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Role of Design Thinking Approach to Technological Innovations in Organisational Performance: An Empirical Study of Indian Tech-Startups

Dr. Anand Muley

Associate Professor, Department of Commerce,

J. M. Patel Arts, Commerce and Science College

Bhandara Maharashtra

Dr Pranjali Madhur

Professor

Universal AI University, Karjat

Email id: pranjalim7@gmail.com

Dr Harvinder Kaur

Associate professor

Bhai Parmanand DSEU campus
harvinder.kaur@dseu.ac.in

Dr. Vishal Singh Varma
Coordinator - Projects and Incubation

Suresh Gyan Vihar University Jaipur
vishal.singh.varma17@gmail.com

ABSTRACT

The present research work aims to understand, role of design thinking approach to revolutionize organizational performance, reshape business model by focusing on new ideas and customer-focused solutions in Indian tech-startups. This method has thereby; improved how they create products and plan strategies, helping them understand customer needs, think of creative ideas, and put useful innovations into action. Present study will also introduce, how design thinking approach is often; seen as a method for innovation and changing how organizations work, but it actually goes beyond that. Helps Indian tech-startups to make products which stand out, because it is a practical, user-friendly way of solving problems which can help create ideas, and provide these organizations with a competitive edge. Design thinking approach promotes a trial-and-error mindset to create solutions which are not only practical but, also valuable and beneficial for both users and the entire startup ecosystem. Usage of design thinking in such businesses and workflows brings great value, therefore; helping make sure the products created in Indian startups are attractive to users and realistic for the company's resources and budget. 217 respondents associated with Indian tech-startups were surveyed to explore the factors that determines role and impact of design thinking approach to technological innovations in organisational performance. The study concludes that there is significant impact of design thinking approach to technological innovations on organisational performance.

KEY WORDS: Design thinking, Organizational performance, Startup Ecosystems, Business model, Competitive edge.

INTRODUCTION

Design thinking is considered as a method used to solve problems through creation of fresh and useful solutions to everyday customer issues. This design thinking approach mainly focuses towards understanding what users need, by exploring new ideas, building of simple models or samples, as well as improving them based on feedback. Indian tech-startups are transforming their organizational performance with new ideas, in today's rapidly changing business world despite; however, not all of them survive. Majority of the start-ups also fail because they concentrate more towards the creation of products, or business processes rather than understanding people. This is where design thinking approach helps, although;

it provides them with a people-focused approach to solving problems, creating innovation, and supporting growth. According to Elsbach et.al. (2018) Design thinking approach is also meant as an organized yet, flexible way to solve problems thus; putting the user's needs first instead of focusing only on business objectives. The exercise generally has five main steps: "empathize, define, ideate, prototype, and test." Each stage allows students and entrepreneurs move closer, to creating useful and meaningful solutions. Startups majorly operate in an uncertain environment because, they are always under the pressure to innovate and adjust quickly. Design thinking approach allows them to handle such uncertainties by identifying the real problems and creating solutions based on used needs. Towards the growth of startups, design thinking is very important as; it turns problems into chances for improvement and simple ideas into successful businesses. Ravishankar et.al. (2015), mentioned technological innovation means using of new technologies in making and using of products which involves understanding new technical options and arranging the needed people and money to turn these ideas into useful products and processes. When paired with good management education, it also becomes a powerful tool for driving innovation. Within the nearby future, startups could play a key role in the country's economic growth through; creating more jobs, which leads to increase in employment and helps strengthen the economy. Through, this approach Indian startups may also boost economic progress by encouraging new ideas and bringing healthy competition into the market. Greatly improves the performance of Indian startups by also, promoting teamwork across the departments. Encouraging user-focused innovation, allowing quick testing to lower risks, and ultimately supporting long-term growth and stronger loyalty. This paper will also let to know, how; the flexible and non-step-by-step nature of design thinking approach helps such startups adjust quickly to shifting market trends and customer needs. Thus, in India's fast-changing business environment it, encourages a habit of constant improvement in organizational performance which is crucial for surviving and growing. According to Kabra. et.al. (2025), using of design think also means removing of barriers amongst departments and encouraging teamwork across different groups like engineering, marketing, and operations. Eventually this, open culture value ideas from everyone, leading to more creative and well-rounded solutions and helping the organization become stronger and more flexible. Even though, the above-mentioned roles are usually described in a qualitative way, further; will we discussed briefly that many Indian startups using design thinking have seen strong returns and clear improvements in standard business results. Some Indian startups will be introduced which reported higher customer engagement, better retention, improved customer rates, and overall growth in revenue. Because of this, the approach is effective in developing practical frameworks to achieve standard and long-term development goals.

LITERATURE REVIEW

Design thinking approach is rooted in simple, logical, goal-focused ideas of planning and execution which have considered to guide businesses for ages. First taught at Stanford University, during the 1980s and 1990s to encourage creativity. Since then, it has been adapted by different businesses use towards the improvement of innovation processes and stay relevant in modern times. Design thinking is one of the research methods used to study problems through creative thinking. Thereby, mainly offering a structured way to find solutions starting from defining the problem, creating and testing prototypes, implementing ideas, and then evaluating the results to understand what works best. Indian startups, according to Singh & Chavan. (2024), have adopted such design thinking approach as a practical, user-centered methods to survive and grow through creating products people truly need, instead of what organizations assume they need. While considering such research work, it is been noticed that design thinking is very crucial for Indian startups because it helps them create solutions which are centered around customer needs, lowers the chances of failures by using quick models and tests, strengthen their brand identity, and supports teamwork across different departments. Helps them to tackle tough local challenges, use limited resources wisely, and develop products that people genuinely need in a highly competitive market. Buhl et.al. (2019), mentioned basic benefit in this approach is that; it helps save resources through understanding users deeply and creating solutions which are genuinely needed because, it uses repeated prototyping and testing to identify mistakes early at a low cost. Bringing in varied ideas and supporting of constant improvement, such initiatives also encourage teamwork across different departments. Yang et.al. (2024), stated this approach reduces waste on unnecessary features, boosts efficiency, and increases returns by making sure innovation matches real needs and practical possibilities, making it a strong method for improving both processes and products. Even though, it is becoming more important in today's business and manufacturing fields, design thinking is still unclear and has many sides. Though, it includes a way of thinking, a process, and a method, but exact purpose of design thinking approach in this rapidly evolving world and their possible advantages in the era of industry 4.0 are still not fully understood. Despite, today's companies shape their growth using design-based strategies which focus on products, services, communication, information, and the overall environment. Buhl et.al (2019),

acknowledged design thinking approach amongst startups can help them improve their processes by understanding what workers and other stakeholders need, and using that knowledge to build more efficient and effective workflows. Teams are able to create solutions that are easier to accept and more likely to be used successfully, by paying attention to the user experiences and including all stakeholders in the design steps. They also play a role to move the focus from internal measurements to the user's real experiences, making processes easier to understand, more useful, and better matched to actual needs instead of guessed ones. Design thinking approaches are being commonly used in both and social sectors, especially in country like India. Startups and educational institutes like IIT Delhi apply design thinking to solve social issues such as healthcare and education. Non-profit organizations also use it to create low-cost solutions, like portable medical testing tools, showing that it works well even in places with limited resources. According to Rizzo et.al. (2017), design thinking approaches are a people-focused, step-by-step approach which helps reduce risks, strengthens customer focus, and supports real-problem solving by questioning assumptions and understanding user needs from the beginning. Through, avoiding expensive mistakes on solutions that don't fit user needs or business objective of Indian startups it, also lowers risk by testing and checking ideas early and regularly. Resulting towards more complete and stronger solutions, it thereby; brings together teams from different fields and skills (like marketing, engineering, design, and finance) within the organization to look at problems from many viewpoints. Verganti et.al. (2021), mentioned that, through supporting creative ideas and practical action, design thinking approach offers a clear but, adaptable methods for handling difficult and unclear problems, often called "wicked problems". Rather than long-theoretical talks, design thinking focuses on "learning by doing" through simple technological models and experiments. This method quickly turns ideas into real solutions which can be tested and improved. The process promotes "diverging" to create many possible ideas and then "converging" to choose the best ones, maintaining a balance between creativity and practically. Some popular Indian startups use design thinking approaches to create user-focused innovations. For example, startups include CRED, which makes finance easier for people without access to banking, and Cleartax, which simplifies tax filing. Design studios like: NetBrahma, Lollypop, and Codewave also, apply design thinking by focusing on user needs, quick prototypes, and solving difficult user issues. This helps them build successful products and services in areas like fintech, healthcare, and online shopping. Ghina. (2025), stated Indian startup CRED applies design thinking by deeply understanding user problems related to credit card management. The company quickly improves its app based on their user feedback by also creating smooth, easy-to-use experiences with attractive design and reward features. CRED turns their boring financial activity into an enjoyable and harmful platform which, encourages better financial habits and customer loyalty. Smartly, they introduced a well-designed, smooth working app and even new though, risky design styles like neomorphism to provide users with a special, touch-like experience that many appreciated. CRED began, by studying the common problems and irritation people face during paying of credit card bills. Their main objective through technological innovations was to make the process enjoyable, not just useful, but; by providing rewards for responsible behavior. According to Weilan & Knizhnik. (2022), Design thinking helps startups differentiate themselves by creating better user experiences that technology alone cannot achieve. CRED tackles the major issues or concerns of users regarding credit card debt and financial well-being by turning bill payments into a fun, rewarding activity. They also expand naturally into services like loans and money management. Indian startups like Paytm and Zomato use a people-focused, repeatable design thinking approach by understanding user needs deeply, testing new ideas quickly, and constantly improving their app design. These companies succeed because they tend to create solutions which fit India's unique culture and infrastructure, such as low digital awareness and the need for dependable offline payment alerts for merchants. Marion et.al. (2021), Integration of design thinking and technological innovation helps the startups differentiate themselves by providing users with a better experience which technology alone cannot deliver. Allowing companies to truly understand users, companies are able to spot real problems and fix them, which leads for a faster acceptance just like CRED growing into a unicorn. When businesses create enjoyable and genuinely helpful products, they build strong user involvement and loyalty, and they even change how users behave. For different groups in India, including city youth, small shop owners, and rural users, Paytm used design thinking to make their digital financial services more accessible. They have done many field surveys and while; talking directly with people, Paytm learned about the real problems with traditional banking in India like the confusing processes, fear of fraud, dependence on cash, and low digital awareness among small merchants. The above-mentioned Indian startup created new solutions like QR-based code payments and the Paytm Soundbox, and improved them through, testing early versions with real users. They in addition added on many regional languages to the app, making digital payments easy to use for people in small towns and villages who do not speak English. Sarooghi et.al. (2019), asserted that during the study, the present research work resulted, design thinking approach helped Indian startups solve current problems and also prepares them for future challenges. With

supportive government policies in India, it can help build strong systems that meet upcoming needs. Swiggy's success in the food delivery industry comes from usage of design thinking to solve the challenges of fast and dependable food delivery. Their user-focused approach resulted in features like quicker delivery and an improved app design, helping them grow and meet customer needs more effectively. Indian startups shift from simply having an idea towards building stable business which truly connect with their target customer, by using such way of thinking approach therefore; which makes design thinking an essential tool for succeeding in the unique Indian market. Many global startups have also succeeded because of design thinking. For example, Airbnb paid attention to the real need of many travelers. Uber followed the similar approach for city commuters by, understanding users they turned a small idea into a worldwide brand. Eisenbart et.al. stated (2022), although; design thinking provides a clear and organized way to understand complex problems and drive innovation, making it an important tool for leaders of startups today. While, improving life for both people and the environment it, helps Indian startup companies rethink value, create new business models, and solve tough social issues. This method remains crucial in this fast-changing world, where businesses are moving from engineering-focused to design-focused strategies.

OBJECTIVE

1. To explore the factors that determines role of design thinking approach to technological innovations in organisational performance
2. To know the impact of design thinking approach on organisational performance

METHODOLOGY

217 respondents associated with Indian tech-startups were surveyed to explore the factors that determines role and impact of design thinking approach to technological innovations in organisational performance. Data collection and analysis is done through "Random sampling method" and "Exploratory Factor Analysis" following "Multiple Regression Analysis".

FINDINGS

In study survey male are 57.6% and rest 42.4% are female. 60.8% are below 36 years of age, and rest 39.2% are above 35 years. 20.7% respondent are from scalable startups, 17.5% from small business startups, 18.9% from lifestyle startups, 18.0% from social startups, and rest 29.7% from other Indian startups.

"Table 1 General Details of Respondents"

"Variables"	"Respondents"	"Percentage"
Gender		
Male	125	57.6
Female	92	42.4
Total	**217**	**100**
Age		
Below 35	132	60.8
Above 35	85	39.2
Total	**217**	**100**
Types of start-ups		
Scalable Startups	52	20.7
Small Business Startups	38	17.5
Lifestyle Startups	41	18.9
Social Startups	39	18.0

Others	45	29.7
Total	**217**	**100**

“Exploratory Factor Analysis”

“Table 2 KMO and Bartlett's Test”

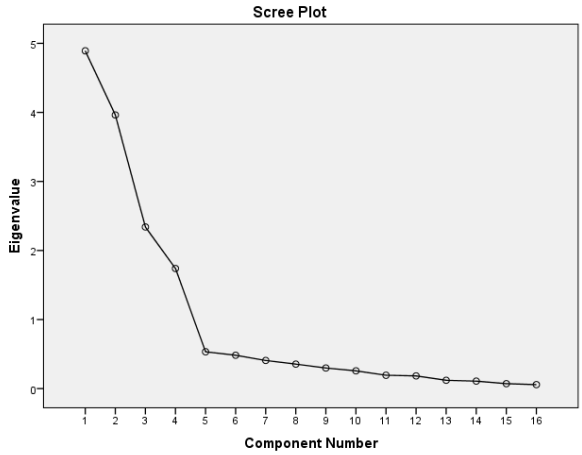
“Kaiser-Meyer-Olkin Measure of Sampling Adequacy”		.787
“Bartlett's Test of Sphericity”	“Approx. Chi-Square”	3079.090
	“df”	120
	“Sig.”	.000

KMO value is 0.787 and the “Barlett’s Test of Sphericity” is significant.

“Table 3 Total Variance Explained”

“Component”	**“Initial Eigen values”**			**“Rotation Sums of Squared Loadings”**		
	“Total”	**“% of Variance”**	**“Cumulative %”**	**“Total”**	**“% of Variance”**	**“Cumulative %”**
1	4.892	30.573	30.573	3.599	22.494	22.494
2	3.962	24.764	55.337	3.283	20.516	43.010
3	2.340	14.625	69.962	3.094	19.336	62.346
4	1.739	10.871	80.833	2.958	18.487	80.833
5	.533	3.332	84.166			
6	.483	3.019	87.185			
7	.407	2.544	89.729			
8	.355	2.216	91.945			
9	.298	1.861	93.806			
10	.257	1.607	95.413			
11	.193	1.207	96.620			
12	.184	1.149	97.769			
13	.120	.752	98.521			
14	.108	.675	99.195			
15	.071	.446	99.641			
16	.057	.359	100.000			

In a “principal component analysis”, 16 variables were grouped into 4 factors with 22.494%, 20.516%, 19.336% and 18.487% variance respectively and total variance is 80.833%.



The graph above shows the Eigenvalues derived from the "Total Variance Explained" table, indicating an elbow point at 4 components.

"Table 4 Rotated Component Matrix"

"S. No."	"Statements"	"Factor Loading"	"Factor Reliability"
	User-Centric Technological Innovation		**.962**
1	Design thinking approach encourages user-focused innovation	.943	
2	Builds up quicker delivery and an improved app design	.932	
3	Help apps to grow and meet customer needs more effectively	.930	
4	Build successful products and services in areas like fintech, healthcare, and online shopping	.918	
	Real time approach		**.921**
5	Design thinking approach identifying the real problems	.945	
6	Create solutions based on used needs	.915	
7	Making sure that innovation matches practical possibilities	.833	
8	This approach supports real-problem solving	.826	
	Teamwork		**.901**
9	The design thinking approach helps organizations solve problems in a creative and teamwork-based way	.868	
10	Promotes teamwork across the departments	.867	
11	Encouraging teamwork across different departments	.842	
12	Brings together teams from different fields and skills	.829	
	User experience		**.877**
13	Design thinking approach helps to pay attention to user experiences and include stakeholders in the design steps	.887	
14	Facilitate easy-to-use experiences with attractive design and reward features	.857	

15	Creates better user experiences that technology alone cannot achieve	.849	
16	Provide users with a special, touch-like experience	.782	

Factor "User-Centric Technological Innovation" includes the variables like Design thinking approach encourages user-focused innovation, builds up quicker delivery and an improved app design, help apps to grow and meet customer needs more effectively, and build successful products and services in areas like fintech, healthcare, and online shopping. Factor "Real time approach" consist of variables like Design thinking approach identifying the real problems, create solutions based on used needs, making sure that innovation matches practical possibilities, and This approach supports real-problem solving. Factor "Teamwork" includes the variables like the design thinking approach helps organizations solve problems in a creative and teamwork-based way, promotes teamwork across the departments, encouraging teamwork across different departments, and brings together teams from different fields and skills. Factor "User experience" consists of variables like design thinking approach helps to pay attention to user experiences and include stakeholders in the design steps, facilitate easy-to-use experiences with attractive design and reward features, creates better user experiences that technology alone cannot achieve, and Provide users with a special, touch-like experience.

"Table 5 Reliability Statistics"

"Cronbach's Alpha"	**"N of Items"**
.840	16

The overall reliability is 0.840 for the 4 constructs comprising sixteen items.

"Table 6 Model Summary"

"Model"	**"R"**	**"R Square"**	**"Adjusted R Square"**	**"Std. Error of the Estimate"**
1	.858[a]	.736	.732	.36307
Predictors: (Constant), User-Centric Technological Innovation, Real time approach, Teamwork, User experience				

The adjusted R-squared value is 0.736 with approximately 73% of the variation.

"Table 7 ANOVA"

"Model"		**"Sum of Squares"**	**"df"**	**"Mean Square"**	**"F"**	**"Sig."**
1	"Regression"	78.109	4	19.527	148.132	.000[b]
	Residual	27.946	212	.132		
	Total	106.055	216			
a. Dependent Variable: User-Centric Technological, Innovation Real time approach, Teamwork, User experience						
b. Predictors: (Constant), Overall impact of design thinking approach on organisational performance						

Value under significant column indicates a significant relationship between design thinking approach (User-Centric Technological, Innovation Real time approach, Teamwork, User experience) and organisational performance.

"Table 8 Coefficients"

"Model"	"Un standardized Coefficients"		"Standardized Coefficients"	"t"	"Sig."
	"B"	"Std. Error"	"Beta"		
(Constant)	4.244	.025		172.200	.000
User-Centric Technological Innovation	.059	.025	.084	2.373	.019
Real time approach	.121	.025	.173	4.901	.000
Teamwork	.582	.025	.830	23.542	.000
User experience	.073	.025	.104	2.943	.004
DV: Overall impact of design thinking approach on organisational performance					

All the factors User-Centric Technological, Innovation Real time approach, Teamwork, User experience are showing significant impact of design thinking approach on organisational performance. Highest impact is shown by Teamwork with beta value .830 followed by Real time approach (.173), User experience (.104), and User-Centric Technological Innovation with beta value .084.

CONCLUSION

The present research work concludes that using of design-thinking mindset which focuses towards creating prototypes, testing them, and learning quickly in organizational performance can be very helpful for a startup. This method lets a startup check and confirms ideas early, which saves time and resources later. Menon et.al. (2023), concludes design thinking approach continues to be a strong method for Indian startups that want to fix business challenges and build new ventures. By understanding the users, clearly defining the issue, and brainstorming ideas, design thinking can help your startups start well and grow in a tough market. The design thinking approach helps organizations solve problems in a creative and teamwork-based way. Using design thinking and technological innovations also helps build and manage digital skills more efficiently and effectively, while; supporting both practical and planned decision-making and improving overall performance. Further, the present research work concludes that repeated process of both design thinking and technological innovation helps Indian startup keep improving their product, making it more focused on user needs and boosting their chances of success. Through, constantly learning and adjusting, a startup can stay ahead of trends and stay competitive in its industry.

The study aims to explore the factors that determines role of design thinking approach to technological innovations in organisational performance and found that User-Centric Technological, Innovation Real time approach, Teamwork, User experience are the factors showing different role of design thinking approach. The study concludes that there is significant impact of design thinking approach to technological innovations on organisational performance.

REFERENCES

1. Elsbach, K. D., & Stigliani, I. (2018). Design thinking and organizational culture: A review and framework for future research. Journal of management, 44(6), 2274-2306.
2. Ravishankar, M. N., & Gurca, A. (2015). A bricolage perspective on technological innovation in emerging markets. IEEE Transactions on Engineering Management, 63(1), 53-66.
3. Kabra, G., & Mukerjee, H. S. (2025). Analyzing barriers to design thinking adoption within organizations: a DEMATEL approach. International Journal of Productivity and Performance Management, 74(3), 915-939.
4. Singh, S., & Chavan, C. S. (2024). Unraveling the Threads of Design Thinking, Innovation, and Business Growth: A Holistic Review and Analysis. Journal of Computational Analysis & Applications, 33(5).

5. Buhl, A., Schmidt-Keilich, M., Muster, V., Blazejewski, S., Schrader, U., Harrach, C., ... & Süßbauer, E. (2019). Design thinking for sustainability: Why and how design thinking can foster sustainability-oriented innovation development. Journal of cleaner production, 231, 1248-1257.
6. Yang, L., Kumar, R., Kaur, R., Babbar, A., Makhanshahi, G. S., Singh, A., ... & Alawadi, A. H. (2024). Exploring the role of computer vision in product design and development: a comprehensive review. International Journal on Interactive Design and Manufacturing (IJIDeM), 18(6), 3633-3680.
7. Buhl, A., Schmidt-Keilich, M., Muster, V., Blazejewski, S., Schrader, U., Harrach, C., ... & Süßbauer, E. (2019). Design thinking for sustainability: Why and how design thinking can foster sustainability-oriented innovation development. Journal of cleaner production, 231, 1248-1257.
8. Rizzo, F., Deserti, A., & Cobanli, O. (2017). Introducting design thinking in social innovation and in public sector: A design-based learning framework. European Public & Social Innovation Review, 2(1), 127-143.
9. Verganti, R., Dell'Era, C., & Swan, K. S. (2021). Design thinking: Critical analysis and future evolution. Journal of Product Innovation Management, 38(6), 603-622.
10. Ghina, A. (2025). Finpay Remittance Service Innovation: Product Development Using a Design Thinking Approach to Enhance User Experience. Malaysian Journal of Business, Economics and Management, 1-9.
11. Weiland, K. J., & Knizhnik, J. R. (2022). Design thinking, lean startup, and high-technology marketing for human-centered systems engineering. Systems Engineering, 25(3), 207-223.
12. Marion, T., Cannon, D., Reid, T., & McGowan, A. M. (2021). A conceptual model for integrating design thinking and lean startup methods into the innovation process. Proceedings of the Design Society, 1, 31-40.
13. Sarooghi, H., Sunny, S., Hornsby, J., & Fernhaber, S. (2019). Design thinking and entrepreneurship education: Where are we, and what are the possibilities?. Journal of Small Business Management, 57, 78-93.
14. Eisenbart, B., Bouwman, S., Voorendt, J., McKillagan, S., Kuys, B., & Ranscombe, C. (2022). Implementing design thinking to drive innovation in technical design. International Journal of Design Creativity and Innovation, 10(3), 141-160.
15. Menon, R. B., Avadhani, V. D., Menon, P. B., & Das, D. (2023). Development of an entrepreneurship model using the design thinking approach and emotional intelligence for sustainable wellness among the young generation. Cogent Business & Management, 10(3), 2271243.