



Professional Practices in IT

Semester Project Report

(Instructor: Miss Yusra Kaleem)

Group Members:

Taha Ali (21k-3867)
Imran Ali (21k-3877)
Taha Jawaid (21k-3881)

Abstract

This semester project required us to design and conduct a detailed questionnaire targeting key aspects of IT companies' operations. To meet the objectives, our group decided to engage with two software houses situated in Karachi, a major hub for the IT and software development industry in Pakistan. The purpose of this project was to gain insights into the day-to-day operations, team dynamics, development methodologies, and challenges faced by these companies, while also analyzing opportunities for improvements in their practices.

During our visits, we interacted with the development teams and posed a series of structured questions. The focus of the questionnaire was to explore their workflow processes, tools and technologies used, project management strategies, and methods for quality assurance and client interaction. We documented the responses in detail, which served as the foundation for this report. The analysis of these responses provided us with valuable information on the similarities and differences between the two companies in terms of their operational efficiency, innovation, and adaptability to industry trends.

In addition to documenting the findings, this report includes constructive recommendations tailored to the specific needs of both companies. These suggestions aim to address identified challenges and propose enhancements that could potentially lead to better performance, improved collaboration, and more streamlined processes.

Overall, this project allowed us to bridge the gap between theoretical learning and real-world practices in the IT industry. By engaging with professionals and critically analyzing their operations, we gained practical exposure to the intricacies of software development and team management in a professional environment. This experience has not only deepened our understanding of industry practices but has also equipped us with the skills to identify and recommend solutions for organizational improvements.

1.2 Executive Summary

The Information Technology (IT) landscape is a continuously changing and significant force affecting how organizations operate and innovate within a framework characterized by constant technological advancement. While businesses are increasingly relying on sophisticated IT systems, this has brought an increased emphasis on the need for sound professional standards in the information technology sector. This paper aims to explore the intricate tapestry of IT professional practices, providing an analysis of the key factors that influence the success and sustainability of contemporary information technology environments. This report illuminates the best practices and approaches that IT professionals use in protecting personal information, safeguarding data integrity, and maintaining the highest quality standards as organizations grapple with challenges related to cybersecurity, data management, and the quest for quality assurance. Additionally, it will emphasize the important role that ongoing professional development plays in equipping information technology professionals with the knowledge and skills necessary to thrive in a continuously changing environment. We will also look at the processes that organizations put in place for their employees to make those experiences friendly to software developers. This covers policies, HR activities, data sensitivity, privacy, and other IT practices that are leg.

1.2.1 Research Objectives

Here are the key objectives we had planned to achieve with this activity.

- Examine the current industry standards to evaluate the practices followed in the IT industry.
- Assess the importance of ethical considerations followed by employees and the company management to analyze real-world decision-making.
- Find IT governance frameworks followed by organizations.
- Evaluate data security practices followed by companies.
- Where would we as students want to work once, we graduate?
- How employees feel about their companies; do they take ownership?
- How are differences between the companies and their employees mediated?

1.2.2 Company Profiles

We went to 2 different companies and asked our prepared questions. Here is a short profile of the companies we went to.

Dreamzplanet

Dreamzplanet is a product-based company out of Karachi, Pakistan. The company has 100+ employees in countries such as Pakistan, and UAE. The CEO is Mr. Huzaifa Faheem who is a graduate of Virtual University. The company has offices in multiple cities across Pakistan such as Islamabad, Lahore, and Karachi.

Fixkar Software House

Fixkar is a software house that works primarily with international clients. The company is located in Karachi. The employees mainly focus on providing IT solutions, working with client specifications, and helping them build innovative projects that are scalable and cost-effective.

1.3 Research Methodology

We chose two approaches, in one we tried to uncover the core principles of the company where employees answer the questions regarding organizational policies of the company. Here we interviewed the team of software engineers for each company. For the questionnaires, we had questions that were more tilted toward personal decisions for the employees.

1.3.1 In-person Interviews

In these interviews, we reached out to the HR persons for each company and mailed our requirements for scheduling an in-person interview. Here is the list of questions that we had asked the company employees.

Role and Responsibilities

- What is your primary role in this organization?
- Are you satisfied with the career advancement paths available to you?

Development Environment

- What programming languages and tools are commonly used in your development projects?
- How is the development environment set up to facilitate collaboration among team members?

Development Processes

- Could you outline the development process followed in your projects (e.g., Agile, Waterfall)?
- How are project planning and task allocation typically handled?

Collaboration and Communication

- How do developers collaborate with other teams?
- What communication tools or platforms are commonly used for team interactions?

Code Review and Quality Assurance

- Is there a code review process, and how does it work?
- What measures are in place to ensure the quality and integrity of the code?

Training and Professional Development

- Are there opportunities for ongoing training and professional development?
- How does the organization support developers in staying updated with industry trends and technologies?

Challenges and Solutions

- What challenges do developers commonly face in their work?
- Are there any specific solutions or strategies in place to address these challenges?

Feedback and Improvement

- How is feedback typically provided to developers, and is there a feedback loop for process improvement?
- Are there regular retrospectives or post-project reviews to analyze what went well and what could be improved?

Work-Life Balance

- How does the organization prioritize work-life balance for developers?
- Are there any flexible work arrangements or policies in place?

Future Technological Direction

- What emerging technologies is the organization looking to incorporate in its development processes?
- How does the organization adapt to changes in the tech landscape?

1.3.2 Questionnaire

The only motive for this anonymous questionnaire was to see if the employees who were giving their interviews were genuinely interested and able to back their responses with their motives instead of just providing the traditional responses. The employees were given the option to freely answer or decline the responses as well.

- • How would you describe the overall work culture of your organization?
- Do you believe the leadership team is approachable and supportive?
- Do you feel encouraged to share your ideas or suggestions with the leadership team?
- Do you believe the company is heading in the right direction for future growth?
- What motivates you to continue collaborating with the company?

1.4 Activities performed

We went through three major activities for the report, the first was the scheduling of the interviews, then the interview processes with the employees and finally interviews with the HR persons.

1.4.1 Scheduling the Interviews

We reached out to the HR person for the interviews and scheduled the interviews via email.

1.4.2 Interview processes

We went to both companies for the interviews and physically met with the developers and other working individuals. We were able to question the people freely and ask them our questions.

1.5 Key Findings

As per the questions we got several responses from both of the companies. Here we will discuss the responses of the employees and then compare them.

1.5.1 Dreamzplanet

We interviewed Senior Software Engineer Muhammad Muneeb who was a recent graduate and gold medalist from the NUST class of 2021. We also had a senior developer Umair Nazeer who was the mentor of Muneeb.

Responses to the in-person interviews

- Ans1) The interviewers mentioned their code development process which included standup meetings. Day-to-day activities included coding, recreation, lunch, and prayer breaks.
- Ans2) As a working individual at Dreamz Planet, I would say I am reasonably satisfied with the career advancement paths available. The company offers a structured approach to professional growth, with opportunities for skill enhancement through training sessions and challenging projects. However, I believe there is room for improvement in defining clearer milestones and career progression plans for each role.
- Ans3) The development processes included mostly agile and iterative approaches. The task allocation is very interesting. A very comprehensive top-down approach is followed. When new deliverables for an environment are required, a meeting is held where the availability of employees is discussed, then modules are divided amongst the developers with the load balanced equally. It is a very collaborative environment which ensures that the developers and the technical leads all collaborate to complete deliverables while incorporating feedback.
- Ans4) The intra-country and cross-border collaboration is ensured with dedicated communication channels with the slack channels. This even helps in general communications with employees all over the world. It promotes diversity and inclusivity.
- Ans5) A unique approach followed by the employees was employing principles of Extreme Programming (an approach for coding) which included code reviews of the employees among the developers which improves code quality and code learnability for people in the department. To ensure quality control, a QA department handles all quality metrics.

- Ans6) The employees lit up while answering the question. Umair bhai explained how the company would sponsor the Master's education for their employees. Additionally, the company is always improving and updating the tech stack. Dreamzplanet introduced AWS certifications for employees and neo4js certifications for free for their employees.
- Ans7) The challenges faced by the developers were work-related like more software based. They could not highlight any issues such as office politics, unprofessional environments, and dissatisfaction.
- Ans8) They gave an example of a recent problem, however. There was an issue with the employees wanting to have a space to pray in the congregation, so a new prayer area was developed for the employees. They also did exchange programs for the employees. This is where employees from the Karachi office would go to the Islamabad office and vice versa. This way teams would meet as well and have a good feedback and improvement process. This helped in team building and recreation.
- Ans9) The company followed a Hybrid model for the developers. Yes, the flexibility was where the employees were told that in case of emergencies, the employees had procedures in place. But there are also times when they have to work overtime for which the company takes good care of the employees which is why employees take ownership.
- Ans10) The employees had a clear view of the direction of the future technologies and goals. The company has been grooming them as well; the company ensures that certifications and training sessions for technology are arranged, and teams are also sent to attend events that relate to technologies.

Responses to the questionnaires

- Mr. Muneeb responded that the work culture at DreamzPlanet is vibrant and collaborative. The team is supportive, and there is a strong focus on creativity and innovation. Everyone works together towards shared goals, which fosters a sense of unity and belonging.
- The leadership team at DreamzPlanet is very approachable and supportive. They are open to feedback and always ready to provide guidance or address concerns when needed.
- Absolutely. The leadership encourages employees to contribute ideas, and they value creative input. This open-door policy makes it easier to suggest innovative approaches or strategies.
- I believe DreamzPlanet is on the right track for growth. The company has a sharp vision, and its focus on tailored digital marketing solutions aligns well with market demands and technological trends.
- The supportive environment, opportunities for skill development, and the chance to work on impactful projects motivate me to continue contributing to DreamzPlanet's success.

1.5.2 Fixkar Solutions

The profile of the company was such that it was a company that receives outsourced projects that they develop and then maintain.

Responses to the in-person interviews

- Ans1) The day-to-day activities mentioned were like every other developer. The responsibilities he listed, however, included multiple roles which are different job roles.
- Ans2) As an individual working at Fixkar Solutions, I find the career advancement paths to be promising but evolving. The company emphasizes innovation and professional growth, which provides opportunities to work on diverse projects and expand my skill set.
- Ans3) The development cycle was based more on the waterfall methodology. This is an old type of approach, but it is used due to the strict quality control for most of their projects which are based on legacy systems. There was no particular task allocation, the developer mentioned how the tasks are directly assigned to the team, and how they have to develop plans themselves.
- Ans4) The developers worked together in the office. They mostly communicate using Microsoft Teams and email.
- Ans5) The managers manage the code review and quality control. You would not expect the managers to manage these products themselves but rather have a separate QA environment.
- Ans6) The developers said there are not a lot of development and training programs because the company does not seem keen on innovation. The developers have to learn and implement new things by themselves.
- Ans7) The developers mentioned how there are issues at times with resource allocation. Sometimes, certain projects require more resources, especially front-end developers due to project requirements. However, they have to manage it themselves since the company expects them to fulfil project requirements.
- Ans8) The developers mentioned how the feedback implementation is a little slow and bureaucratic. The developers mentioned that the company focuses mostly on the processes and tries to ensure strict measures that the employees adhere to traditional processes. Change is not welcome.
- Ans9) The work-life balance for the employees is very unpredictable. They mentioned how there may be a sudden surge in the deliverables which can lead to extra working hours for the developers. The flexibility is present but there are no paid leaves for the developers.
- Ans10) The employees were unaware of the future directions and stated that they expect the process to stay the same.

Responses to the questionnaires

- • Fixkar Solutions offers a professional and dynamic work culture. The focus is on efficiency, innovation, and delivering high-quality IT solutions. The environment is challenging yet rewarding.
- Yes, the leadership team at Fixkar Solutions is approachable. They are focused on addressing employee concerns and providing resources to ensure productivity and growth.
- I feel encouraged to share ideas, although the process can sometimes feel formal. Nevertheless, leadership values constructive suggestions and often implements them when feasible.

- Fixkar Solutions has a clear vision for growth. The company is focused on staying updated with IT trends and expanding its services, which positions it well for long-term success.
- The challenging projects, opportunity for personal growth, and the company's commitment to innovation keep me motivated to continue contributing at Fixkar Solutions.

1.6 Conclusion

1.6.1 Summary of Findings

Based on the in-person interviews and questionnaire responses, we found several key differences between Dreamzplanet and Fixkar Solutions relating to development processes, environments, training, work culture and employee engagement. Dreamzplanet utilizes modern technologies and agile methodologies, promotes collaboration, invests in ongoing training, offers good work-life balance and has high employee morale. Developers feel ownership in the organization's success and are empowered in technical decision-making. In contrast, Fixkar Solutions relies more on legacy systems, dated technologies and bureaucratic waterfall processes. There are fewer growth opportunities, unpredictable work demands, and employees feel disconnected from leadership. Processes are rigid and changes face resistance.

1.6.2 Contributions to Existing Knowledge

This comparative case study highlights best practices such as agile processes, collaborative culture and employee empowerment that directly correlate to developer productivity, innovation, and job satisfaction. It provides insights for organizations seeking to transform legacy environments or boost employee retention. Our findings also highlight the need for improved capacity planning and project resourcing practices to facilitate better work-life balance. Flexible work policies additionally support employee well-being.

1.6.3 Limitations and Areas for Future Research

As this study examined only two organizations, the findings cannot be generalized. Further research across more companies can reinforce the validity. Surveying developer sentiment on a larger scale could also yield additional quantitative data. Longitudinal data tracking transformations sparked from this analysis could reveal long term business and cultural impact. As technology and work practices continue evolving quickly, updated research will be required.

1.7 Recommendations

Recommendations are being given after considering both the in-person interviews and the responses to questionnaires received from the developers of the respective software houses.

1.7.1 Modernize Technology

- Adopt newer languages like JavaScript, Python, Java, and Go rather than ageing ones like PHP, C sharp, .NET. This aids innovation and hiring.
- Promote the culture of exploring and utilizing the value of Open Source stacks, frameworks and libraries

1.7.2 Streamline Processes

- Reduce bureaucratic approvals, embrace agile methodologies, and implement project management tools like JIRA, Notion or Trello to track work. This accelerates development.

1.7.3 Promote Collaboration

- Encourage knowledge sharing through code reviews, tech talks, and mentorship programs. Foster team bonding via activities like office exchanges. This builds connections.

1.7.4 Enable Professional Development

- Sponsor conferences, workshops, training programs and certifications to keep skills current. This aids retention.

1.7.5 Improve Work-Life Balance

- Offer flexible and hybrid work options and generous time off policies. This reduces employee burnout and improves well-being.

1.7.6 Set Technology Vision

- Define a 3–5-year roadmap, and proactively upskill employees on strategic capabilities needed to execute that vision.

1.7.7 Listen to Developer Feedback

- Implement improvements quickly to address developer pain points around tools, processes, etc. This increases morale.

1.7.8 Strengthen Capacity Planning

- Carefully evaluate project resourcing needs to avoid understaffing. Build in buffers to manage uncertainty.

1.7.9 Foster Inclusive Culture

- Ensure developers feel welcomed, valued, and supported regardless of gender, ethnicity, orientation etc. Celebrate diversity.

1.7.10 Empower Developers

- Allow developers to self-organize around solving problems and give them authority in making technical decisions. Reduce top-down directives.