresh tata project related items.

TDL items are a hot topic in BigBasket currently and having worked on all member related flows, I can say that I have delivered high quality work since it is being used by clients across BigBasket and has gone through multiple rounds of testing. Given that at the present stage, I am getting more requests from clients and am getting more tasks catering to the TDL project, I have become quite comfortable with the procedure overall. My day consists of taking care of new tasks, providing dev support to clients, and resolving bugs. I have successfully been able to connect all the flows and have got them to run smoothly across all applications where the apis have been integrated till now.

My Role, Expected Outcomes and Deliverables

The chart below is a detailed representation of the role I have played during my internship period at BigBasket with all outcomes and deliverables.

Please note that tasks titled 'Tata-BB Task' are confidential items related to the Tata - BigBasket merger so details cannot be revealed to honour company confidentiality.

Month	Week	Task	Completed / Ongoing / Incomplete	Work Description
January	1	Company KT	Complete	Onboarding process + Reading up Confluence documentations to understand the life cycle

				followed at BigBasket.
	2	Audit Logging - Hubcore Admin Service	Complete	Audit logging in hubcore admin involved logging all past data and comparing differences with the current user interaction.
	3	Error Handling + Swagger Documentation	Complete	Some error handling was required for a few APIs which had to be documented on swagger.
	4	Writing Swagger for Urgently Requested API	Complete	Successfully wrote the Swagger for the requested API and closed the urgent matter on the same day itself.
	4	Node.js Addition Complications + Deployment	Complete	After the addition of the node.js layer, fixed a few bugs and added features.
February	1	OTP on Login Received Inconsistently	Complete	Identified the issue leading to the bug that arose related to the OTP being received inconsistently.
	1	API for BBStar Team	Complete	Wrote an API that was requested by the BBStar team for their corporate program.
	3	Default Address Creation	Complete	There was a task to create a default address by semi automation on the admin page.
	4	Tata-BB Task 1	Complete	Confidential
March	1	Tata-BB Task 2	Complete	Confidential
	2	Tata-BB Task 3	Complete	Confidential
	3	Tata-BB Task 4	Complete	Confidential

	4	Tata-BB Task 5	Complete	Confidential
April	1	Tata-BB Task 6	Complete	Confidential
	2	Tata-BB Task 7	Complete	Confidential
	2	Tata-BB Task 8	Complete	Confidential
	3	Tata-BB Task 9	Complete	Confidential
	3	FC Entries for Hubs / Slots	Complete	Hubs / Slots - FC (Fulfillment Center) entries made and cross verified.
	4	Tata-BB Task 10	Complete	Confidential
	4	FC Entries for Hubs / Slots	Complete	Hubs / Slots - FC entries task with minute additions.
	4	KT for Hubs / Slots	Complete	Hubs / Slots - KT done
May	1	BB2.0 Support - Node.js	Complete	BB2.0 review and support was required to help out with authentication / authorization architecture and approach followed on adding node.js layer along with suggestions.
	2	Tata-BB Task 11	Complete	Confidential
	2	Dependabot Vulnerability	Complete	A JS vulnerability was caught by the automated dependabot however there were complications that needed fixing.
	2	Project B T-Bug (this is a confidential project, hence the alias)	Complete	Confidential
	3	Tata-BB Task 12	Complete	Confidential
	4	BB2.0 Support - Node.js	Complete	BB2.0 review and support for node.js

June	1	Tata-BB Task 13	Complete	Related to corporate program
	1	Tata-BB Task 14	Complete	Confidential
	2	Tata-BB Task 15	Complete	Confidential
	3	Pan Mandate B2B Task - License Logs Clean Up	Complete	Had to structure logs in such a way that license details do not show up for a B2B customer
	3	Pan Mandate B2B Task - GSTIN Verification	Complete	Populate PAN number extracted from GSTIN field after verification and send accept/reject emails to user accordingly
	4	BB2.0 ODR	Ongoing	Add support for multiple delivery restrictions in sub are ids for ODR calculation
	4	Pan Mandate B2B Task - PAN Regex Validation	Ongoing	Add config for PAN validation regex and handle with existing gstin validation regex
Regular occurrence	Regular occurrence	T-Bugs Resolution	Ongoing	T-Bugs (transient bugs) are ones which are related to an ongoing project and are caught in hqa which need instant resolution.

Discussions, Conclusions and Recommendations

An important discussion point is the sequence of approach followed throughout the period for every task at hand:

- Understand the requirement and the use case.
- Organize meetings with supervisors / stakeholders to discuss the same if required.
- Make a product spec or a tech spec or an api spec (one or more of these) and get it reviewed by stakeholders. We use confluence to document all our resources.
- Begin development after tech spec review.

- Conduct dev testing.
- Deploy and handover to qa and hqa for further testing and finally deploying to production.

Discussions and recommendations initiated from my side for tasks:

Every small task has an opportunity cost attached to it when we talk about approaches to be taken. There have been a couple of scenarios, one was where a bug was raised related to too many server to server calls, so I suggested an approach to introduce caching into the system to reduce those calls. Caching helped cut down those calls by 40 percent and allowed the entire code to function the same way with reduced calls. I discussed this approach with a senior whom I was working with and we went forward with the approach.

Challenges and Learnings

- Being a part of a high-priority integration project with external cross company teams is a massive exposure for me as an intern and I'm glad that I am a part of it and able to contribute my bit.
- Got a good idea of how dev testing, unit testing and integration testing is done.
- Other clients integrated the services I created, and they still approach me to help out with issues they are facing during integration or certain questions that they might have. This is giving me a good mentor / manager-like experience in the company, knowing that I have worked on this, handled this issue and people in the company are going to approach me when in doubt in this area.
- Regular one-to-one conversations with the Tata developers, discussing bug fixes on their side and reaching out during testing and integration, co-dependently working on items is a lovely learning experience.
- I have enjoyed working with multiple people and been in conversation with the PMs for the work I have been doing. Planning is also an important part before development and it is interesting to be doing that.
- Discussing possible solutions / alternate approaches with people higher in the hierarchy has given me good company exposure.
- Learning company lifecycle when dealing across other companies / clients.
- Handling an increase in scope has led to me understanding various aspects of a big project.

NON-TECHNICAL

Interning at BigBasket has offered me a massive amount of exposure, full of experiences that have turned out to be a turning point in my learning curve. I feel extremely privileged to have got this opportunity from my university as a part of my academic period since it has prepared me for the whats and hows of the corporate world beforehand, a perfect start for a fresher. I strictly believe in the 'learning by doing' motto. Being able to apply my theoretical knowledge gathered in my BTech in the real world feels like an accomplishment, a step closer to the plethora of exposures moving forward.

The courses that I studied throughout my BTech, in particular 'Software Engineering', have been a backbone of the knowledge that I have been able to build up during my internship. At BigBasket, we follow the Agile Methodology of project development and delivery, having sprints scheduled across the weeks and daily internal stand-ups called scrum. These take place within the team to review progress, close assigned tasks and maintain overall clarity of every team member's tasks at hand and respective bandwidth to work on a new task. Every task we work on has a lifecycle associated with it - from development to testing to transient bugs resolution to deployment on multiple servers in stages and finally the production server. The flow is very systematic and linear, which is SDLC being performed practically, exactly how we were taught in the university course. It goes without stating that 'Data Structures' and 'Algorithms' have also been crucial courses, forming the entire base for any practical logic building and solutioning.

At BigBasket, I managed to get a lot of exposure as an intern due to my cross client interaction and them having dependencies on my development. Company practices and client management are subtle things that are left unnoticed but were taught to us at NIIT whose importance strikes me now. With regular interactions over calls and meetings, I began to understand how decision making and solutioning is done, and slowly started to understand their approach and mindset.

It has been a beautiful experience for me overall, a steep graph of the learnings that I have gathered in these 6 months. This experience has checked all the boxes for me - active contribution to production code, understanding the lifecycle, client interactions, facing challenges, being of support to another and handling core components independently.