

Role of Technology Innovations in Providing Cutting Edge- Entrepreneurial Opportunities in India.

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Abstract

Technological innovations have created entrepreneurial opportunities worldwide and India with its burgeoning tech ecosystem is riding this wave. In the recent years technology - fueled Indian startup ecosystem has grown enormous. Disruptive technologies like artificial intelligence, blockchain, internet of things, machine learning etc also disrupted conventional industries creating new entrepreneurial undertakings across all industries. Similarly, democratization of tech has opened doors for diverse entrepreneurs to use cutting edge tools & platforms to realise their ideas. Smartphones and cheap internet access have created these entrepreneurial opportunities & opened businesses to a larger consumer base. In addition, government initiatives like Startup India and conducive policies have provided support for innovation and entrepreneurship through funding, mentorship and regulation. Stakeholders can push technological advancements and create growth of entrepreneurship in India through synergy and knowledge exchange. A sample of 249 respondents was collected from entrepreneurs of India. The variables that identify the role of technology innovations in Providing Cutting Edge- Entrepreneurial Opportunities in India are Digital Transformation, E-Commerce and Marketplaces, Artificial Intelligence and Machine Learning, and Internet of Things (IoT).

Keyword- Role of Education, Tech In Business, Democratization Of Technology.

Introduction

Innovation and problem-solving strategies have always been fundamental to entrepreneurial / growth / success. Technology improvements give entrepreneurs many resources and tools to succeed. Being among the fastest growing countries worldwide, India has realized the benefits of innovation in its growth & is focusing on improving its innovative capacities globally.

Akpan, Udoh, & Adebisi, (2022) Excellent services exports, dominated by Information Technology (IT) Services and Business Process Outsourcing (BPO) services, have contributed to the country's economic growth to USUSD 254.5 billion by 2021-22. This growth in turn, aided by Indian and global IT company has made India a technology and innovation hub. Innovation is required as the world landscape changes. Recent years have seen amazing developments in Artificial Intelligence, quantum computing & 3D printing, that indicate we must keep up with the times and be innovative to meet the unique challenges. Govindarajan & Ramamurti, (2011) india has very much to find out in the area of pioneering technologies, but it has set the scene for an ecosystem that promotes innovation. The COVID-19 epidemic spurred new technologies all over the world and new ideas came to India. The pandemic showed that innovation was needed to deal with new situations and move ahead.

Benitez, Llorens, & Braojos, (2018) such developments in mind, technology innovations are crucial in creating new business opportunities in India. Utilizing new technologies, entrepreneurs can develop new market, streamline processes

and find new solutions to society' needs. Also, the Indian government's drive for innovation and the country' booming startup ecosystem provide an environment for entrepreneurs. Vasilchenko & Morrish, (2011) Further efforts to foster entrepreneurship and innovation will be necessary for India to become a global innovation and tech leader. With collaboration, investment and support for innovators & startups India can move forward towards sustainable development and prosperity.

Literature Review

Technology innovations have recently attracted much attention in academic literature pertaining to entrepreneurship development.

Bhatnagar (2012) research on how technology innovations create new entrepreneurs in India. Technology innovation proliferation has created unanticipated growth and innovation opportunities in the Indian entrepreneurial landscape. With the advent of digital technology and internet entrepreneurs have over come traditional barriers to get access to cutting edge business opportunities.

With electronic technology and web came an entirely new dimension of entrepreneurship in India based on efficiency, effectiveness and accessibility to information, Verma & Bhattacharyya, (2017) unavailable data, resources and tools are now available to entrepreneurs to help make better choices and streamline operations. This increased information access has helped entrepreneurs not procrastinate and instead become more productive to keep up with the marketplace.

Also, digital technology has allowed communication and collaboration across borders for entrepreneurs to interact with stakeholders globally. This accessibility has brought in more collaboration, innovation and expanded market enabling Indian entrepreneurs to go global.

According to Gupta, Malhotra, Czinkota, and Foroudi (2016) said digital technology created new markets and business models allowing entrepreneurs to break with established patterns to create new services and products. With the help of digital platforms entrepreneurs open up new markets, adjust their offering in line with changing customer demands and stimulate innovation across different economic sectors.

Chatterjee & Kar, (2020) As India moves towards technology-driven entrepreneurialism, entrepreneurs must seize such chances to position themselves for success in a dynamic business climate. People who don't adapt risk being left behind because technological innovation never stops.

Yunis, Tarhini, & Kassar, (2018) succeed in this dynamic environment, entrepreneurs must keep up with the most recent trends and instruments, innovate and embrace lifelong learning. With technology innovation Indian entrepreneurs can tap new possibilities, push economy and become global leaders. While technology plays a growing role also, entrepreneurs must be flexible, adaptable and ahead of the curve to make the most of the huge opportunity that technology innovations offer for entrepreneurship success in Indian context. In an era of technology innovation we can not discount social media. Effect of social media on entrepreneurship opportunities in India traditional business practices have been radically transformed by a sea of digital business opportunities.

Social media has turned into a must have application in case you wish to enter the Indian market. From brand building & marketing to customer engagement & networking social media affords entrepreneurs unprecedented reach to their customers.

Koneru (2017) Among the low-cost social media marketing tools that business people can use to reach large audiences for little investment. With social media entrepreneurs can market their goods / services, communities around a brand or interact live with customers - increasing brand exposure / customer loyalty.

The nature of social media also demands that entrepreneurs themselves are constantly evolving and adjusting. Social media platforms are constantly changing and trends are emerging - businesses must be aware of new developments in addition to

best practices. Accepting innovation & using social media help entrepreneurs survive and thrive in a dynamic business environment.

Prahalad (2012) an entrepreneurial landscape in Indian technology innovations create new opportunities. With India becoming a global innovation & technology hub, entrepreneurs have many resources and support systems to grow their businesses. Social media in business plans might help entrepreneurs tap into the Indian market. As India moves towards new technologies, entrepreneurs must seize opportunities offered by social media to stay in the race. Being agile and proactive when approaching social media marketing may help entrepreneurs navigate Indian business ecosystem and maintain growth.

De Massis, Frattini, & Lichtenthaler, (2013) , the importance of social media in creating cutting edge entrepreneurial opportunities in India can not be dismissed. Social media as an innovation tool - entrepreneurs adapt to a changing market place. So as social media continues to define entrepreneurship in India, savvy business owners need to seize the opportunity to leverage this disruptive technology to up - scald their enterprises. Technology innovations have shaped entrepreneurial possibilities in India in a variety of technical areas. Among all these innovations e-commerce growth represents perhaps the most transformative force of all-giving business owners unpredicTED access to global markets and enormous resources to scale their companies.

E-commerce expansion gives entrepreneurship to all kinds of people to start and grow businesses online. Entrepreneurs reach consumers worldwide via e-commerce platforms, remove geographic barriers and grow their customer bases exponentially. This global reach opens up new market potential & revenue growth potentials.

In other words, e-commerce enables entrepreneurs to work 24 hours a day using automation and digitalisation to improve processes and productivity, According to Bhagavatula, Elfring, Van Tilburg, and Van De Bunt (2010). This 24/7 access enables customers to serve them as much as entrepreneurs to be flexible and responsive to market dynamics live.

The biggest advantage e-commerce gives to entrepreneurs are affordability and accessibility. Unlike traditional brick-and-mortgage stores, starting an e-commerce requires little capital investment and is therefore possible for emerging entrepreneurs with little capital. Besides, e-commerce platforms provide data and analytics to entrepreneurs for sound business decisions and specialized advertising for specific market segments.

Unique product selections and online purchasing enable entrepreneurs to differentiate themselves in the market place. E-commerce also opens up cross selling and upselling opportunities for business owners to increase revenue and customer satisfaction.

Schilling (2017). e-commerce encourages innovation and creativity because it allows entrepreneurs to test new business models, services & products. Dropshipping, subscription models or personalized offerings - entrepreneurs can invent new ways to meet evolving consumer demands and preferences.

In India e-commerce has turned into a motor of growth and creation of jobs. With all the smartphones and internet connections available, millions of Indians could shop online and ecommerce entrepreneurs are in fad. Government initiatives like digital India and Startup India also promote e-commerce through digital literacy and Startup ecosystem. Generally speaking e-commerce growth marks a paradigm shift in the way entrepreneurship is done in India. With innovations and technology e-commerce gives entrepreneurs the resources, opportunities & resources to prosper in an ever more competitive marketplace for businesses. As India moves towards digital transformation e-commerce will be increasingly important for economic prosperity and entrepreneurship success in the country.

Data driven decision making is the new normal in technological innovation era for entrepreneurs. As big data analytics guides businesses globally, its application in the Indian entrepreneurial landscape holds great promise for growth and innovation. Inspired by data analysis used by global giants like Youtube, Indian entrepreneurs can use data to navigate the murkier market and seize disruptive entrepreneurial chances.

In an emerging startup ecosystem such as India, data analytics can reveal a lot about consumer behaviours, market trends and emerging chances. Massive datasets can give entrepreneurs insight into product development, segmented marketing

campaigns and personalised customer experiences. This aligning with data-driven insights increases competitiveness, efficiency & innovation - ingredients to success in the ever-changing Indian entrepreneurial landscape.

Data driven decision making gives companies an edge but is also required to survive in an ever-changing world, according to Halme, Lindeman, and Linna (2012). As India embraces technology & digital transformation, entrepreneurs need skills and equipment to sail in this digital sea. Data analytics become a survivor skill that allows entrepreneurs to anticipate market shift, seize on emerging chances and remain competitive in a changing business landscape.

Beyond data analytics, technological innovations also include other emerging technologies that offer huge scope for entrepreneurs in India. From artificial intelligence & machine learning to blockchain & the Internet of Things, these developments offer unprecedented chances to disrupt established industries / business models / enter new market segments. Utilizing these technologies creatively Indian entrepreneurs can carve out a niche in the international market and become experts in their fields.

Finally, technology innovations can never be underestimated in creating new entrepreneurship opportunities in India. Data analytics and new technologies can help Indian entrepreneur navigate the market, innovate and seize chances. This makes them more competitive by nature and helps the Indian economy in general grow and prosper.

Objective

Role of technology innovations in Providing Cutting Edge- Entrepreneurial Opportunities in India.

Study’s Methodology

249 respondents are considered for this study which was collected from entrepreneurs of India. For collection of data, Random sampling method, and examined by “Explanatory Factor Analysis” for outcome.

Study’s findings

Below table is about general details of respondents which shows that 54.62%, and 45.38% are female participants. Regarding age of the respondents, 34.94% are between 28 to 32 years, 36.55% are 32 to 36 years, and 28.51% are above 36 years of age. About Entrepreneurship level, small scale business is 27.71%, Medium scale business is 31.73%, and Large scale business is 40.56%.

Details of Participants

Variable	Participants	% age
Gender		
Male	136	54.62
Female	113	45.38
Total	249	100
Age in years		
28 to 32	87	34.94
32 to 36	91	36.55

Above 36	71	28.51
Total	249	100
Entrepreneurship level		
Small scale business	69	27.71
Medium scale business	79	31.73
Large scale business	101	40.56
Total	249	100

“Factor Analysis”

“KMO and Bartlett's Test”

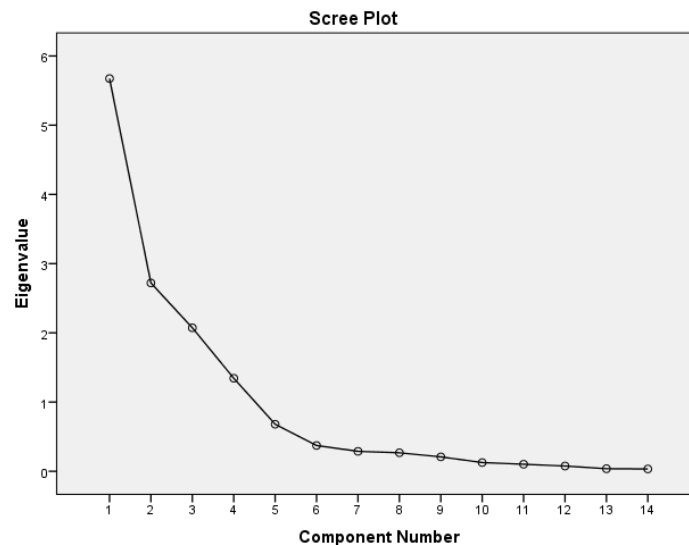
“Kaiser-Meyer-Olkin Measure of Sampling Adequacy”		.798
“Bartlett's Test of Sphericity”	“Approx. Chi-Square”	3728.377
	df	91
	Significance	.000

In above table “KMO and Bartlett's Test” above, KMO value found is .798

“Total Variance Explained”

“Component”	“Initial Eigenvalues”			“Rotation Sums of Squared Loadings”		
	“Total”	“% Of Variance”	Cumulative %	“Total”	“% Of Variance”	Cumulative %
1.	5.673	40.524	40.524	3.721	26.582	26.582
2.	2.720	19.428	59.952	3.602	25.727	52.309
3.	2.072	14.803	74.755	2.394	17.103	69.412
4.	1.344	9.601	84.356	2.092	14.944	84.356
5.	.680	4.855	89.210			
6.	.372	2.661	91.871			
7.	.288	2.056	93.928			
8.	.267	1.908	95.836			
9.	.209	1.491	97.327			
10.	.126	.899	98.226			
11.	.102	.729	98.956			
12.	.076	.542	99.497			
13.	.037	.265	99.762			
14.	.033	.238	100.000			

All the four factors are making contribution in explaining total 84.356% of variance. The variance explained by Digital Transformation is 26.582%, E-Commerce and Marketplaces is 25.727%, Artificial Intelligence and Machine Learning is 17.103%, and Internet of Things (IoT) is 14.944%.



ScreePlot

“Rotated Component Matrix”

S. No.	Statements	Factor Loading	Factor Reliability
	Digital Transformation		.975
1.	Technology enables digital transformation, allowing them to streamline processes	.959	
2.	Entrepreneurs can capitalize on this by creating digital solutions, software platforms, and online services	.942	
3.	It is important for economic prosperity and entrepreneurship success in the country	.942	
4.	Digital transformation also includes other emerging technologies that offer huge scope for entrepreneurs	.928	
	E-Commerce and Marketplaces		.959
1.	Rising e-commerce platforms and online marketplaces opened new avenues for entrepreneurs	.968	
2.	Entrepreneurs can create niche online stores, leverage platforms for product distribution	.935	
3.	Entrepreneurs can explore innovative business models within the digital commerce space	.918	
4.	It enables entrepreneurs to work using automation and digitalization to improve processes and productivity	.880	
	Artificial Intelligence and Machine Learning		.878
1.	AI and machine learning can be used to develop innovative solutions across various industries	.885	
2.	AI-powered applications, automation, and predictive analytics can create new business opportunities	.842	
3.	AI and ML can create new entrepreneurial undertakings across all industries	.831	
	Internet of Things (IoT)		.766

1.	Internet of Things (IoT), opens up avenues for entrepreneurs to create solutions that improve urban living	.891	
2.	IoT opens up entirely new frontiers for innovation & entrepreneurial spirit	.776	
3.	It offers unprecedented chances to disrupt established industries / business models / enter new market segments	.747	

Factors and the associated variables

The first factor of the study is Digital Transformation, the variables included under this factor are Technology enables digital transformation, allowing them to streamline processes, Entrepreneurs can capitalize on this by creating digital solutions, software platforms, and online services, it is important for economic prosperity and entrepreneurship success in the country, and Digital transformation also includes other emerging technologies that offer huge scope for entrepreneurs. Second factor of the study is E-Commerce and Marketplaces, the variables fall under this factor are Rising e-commerce platforms and online marketplaces opened new avenues for entrepreneurs, Entrepreneurs can create niche online stores, leverage platforms for product distribution, Entrepreneurs can explore innovative business models within the digital commerce space, and It enables entrepreneurs to work using automation and digitalization to improve processes and productivity. Artificial Intelligence and Machine Learning is the third factor, it includes variables like AI and machine learning can be used to develop innovative solutions across various industries, AI-powered applications, automation, and predictive analytics can create new business opportunities, and AI and ML can create new entrepreneurial undertakings across all industries. The last and fourth factor is Internet of Things (IoT), it includes variables like Internet of Things (IoT), opens up avenues for entrepreneurs to create solutions that improve urban living, IoT opens up entirely new frontiers for innovation & entrepreneurial spirit, and it offers unprecedented chances to disrupt established industries / business models / enter new market segments.

“Reliability Statistics”

“Cronbach's Alpha”	“Number of Items”
.879	14

Total reliability of 14 items including variables for Role of technology innovations in Providing Cutting Edge-Entrepreneurial Opportunities in India is 0.879

Conclusion

Thirdly, technology innovations have provided India with cutting edge entrepreneurial opportunities and have tremendous potential for economic development and growth. By making data driven decisions and adopting technologies, Indian entrepreneurs can meet challenges of the market, seize opportunities and create industry innovation. Data analytics may be a compass entrepreneurs use to discover hidden consumer behaviours, market trends and emerging business opportunities. With massive datasets and sophisticated analytical tools entrepreneurs can make better decisions and adapt their services and products to meet changing consumer demands and offer personalised customer experiences to increase satisfaction and customer loyalty. Furthermore, the strategic use of newer technologies such as for instance artificial intelligence / machine learning / blockchain in addition to Internet of Things opens up entirely new frontiers for innovation & entrepreneurial spirit. These technologies open up new business models and untapped market segments that could disrupt established industries. Indian entrepreneurs can use these technologies to create new solutions, improve operational efficiency &; compete internationally. In addition to this, role of technology innovations extends to the whole entrepreneurial ecosystem of India. Government initiatives like Startup India &; policies for innovation and entrepreneurship help foster entrepreneurial activities. They help in collaboration, getting funding / resources and innovation / risk taking by promoting startup / entrepreneur growth in India. In short, technology innovations create contemporary entrepreneurial opportunities in India today. Utilizing technical advancements, information and insights and creating a culture of innovation will position Indian entrepreneurs at the forefront of global innovation ensuring stable

economic development and prosperity of the nation as a whole. The variables that identify the role of technology innovations in Providing Cutting Edge- Entrepreneurial Opportunities in India are Digital Transformation, E-Commerce and Marketplaces, Artificial Intelligence and Machine Learning, and Internet of Things (IoT).

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