Design Thinking and Startup Incubators: Towards a Co-Creation Model for Humanizing the New Product Development Process

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Abstract

This study examines the application of design led co-creation practices in new product development by startups at incubators. In recent times, organizations, globally, big or small, established or emerging are adopting design thinking methodology to harness the creative and innovative capability of their employees. As a consequence, research as well as practice on design thinking and design centric business practices has gained speed with companies like IDEO and its co-founder, David Kelly championing the cause. Owing to various recorded success stories, in developed economies, design thinking has garnered attention from scholars and practitioners alike; however, research on its usage as a strategic co - creation tool in the new product development process in practice in startup in emerging economies is limited. This research attempts to identify the elements of design thinking based practiced by startups for new product development and assess its importance and outcomes in managing innovations. To achieve this, aim the authors examined the new product development process used by startups operating at T-Hub, India's largest incubator for startups headquartered at Hyderabad, India. This paper adopts an exploratory case study approach to identify key elements of design thinking that are practiced by the startups. The main findings show that design thinking is effectively a support process, representing greater integration for success of startups, at both back end and front-end of innovation. Our study provides

interesting implications for the startups, as well as, contributes to the debate of the impact of design thinking on innovation from an emerging economy perspective. Our study also contributes by capturing and presenting a conceptual design led co - creation model for startup incubators.

Start-ups that develop and market new and innovative products have received substantial attention from academics and researchers in recent times. But their success depends on assimilation into the modern business environment that is ripe with hyper-competition and in a competitive space, on the nature and speed of innovation which involves an "effective combination of internally generated and externally generated inventions."[1] Such assimilation of inventions needs to be captured and commercialized as new products as fast as possible in order to beat the competition to the market.[2] The focus on innovation is entrenched in the development of various industries leading to a significant increase in the standard of living of masses.[3] Besides creating competitive advantages, innovation provides the society to experience novel solutions to their existing problems, thus, contributing to the overall benefit of the society at large.[4]

Startup success depends on identification of existing market need(s), gaps in market offers, developing innovative and new products, marketing products to a profitable customer segment, acceptability by customers and accumulating & responding to feedback.[5] One of the commonly accepted methods of measuring the success of innovations by startups has been through measuring acceptance that new products receive from the end user or the customer.[6] Historically, the Process model of New Product Development (NPD) has been the cornerstone of developing new product for larger companies as well as startups. However, in recent times the focus on customer acceptance has increased drastically.

Startup Incubators nurture startups and help them get access to necessary resources, ancillary services and other linkages that are essential to set up their business.[7] They operate as a bridge that connects commerciable innovation to entrepreneurial success including assisting in the designing of new products or services as well as managing them. One of the means of such a synthesis of innovation and entrepreneurial spirit is design thinking.[8]

Design Thinking (DT) has garnered attention of both practitioners as well as researchers as it captures and promotes human centric innovations, which, is key to competitive advantage.[9] By being human centric, it is rapidly becoming a choice for companies that want to think and act differently by listening to customers, understanding them better and creating solutions

that they relate to. Central to viable innovation is in understanding the problems that end users have from their perspective rather than the perspective of the company.[10]

Available literature on the subject of Design Thinking and NPD is indicative of their importance in modern day businesses. However, the practice of Design Thinking in the process of NPD at the startup incubator level is unavailable. Similarly, research on the impact of employing Design Thinking in order to foster and manage the NPD process in startups is also insufficient. This paper presents a body of literature and practice on the linkage between Co-creation, design thinking and NPD. Through exploratory research, the author shall make an attempt to describe in-practice Design Thinking interventions for inculcating a mindset of innovation at start-up incubators.

The following section deals with the review of relevant literature and theories on co-creation, design thinking and innovation. The next section presents the methodology and analysis followed by theoretical and managerial implications. The final section highlights the limitations and the scope for further research.

Literature review and theoretical framework

Co-creation theory and theories on innovation

In a dynamic market, there is a continuous interchange of roles among producer, consumers, suppliers and distributors who constantly deliberate among themselves for the development of new products through the process of co-creation.[11] Such processes adopted for creation of value is critical for the success of large firms.[12] Co-creation enables higher consumption and better consumer experiences resulting in higher profits for the firms.[13] Through the process of co-creation led NPD, value proposition is operationalized embedded with a customer focused set of benefits. On the other hand, for firms, co-creation also drives innovation.[14,15,16]

Competitiveness is the key to the broadening horizon of choice for the customers. Competition results in more, better and novel solutions to problems that the society faces and seeks resolution to. Companies have, hence, adopted a range of strategies to exist during times of competition. Three generic strategies help companies sustain in the face of ever-increasing competition, namely; cost leadership, differentiation and focus.[17] Overall cost leadership aims at technological interventions to ensure incurring a lower cost as compared to the competition without intervening negatively on issues of quality, provision of service etc. Differentiation emphasized the importance of unique offerings from the competition so as to create a product or a service that is visibly different than others. The third, focus

strategy involved identifying and serving a particular group of customers, with specific needs, in the best possible manner so that the competition could not engage with them. Such interventions invariably require innovations.

The importance of innovation in modern day businesses is best expressed in the famous quote of Steve Jobs which reads *"Innovation distinguishes a leader and a follower."* Innovation is at the heart of competitiveness and impacts entrepreneurs and entrepreneurial growth. Innovation is frequently associated with new product or technology development; however, it is best understood as a process in continuum. In addition, innovation presents opportunities to businesses to overcome competitive challenges as well as to inculcate a culture of collaboration among employees that is enduring. Innovation acts as a key enabler in pivoting from the historically accepted methods of dealing with competition and moving towards novel approaches for efficiently and effectively managing the competitive dynamics.[18]

Theories of Innovation in business originate from the works of Schumpeter, wherein, he conceived innovation as the construction of new plant or machinery, introduction of new firms or even the onset of new leadership making innovation a discontinuous activity.[19] Innovation has been defined as "any thought, behavior or thing that is new as it is qualitatively different than other existing forms" and added the possibility of continuousness to innovation as a culture.[20] Innovation entails any new element brought to the buyer, even if it is not necessarily new to the organization.[21] Some of the authors conceptualize innovation as the newness that is implemented by organizations,[22] whereas, for some, it is a utility concept that caters to specific requirements on the end user.[23] Innovation demands new ideas, products or services that includes the concept of new use of existing products or services and even identifying new markets for existing products or services while emphasizing that innovation was a basic creative process within organizations.[24]

Innovation is widely accepted as the development and adoption of new ideas by organization.[25] The ability to discover new relationships, of seeing things from new perspectives and to form new combinations from existing concepts is innovation.[26] Researchers are also of the view that innovation is something that involves knowledge creation as well as its diffusion,[27] and that entails the conception of new association between products, market, technology and the organization.[28] The process of innovation provides added value and a degree of novelty to the organization, suppliers and customers, developing new procedures, solutions, products and services and new ways of marketing.[29]

A detailed and critical analysis of definitions of innovation reveals that it is comprised of newness of ideas, products or services. It is creative and structured problem solving, implementable by organizations, fundamental for sustenance of the organization and included creation as well as diffusion of knowledge. Innovation, hence, is to be considered as an outcome of organizational culture and environment that accommodates the drive for novelty while operating in an existing market or even in finding new markets for existing or new ideas, products or services.

Design thinking as a tool for NPD

Successful innovations, apart from being novel, must aim at maximizing customer satisfaction by catering to their unstated needs. These unspoken and unstated customers' needs have been denoted as "wicked problems" and a practice began taking shape wherein individuals or teams were referred to as designers engaged in a continuous process of defining the problem and crafting solutions that could be validated through experimentation and not analysis.[30] This formed the bedrock of the concept of Design Thinking and emphasized the importance of continuous learning and experimenting that led to better understanding of the problem and aided in identifying new opportunities.[31] Other researchers proposed that design is an evolving process that is intuitive as well as spontaneous.[32]

Design Thinking is increasingly being seen as an iterative problem solving technique in management parlance in conditions of uncertain and complex externalities. Such situations make decision making difficult and predictions challenging as data might be inadequate or not enough for a decision. Design thinking is also considered as a viable option for entrepreneurs who continually deal with complex, uncertain and risky decisions as they operate in the realm of novel solutions.[33,34] Justifying the relationship between innovation and Design Thinking as an approach, it was proposed that such approaches lead to an increase in innovation by being open, iterative and experimental in a dynamic business environment.[35] Design Thinking, provides a fresh lens to look at innovation by being a social process and not a technology intervention.[36] Others have also suggested that by having emotion, action and cognition at its foundational level, Design Thinking processes were adaptive of dealing with the unreliable data driven problem identification and solving process that entrepreneurs or startups usually faced.[37]

With the outcome being innovation, Design Thinking primarily has three distinct phases. Phase 1 of the process aims at developing a deeper understanding and appreciation of unstated, unsaid and unspecified customer needs through observation, focus group discussions and

interviews. Empathy towards the identified needs is critical to the process. This leads to defining the need appropriately. Phase 2 deals with creating ideas to cater to the defined needs innovatively and the final phase consists of prototyping and testing before the product or service is launched thus making is highly customer centric.[38]

The key to success of organization is in understanding and providing for customer needs rather than producing and selling what the organization is good at.[39] Several authors have also propounded theories that indicate similar outcomes justifying the value of being customer centric, oriented and focused.[40,41,42] For this to happen, organization, large corporations and startups alike have to re orient themselves to being open to continuous learning from customers about their needs and being empathetic towards those needs to be able to create lasting competitive advantages.[43]

Startups, by nature, deal with situations where identifying the problem and proposing an acceptable solution is very difficult. Though they have access to technology, many a times the solution is not accepted leading to failure. It is likely that by adopting Design Thinking practices or a human (customer) centric approach they may curb failure.

Design thinking, co-creation and start-up incubators

The relationship between innovation, design thinking and start-up incubators rests on imbibing co-creation as a mode of NPD. Design thinking helps translate ideas into realities by integrating a full spectrum of inputs that originates through interaction at incubators.[44] Broadly, startup incubators operate on either a closed innovation or on an open innovation model.[45] In the closed innovation model, startups move from the idea generation stage to the market on their own with assistance that is limited to availability inside the incubator itself. On the other hand, those incubators that have adopted the open innovation model accommodate external inputs to develop ideas or products in addition to all assistance and expertise available internally at the incubator.[46]

The open innovation model driven incubators display characteristics of design thinking and are best suited for integrating the external end users into the creation process. Through integration of design thinking, such incubators inculcate a culture of thinking that is inclusive and allows for co-creation of new products and services. Inclusivity ensures a participative ecosystem that brings together varied functional expertise as well as end user or consumers for inputs into the NPD process resulting in co-creation.[47] Through design thinking practices, attempts are made to move from a market push mandate to a strategy of identifying the market pull and making it a part of the NPD process.[48]

Such benefits, when embedded into the working culture at incubators signals a strong customer focus or centricity to all the startups that incubate at such startups. By listening to customers, startups have a lot to gain. The process of co-creation provides a cushion of comfort as new products have a higher likelihood of customer acceptance. Product development happens within a shorter span of time than the traditional NPD process. Research also shows that startups that followed a design thinking-based co-creation model for NPD, made an early entry to the market than those who did not.[49]

Research methodology

In order to address the research questions posed and to understand the design thinking process in the context of startups based at a large incubator, authors adopted a single case study approach for rich description and in-depth analysis of data and context-dependent factors.[50] Case study research utilizes in-depth insights of the empirical phenomena and their context. A case study approach provides flexibility, richness and holism, making it an optimal method for the phenomenon of interest, especially in cases where context is complex.[51]

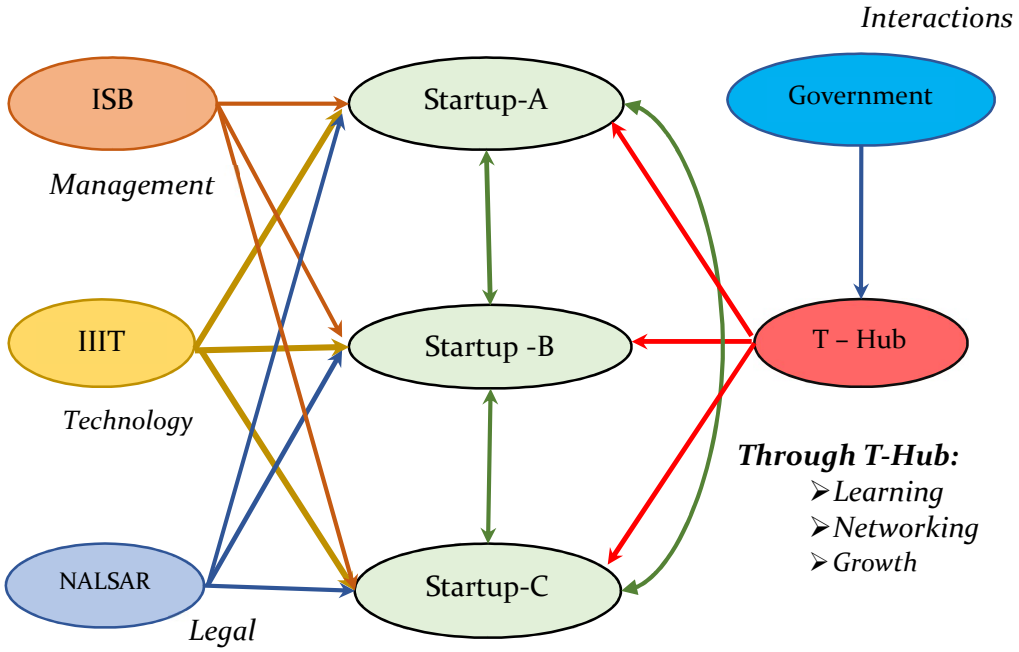
The authors questioned the top leadership of the incubator on their vision of incorporating design thinking model into their culture to understand the level of integration of design thinking into their operations. They are recognized for the large number of startups that they incubate and the number of startups that receive funding from investors. Several startups incubated at the said incubator have been able to commercialize their products with increasing rounds of investments. The choice of the specific incubator was based on the success that they have enjoyed in the startup ecosystem in India since their inception.

For the purpose of this study, multiple data sources were used to provide an understanding of the overall phenomenon of design thinking.[52] Sources of data for the case study included semi-structured interviews, review of internal documents, FGD with key informants, and the website of T-Hub for data triangulation. A total of 19 interviews were conducted that ranged from 30 minutes to 75 minutes. 14 out of 19 interviews were conducted with the startup founders, 5 interviews conducted with leadership team of the T-Hub including CEO and COO. Two rounds of FGDs were conducted with 9 participants in each. All the interviews were audio-recorded and transcribed. The received and validated a summary of their interviews for construct validity.[53] FGDs were also audio-recorded and transcribed. The data were analyzed using open coding process, and codes were subsumed into higher order categories.[54]

Analysis and results

T-hub is a unique experiment in the technology led startup ecosystem in India. Set in Hyderabad, it is the outcome of a public-private partnership of the state of Telangana in India, Industry and academic institutions. Each provides specific benefits to this experiment. The State of Telangana provided the initial push by bringing together the partners, financing the idea, allocating the physical space as well as providing top leadership support. The academic institutions offered support based on their expertise as well. The International Institute of Information Technology, a premier institute for research and education in the area of engineering provided testing labs and faculty support. The Indian School of Business, a globally acclaimed management institute provided strategic assistance, training and mentoring. The NALSAR University of Law, another premier institute in the legal sphere provided support with regards to understanding as well as being compliant with the law of the land. Figure 1 illustrates the collaborative relationship shared between all founding stakeholders.

Figure 1. Interactive and collaborative relationship among founding stakeholders of T – Hub.



The objective of T-hub was to provide a conducive open innovation ecosystem to technology-based startups with an aim of making Hyderabad

as the most favored entrepreneurial destination in India. Just like other incubators across the world, even T-hub provided physical support through infrastructure and services like shared professional services and mentoring to startups at a nominal charge to foster the ecosystem of entrepreneurial endeavors on an open innovation model. By virtue of being in the city of Hyderabad, T-hub also ensured access to venture funders to the startups. The vision of T-hub is best encapsulated by Mr. K Srinivas, the Chief Operating Officer of T-Hub, who said,

> *"If you take Silicon Valley, the University Avenue, the joke is that you just learn by osmosis. If you walk down the street, knowledge is just hitting you from everywhere. When you have such a large bunch of people, investors, mentors, start-ups from multiple areas, the neighborhood, you just learn by talking to other people."*

Similarly, Mr. Jaykrishnan, the Chief Executive Officer remarked that,

> *"T-hub is a learning organization that follows an iterative path to discovery."*

The initial remarks made by the top leadership of T-hub indicate inclination towards fundamentals of Design thinking. With backgrounds of education and work experience in and around the Silicon Valley, Design Thinking as a concept and its utility is not new to both the CEO as well as the COO. But the challenge was to integrate Design thinking as a practice. Upon inquiry, the CEO remarked,

> *"I have experienced Design Thinking in action in large organizations but its adaptability in startups shall be worth attempting."*

The Design Thinking model adopted by T-hub was the five phase model developed by Standard D-School. As can be seen in Figure 2, the model is holistic in nature and is commonly used by practitioners.

Figure 2. Design thinking model adopted by T-Hub (Adapted from Stanford Design School)

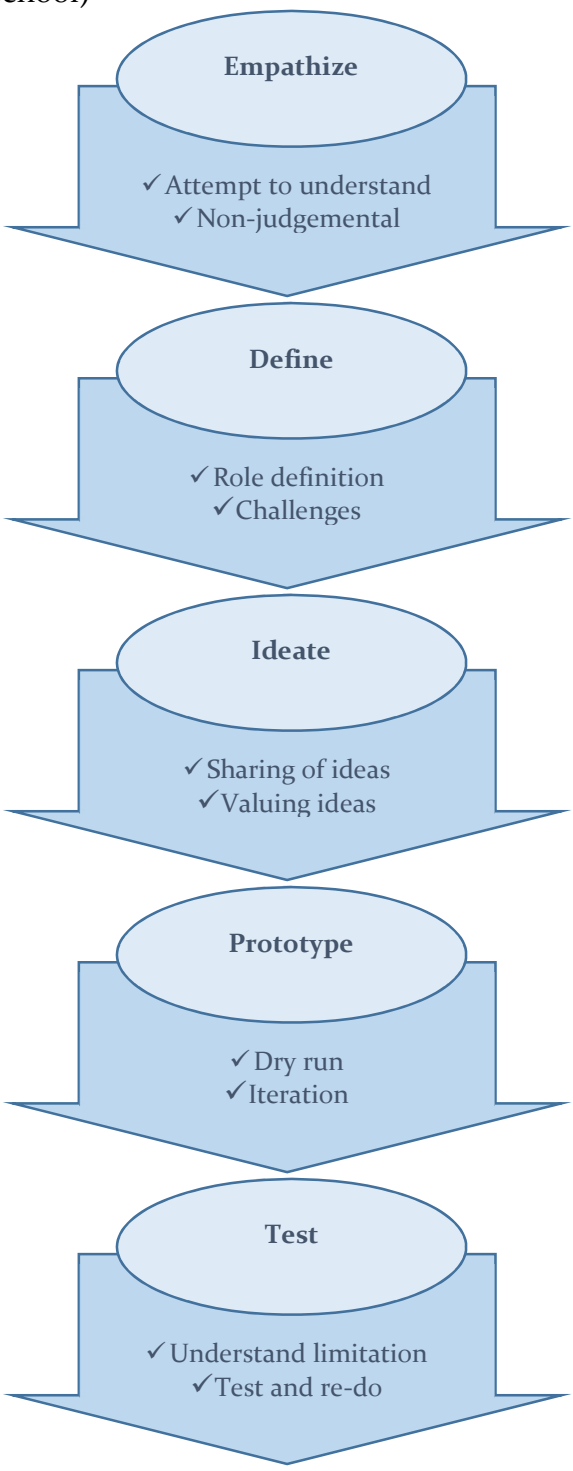
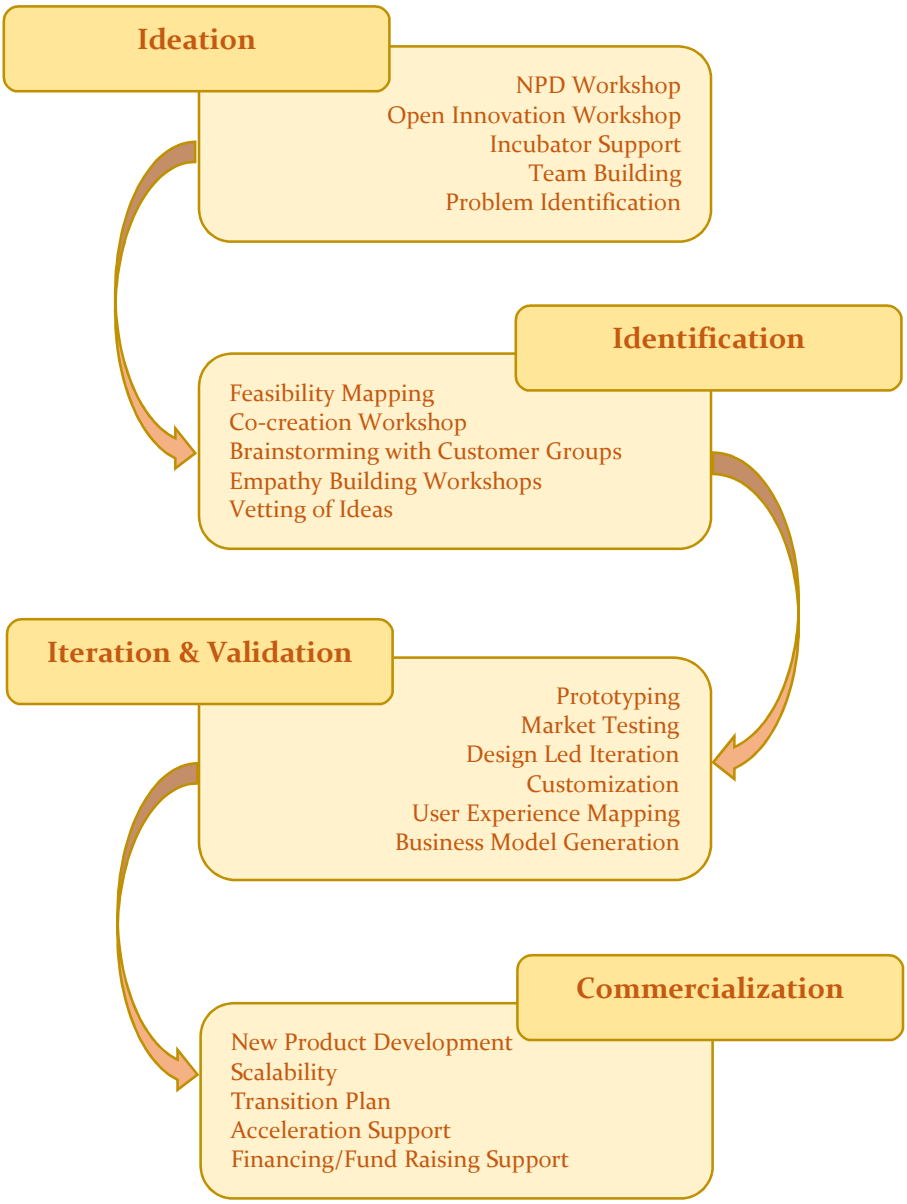


Figure 3. Design-Led Co-Creation Model



Interviews and FGDs with the top leadership at T-hub as well as startup founders revealed that, T-hub incorporated Design Thinking from the very beginning and several respondents stated that early adoption enabled adaptation of Design Thinking into the day – to – day functioning of T-hub. One of the startup founders stated that,

> *"I have been here for little more than a year now and have benefitted a lot from participating in Design Thinking interventions. Such a practice made me develop a better and relevant understanding of the end user's need. Both of us benefitted by product co-creation."*

Another respondent added,

> *"the customer's mind is murky and hence designing solutions of choice is very difficult, however, empathy created a bridge between my team and the end users. It was an amazing experience to develop products for the end user with the end user."*

Yet another founder noted,

> *"it was an eureka moment to me when one of my potential customers revealed that more than technology that goes into the product, it was the final product, the color of its packaging, its situation on the shelf that mattered most. Such revelation helped us understand the consumer and meet expectations."*

Almost all founders agreed that they formed small groups of end users and had employed anthropological or ethnographic tools to develop deeper understanding of customer needs to be able to define their problems better and make attempts towards crafting co-created solutions. Our analysis suggests that at T – hub, a robust co-creation model is practiced for best outcomes. In Figure 3, an attempt has been made to map the four stage co-creation model at T-hub. At T-hub, the co-creation starts at the Ideation stage wherein the incubator conducts several workshops on the process of NPD and open innovation to help startups understand the process of innovation and to include it in the NPD. T-hub also, through its support services, enables startups in team formation for cohesive team development. Finally, it helps registered startups identify customer or market problems and gaps. In the identification stage, T-hub helps startups in mapping idea feasibility. They also conduct co-creation workshops to connect startups with consumer groups. This practice helps startups in developing empathy

towards consumer problems and understand them better leading to a vetting of ideas through interaction with consumers as well as experts at T-hub. In the third stage, a thorough iteration and validation of ideas occur. In this stage, prototyping of the final product is done though the various stages of iterative design thinking model. This helps startups in cost saving while customizing through the user experience mapping process. In this stage, T-hub assists startups in market testing and business model generation as well. In the final stage, T-hub helps startups in commercializing the new product along with acceleration and fund raising support. Experts at T-hub also offer scalability and transition plans to startups incubated at its facilities.

Several founders also stated that they conducted such round to be able to create an iterative model of problem identification. T-hub facilitates the trainings on tools and techniques of interacting with the end users and analyzing the interactions and inputs provided by the end users. One other founder remarked that,

> *"I am thankful to T-hub for showing me the path to interact with the prospective customers. This process revealed to me classes of end users and I realized that my target audience was larger than I had previously thought."*

While responding to questions on documented interventions, the COO responded,

> *"one of the startups made several house visits to both customers as well as potential customers to observe them in their natural environment that helped them understand the unsaid and unmet yet important needs of customers towards which the technology could provide solution. Similarly, iterations on problem framing narrowed their understanding of the actual problem. Empathy aided the funneling down of broad base problems to fine-tuned ones."*

We can clearly see that it matches the first phase of the Design Thinking i.e. to empathize with customer needs leading to the second phase of the process i.e. of defining a problem through iteration.

Being empathetic helped startups in incorporating user centric direction to the ideation process. Such a practice, though not data driven, helped founders capture deep learning of user needs that could be translated into accepted solutions by users. One of the founders narrated,

"the ideation process earlier used to be one sided with team mates putting forward their thoughts as those of the customers but here at T-Hub by being user centric, they now focused on how technology can enable users. We became enablers rather than sellers. We also experience a higher degree of loyalty and trust among our customers."

Another founder said,

"Here at T-hub we learn the art of empathizing. By being empathetic to customer needs, the perspective of ideation has gone through a paradigm shift. Our biases are now reduced and we now see clearly that what we value and what our customers value are different and thus our offering have undergone a change. We, now appreciate problems better and more."

In general, most of the founders suggested that they have become more innovative.

From being empathetic towards user needs while defining the problem and ideating on possibilities to physically testing solutions through prototyping, founders expressed their wow moments. One of the founders mentioned,

"our prototype was inexpensive but we received invaluable inputs from users during a focus group discussion. We pivoted. We are happy that the process did not result in any significant financial loss. T-Hub is a place to do all such experimentations."

Another founder explained that during pilot testing with a prototype, users raised concerns about over indulgence with technology resulting in automating repetitive tasks thereby easing the actual use flipping an imminent failure story into a success story. Another founder remarked,

"we made at least 26 prototypes without making drastic technological changes and with least expense. We used cardboard for steel that ensured reuse as well. Such experimentation which we have done here at T-Hub was unimaginable without Design Thinking or thinking with the user in mind."

On a similar note, another founder stated that,

"more than money, we saved a lot of time and effort in testing our prototype and that helped us launch our product earlier than we had thought. What we learn at T-Hub is that real innovation is not technology

but takes place in our thought. My team is ready and willing to co-create, experiment and accept failures. This is real innovation"

Several of the startups that the authors interacted with, highlighted how they could pursue innovations because of the application of Design Thinking techniques. They also reflected upon their experiences of employing a phase wise engagement with the Design Thinking model starting with empathizing and moving through the iterative problem framing process to ideating possible user centric solutions leading to prototyping and finally testing their innovations with users leading to the expression of innovation successfully as well as profitably with regards to being able to raise capital from venture funders for scaling up.

Discussion and conclusions

Our research indicates several positive outcomes achieved by startups at T-hub due to the adoption of design led co-creation techniques. By being user centric in their approach towards framing or identifying problems, they added a rather humane element to the bare technology that was intended to drive innovations. Further, it was also found that through the iterative process of problem formulation, it was fine-tuned towards what startups could offer in terms of innovations that was acceptable to the users. The engagement of the team with users provided for a unified perspective that was geared towards finding an optimal solution rather than just a solution for the user.

One of the major reasons for the failure of startups was the sudden need to pivot from the existing solution. Through design led co-creation, founders maneuvered through such situations without losing money. Startups, that were bootstrapping, found Design Thinking to be of great value as without it they could have spent money in designing prototypes that may not be acceptable but cost a lot of money. One of the other important findings of this research is that startups have small teams and within those teams, individuals, at times, shy away from thinking together. Design thinking brought them together and enabled co-creating through directed thinking. Many founders found this invaluable.

Another major finding was that, founders built startups on assumptions. Innovation though assimilates creativity and creative interpretations, needs a direction to be successful. Through design led co-creation, founders stated that assumptive connotations of innovation concretized into acceptable solutions to validated problems. Design Thinking not only funneled an array of problems but at the same time allowed for an expansion of usage of technology towards varied solutions. This, at times, led to the discovery of

newer sets of end users resulting in larger market. The authors also found that several startups realized customer loyalty and trustworthiness at the end of the Design Thinking process due to the engagement of users from the beginning of the product development.

Based on several interviews and focus group discussions with startup founders and employees, the authors found that there was a significant relationship between Design Thinking and inculcating a culture of humane centric innovation within the startups. Such a relationship, according to our research yielded positive results and reduced failures as well.

Managerial implications

There are valuable practical implications of employing design led co-creation practices. Adopting such practices shall foster a culture of innovation. The same has been observed in our research on startups at T - hub. Startups and incubators should train their focus on humanizing the NPD process by being customer centric. However, the same could be tested and incorporated in larger organizations as well. Similarly, by adopting a design led co-creation process, start-ups, incubators as well as large organizations can experience better team coherence and performance. Through this process, engagement levels among team members can be enhanced. Such outcome can be modeled in any kind of organization dealing with customers. Effective team building can be achieved through such practices as well. The process of design led co-creation, as employed by startups studied at T-hub, resulted in customer loyalty and trust. Such outcomes can be derived by any organization through adopting design thinking and co-creation as ways of customer acquisition and retention.

As authors, we believe such interventions are replicable. However, they have to be contextualized and must have support from top leadership for yielding the best results. The paper contributes by exploring the adoption of design led co-creation practices by startups at T-Hub that are at the cusp of innovation. Also, the paper discusses nuances of the application of design thinking as well as co-creation practices and the outcome of reduction of failure in startups.

Limitations and directions for future research

This study has several limitations that can be addressed by the future research. First, the findings suggest that start-ups get benefited through training on design led co-creation model of new product development at T-Hub. Future research may consider the views of end users also to assess the effectiveness of the model proposed in this study. Second, the study is limited to the start-ups based on the T-Hub facility at Hyderabad, therefore,

generalizations of results may not be done for other start-ups and incubators. Finally, future research may empirically validate the effectiveness of the conceptualized co-creation model and examine the antecedents and consequences of design led co-creation environment in similar or different settings using quantitative methods.

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Endnotes

1. Teece, D.J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, *18*(7), 509-533.
2. Fukushima, M., Fujita, M., Okano, Y., & Takayama, M. (2014). How startups explore and exploit dynamic instant innovation (DII) for new product introductions from experiment to implementing. *Japan Advanced Institute of Science and Technology*.

3. Abernathy, W.J., & Clark, K.B. (1993). Innovation: Mapping the winds of creative destruction. *Research Policy, 22*(2), 102-102.
4. Tewksbury, J.G., Crandall, M.S., & Crane, W.E. (1980). Measuring the societal benefits of innovation. *Science, 209*(4457), 658-662.
5. Booz, A., & Hamilton. (1968). *Management of new products.* New York: The Company.
6. Hauser, M. (2006). *Moral minds: How nature designed our universal sense of right and wrong.* Ecco/HarperCollins Publishers.
7. Lyons, T.S. (2001). Building social capital for sustainable enterprise development in country towns and regions: successful practices from the United States. In M.F. Rogers, & Y.M.J. Collins (Eds.)., The Future of Australia's Country Towns (pp.94-112). LaTrobe University, Australia: Center for Sustainable Regional Communities.
8. Van Zyl, R. (2008, April). Buchanan's design thinking matrix: implications for SMMEs. Paper presented at the International DMI Education Conference, ESSEC Business School, Cergy-Pointoise, France.
9. Seidel, V.P., & Fixson, S.K. (2013). Adopting design thinking in novice multidisciplinary teams: The application and limits of design methods and reflexive practices. *Journal of Product Innovation Management, 30*, 19-33.
10. Brown, T. (2009). *Change by design: How design thinking creates new alternatives for business and society*. HarperCollins Publishers.
11. Prahalad, C.K., & Ramaswamy, V. (2000). Co-opting customer competence. *Harvard Business Review, 78*(1), 79-90.
12. Vargo, S.L., & Lusch, R.F. (2004). Evolving to a new dominant logic for marketing. *Journal of Marketing*, *68*(1), 1-17.
13. Bitner, M.J., Ostrom, A.L., & Morgan, F.N. (2008). Service blueprinting: a practical technique for service innovation. *California Management Review, 50*(3), 66-94.
14. Ostrom, A.L., Bitner, M.J., Brown, S.W., Burkhard, K.A., Goul, M., Smith-Daniels, V., Demirkan, H., & Rabinovich, E. (2010). Moving forward and making a difference: research priorities for the science of service. *Journal of Service Research, 13*(1), 4-36.
15. von Hippel, E. (2005). *Democratizing innovation: Users take center stage*. Cambridge, MA: MIT Press.
16. Chesbrough, H. (2006). *Open business models: How to thrive in the new innovation landscape.* Boston, MA: Harvard Business School Press.
17. Porter, M.E. (1980). *Competitive strategy: Techniques for analyzing industries and competitors.* New York: Free Press.
18. Drucker, P.F. (1985). Entrepreneurial strategies. *California Management Review. 27*(2), 9-25.
19. Schumpeter, J.A. (1939). *Business cycles: A theoretical, historical and statistical analysis of the capitalist process* (Vol. 1). New York: McGraw-Hill.
20. Barnett, H.G. (1953). *Innovation: The basis of cultural change*. New York: McGraw-Hill Book Company.
21. Howard, J.A., & Sheth, J.N. (1969). The theory of buyer behavior. In M. J. Baker (Ed.), Critical Perspectives on Business and Management (pp. 81-105). New York: Routledge.
22. Mohr, L.B. (1969). Determinants of innovation in organizations. *American Political Science Review, 63*(1), 111-126.
23. Damanpour, F., & Evan, W.M. (1984). Organizational innovation and performance: The problem of "organizational lag". *Administrative Science Quarterly*, *29*(3), 392-409.
24. Simmonds, K. (1986). Marketing as Innovation the eighth paradigm. *Journal of Management Studies, 23*(5), 479-500.
25. Damanpour, F. (1991). Organizational innovation: A meta-analysis of effects of determinants and moderators. *Academy of Management Journal, 34*(3), 555-590.

26. Evans, J.S. (1991). Strategic flexibility for high technology manoeuvres: A conceptual framework. *Journal of Management Studies, 28*(1), 69-89.
27. Rogers, M. (1998). *Innovation in Australian Enterprises: Evidence from the GAPS and IBIS Database (Working Paper No. 19/98).* Australia: Melbourne Institute of Applied Economic and Social Research.
28. Boer, H., & During, W.E. (2001). Innovation, what innovation? A comparison between product, process and organisational innovation. *International Journal of Technology Management, 22*(1-3), 83-107.
29. Knox, S. (2002). The boardroom agenda: developing the innovative organisation. *Corporate Governance, 2*(1), 27-36.
30. Rittel, H. W., & Webber, M. M. (1973). Dilemmas in a general theory of planning. *Policy Sciences, 4*(2), 155-169.
31. Beckman, S.L., & Barry, M. (2007). Innovation as a learning process: Embedding design thinking. *California Management Review, 50*(1), 25-56.
32. Schon, D.A. (1983). *The reflective practitioner: How professionals think in action*. New York: Basic Books.
33. Sarasvathy, S. D. (2001). Causation and effectuation: Toward a theoretical shift from economic inevitability to entrepreneurial contingency. *Academy of Management Review, 26*(2), 243-263.
34. Miller, J.H., & Page, S.E. (2009). *Complex adaptive systems: An introduction to computational models of social life*. Princeton: Princeton University Press.
35. Eisenhardt, K.M., & Tabrizi, B.N. (1995). Accelerating adaptive processes: Product innovation in the global computer industry. *Administrative Science Quarterly, 40*(1), 84-110.
36. Feldman, M.S., & Pentland, B.T. (2003). Reconceptualizing organizational routines as a source of flexibility and change. *Administrative Science Quarterly, 48*(1), 94-118.
37. Cohen, M.D. (2007). Reading Dewey: Reflections on the study of routine. *Organization Studies, 28*(5), 773-786.
38. Brown, T. (2009). Change by design: How design thinking creates new alternatives for business and society. Collins Business.
39. Levitt, T. (1960). *Marketing myopia.* Boston: Harvard Business Press.
40. Christensen, C. M., & Bower, J. L. (1996). Customer power, strategic investment, and the failure of leading firms. *Strategic Management Journal, 17*(3), 197-218.
41. Kohli, A.K., & Jaworski, B.J. (1990). Market orientation: the construct, research propositions, and managerial implications. J*ournal of Marketing, 54*(2), 1-18.
42. Vargo, S.L., & Lusch, R.F. (2014). Inversions of service-dominant logic. *Marketing Theory, 14*(3), 239-248.
43. Shah, D., Rust, R.T., Parasuraman, A., Staelin, R., & Day, G.S. (2006). The path to customer centricity. *Journal of Service Research, 9*(2), 113-124.
44. Beckman, S.L., & Barry, M. (2007). Innovation as a learning process: Embedding design thinking. *California Management Review, 50*(1), 25-56.
45. Chesbrough, H. (2006). *Open business models: How to thrive in the new innovation landscape*. Boston: Harvard Business Press.
46. Kaivo-oja, J. (2011). *Futures of innovation systems and systemic innovation systems: Towards better innovation quality with new innovation management tools.* Turku: Finland Futures Research Centre, University of Turku.
47. Acklin, C. (2010). Design-driven innovation process model. *Design Management Journal, 5*(1), 50-60.
48. Verganti, R. (2009). *Design driven innovation: changing the rules of competition by radically innovating what things mean*. Boston: Harvard Business Press.

49. Dow, S.P., Glassco, A., Kass, J., Schwarz, M., Schwartz, D.L., & Klemmer, S.R. (2010). Parallel prototyping leads to better design results, more divergence, and increased self-efficacy. *ACM Transactions on Computer-Human Interaction, 17*(4), 1-24.
50. Yin, R.K. (Ed.). (2017). *Case study research and applications: Design and methods* (6th ed.). Thousand Oaks, CA: Sage Publications.
51. Miles, M.B., & Huberman, A.M. (Eds.). (1994). *Qualitative data analysis: An expanded sourcebook* (2nd ed.). Thousand Oaks, CA: Sage Publications.
52. Baxter, P., & Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice researchers. *The Qualitative Report, 13*(4), 544-559.
53. Mentzer, J.T., & Flint, D.J. (1997). Validity in logistics research. *Journal of Business Logistics, 18*(1), 199.
54. Strauss, A., & Corbin, J. (1990). *Basics of qualitative research: Grounded theory procedures and techniques.* Thousand Oaks, CA: Sage Publications.