



Role of Information Communication Technologies for Overall Growth of Startups

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ABSTRACT: Information Communication Technologies are adding to facilitate the reason for the new companies and incubation process from multiple points of view. ICT encourages the creation, transmission, and handling of data. ICT provides wide range of tools which the entrepreneurs can use them for the growth of their startup. The paper investigates the areas in which ICT practices can be employed for building efficiencies in the processes of concept to servicing the market. It also seeks to deal with the critical factors which help to find the growth determinants for startups [1]. The detailed analysis of how ICT tools can be used to foster the fast growth of entrepreneurship is done. Thorough analysis of ICT tools to evaluate the use open source software for cost reduction is done. How big data analytics tools be used for doing sentiment analysis is also done. The impact of data mining tools for profiling markets is also done thoroughly. This paper also investigates how ICT helps in elimination of non-value adding procedures and processes. Evidence has been collected through a literature search, questionnaires, entrepreneur's reports and interviews. The detailed study of the challenges faced by startups and the best solutions for them is also done [2].

I. INTRODUCTION

Information technology drives innovation and innovation is the path to business success. It's very hard to imagine any business that has not benefited from the ICT. Entrepreneurs can use ICT based tools for doing market research by doing online surveys to get customer feedback, can review public sentiment on social media and industry forums.

The first thing startups in any industry try to figure out is how to make smart use of ICT based tools. Without a backbone of information communication technology, a business is not going to go far. ICT tools help the entrepreneur in preparing accurate business plan, systematic management, real time monitoring and effective marketing.

ICT help to totally re-shape value chains, sharpen market intelligence, improve efficiency, reduce time-to-market and increase customer satisfaction. With the aid of technology, startups can now go global from day one, reaching overseas markets and talent pools instantly. The information and communication technology (ICT) revolution is sweeping the world, the ICT industry has grown to be the principal driving force behind the world economy [3].

II. RELATED WORK

ICT represents a brand new General Purpose Technology, with the capacity of reworking monetary methods right into a "New Economy," generating a sustained growth in monetary boom via procedures of technological development and innovation. ICT has contributed substantially to productiveness growth and competitiveness.

Technology is the riding pressure of development in this period of globalization. Information and Communication Technology (ICT) has turn out to be a practical requirement for the socio-economic growth and sustained improvement of any us of a. Its pivotal position is empowering humans for self-efficacy and the way it may facilitate this venture to attain out to grassroots stage. Finally, it is concluded that ICT is a good sized contributor to the fulfillment of the continuing initiative of Start-up India [4].

ICT performs a crucial role in facilitating the modernization and improved economic performance of corporations in transition international locations. ICT in itself is frequently inadequate for improving economic overall performance. ICT use amongst companies in transition international locations is by and large geared toward stepped forward production and transaction strategies. Companies use ICT to serve clients and the market.

A startup or start-up is begun by way of character founders or entrepreneurs to look for a repeatable and scalable enterprise model. More particularly, a startup is a newly emerged enterprise assignment that aims to develop a viable enterprise model to meet a market want or hassle. Founders layout startups to correctly increase and validate a scalable enterprise model. Hence, the concepts of startups and entrepreneurship are comparable. However, entrepreneurship refers all new agencies, consisting of self-employment and corporations that never intend to develop hugely or come to be registered, while startups talk to new corporations that intend to grow past the solo founder, have employees, and intend to develop massively. Start-up faces excessive uncertainty and does have high charges of failure, but the minority that passes directly to be successful businesses has the ability to emerge as massive and influential [1],[2].



A. *STARTUP SCENARIO OF INDIA*

India is the third biggest startup hub. India has almost 12,000 to 15,000 startups. 800 to 1000 new startups are started out annually. It is predicted that it could boom to 2000 through year 2020. The startups are broadly divided into two kinds Tech startups and Non- Tech startups. The Tech based totally startups have an approximate share of 45 to 48%. It is predicted that overall Tech startups will growth to 11,500 in 2020. With the boom in the new Tech startups 250,000 new jobs will be created. Hence ICT plays a major role in sales generation in addition to activity advent. As in keeping with the World Bank's report: Doing Business out of 189 economies India is ranked 130th on the benefit of doing enterprise, 133rd on the convenience of buying and selling throughout borders, 157th on the benefit of paying taxes and most importantly 155th in case of beginning an enterprise. Starting a brand-new enterprise is a herculean mission [1].

B. *PROBLEMS WITH INDIAN STARTUPS*

The entrepreneur may face a lot of problems and demanding situations [1]. Some of the fundamental challenges which a startup can face are listed beneath:

1. Seed Money

Capital is fundamental for contracting staff, getting an office space, advancement of an item, and for showcasing also. The first and most normal kind of challenge is to accumulate the cash to dispatch a startup and keep it running. Individuals neglect to consider such expenses and begin going through when some incomes in.

2. Dealing with competitors

Though the business plan is very good and the product is unique, the startup world is very wild and serious. With such a large number of organizations battling for a similar spot, it could be trying to remain in front of the opposition. The startups has a serious challenge from the copycats.

3. Recruiting the right expertise

Hiring a proper man or woman is a hard manner, but hiring for start-ups may be very tough. For a young enterprise which has a restrained cash glide, hiring the wrong employee can doubtlessly ruin begin-up. Recruiting the proper or gifted humans is critical for any business; however, startups particularly can't manage to pay for to make hiring errors. If a startup has now not yet hooked up credibility and has less cash, then a wrong lease can set the startup again for months or preserve the commercial enterprise from commencing altogether.

4. Building and Scaling an Indian Startup

The difficulties looked by Indian new businesses start with fundamentals, for example, procuring and dealing with a group, managing clients, and building up a marketing methodology. Most of the Indian businessmen have a specialized foundation and need business information.

For running a startup, a lot of working capital is required. Numerous new businesses, particularly at beginning periods, are bootstrapped. Therefore, while few out of every odd startup needs outer venture, a significant number of them begin searching for financial specialists as they intend to scale their business. Notwithstanding, finding the correct speculator and raising assets is troublesome, regardless of whether they have gotten positive reactions on their item and have some demonstrated market approval.

5. Lack of planning and visualizing

Arranging is a basic part of startup culture. It is amazing how daintily individuals take it and neglect to cover significant things like spending plan, assets, and potential dangers as a piece of their field-tested strategy. Thus, they waver and come up short. Make an itemized arrangement and incorporate each seemingly insignificant detail, with the goal that the startup doesn't halt when something goes suddenly.

6. Research and Development scenario

India is an outlier inside the pattern of R & D investment. R & D investment in India is executed in general by way of government even as inside the other growing and developed nations it is accomplished more often than not via personal zone. In India R & D spending percent of GDP is 0.85 to 1% compared to 2.8% in USA.

In India the advertising in studies task isn't a goal but it is an incentive. India has filed the most effective 6 patents in step with million populaces in comparison to USA 950, Japan 1600 and South Korea filed 2000 patents according to million.

7. Mentoring

To move the startup thought the correct way, every entrepreneur need a decent coach. With regards to mentorship India has far less choices. Be that as it may, over the most recent couple of years, we have seen them jumping up. Getting a good and experienced mentor for startup is difficult in India.

8. Diversity and the Digital Divide

It is observed that an information gap exists between the solutions provider and the client. To build successful products, the entrepreneur's need to bridge this gap and develop an in-depth understanding of the customers and their



needs. The Indian market place is very different as it has a plenty of societies with a plethora of cultures, languages, ethnicities and religions. In that sense, relative favorable circumstances are connected to explicit districts. Along these lines, developing a skilnet Indian startup is progressively troublesome, in light of the fact that they have small comprehension of clients in different districts.

9. Technology infrastructure

For the startup business ICT performs an essential position thus IT-infrastructure is should. It is discovered that Internet penetration in India could be very excessive and almost one out of three Indian has a smart cell phone. Hence a greater variety of consumer’s is going online. The IT infrastructure is available simplest in metro towns only.

10. Regulatory troubles

To set up a brand new commercial enterprise it takes 30 to 60 days in India as compared to only four days in USA. India has a multi-window clearance machine. An entrepreneur will make more than one journeys to the authority’s workplaces to sign in and get clearances.

III. RESEARCH METHODOLOGY

A. THE SURVEY QUESTIONS

This study utilizes a survey (online as well as off-line) that was conducted between 2016 to 2020. The survey explored various aspects of startups and covered a large set of questions.

B. DATA CLEANING AND VALIDATION

To guarantee the quality and legitimacy of the survey data, we experienced a cautious information cleaning and approval process on the first dataset. The procedure was for the most part automatized utilizing R programming bundle. We have evacuated suspicious information passages physically. To begin with the information cleaning process, we have expelled duplicate entries that may have been presented during the information sending out procedure. We additionally fixed different evident mistakes that might be credited to the overview plan or information sending out procedure.

After this primer advance, we did manual information cleaning question by question. After the underlying cleaning, we checked the legitimacy of the information utilizing a lot of approval cases that we found dependent on a nearby assessment of all the survey questions. The approval cases identified a lot of unreasonable, unimaginable, invalid mixes of answers which rendered certain data sections invalid, which thusly were expelled from the dataset.

C. Data Analysis The data analysis process was conducted using R software environment.

D. Hypothesis testing

Hypotheses were tested using Chi square test.

Hypothesis 1: Can open source technology be used for cutting down cost of software licensing of proprietary items.

H0 Null Hypothesis: less than 70% startups use open source technology be used for cutting down cost of software licensing of proprietary items. (H0: $p < .70$)

H1 Alternate Hypothesis: 70% or more startups use open source technology be used for cutting down cost of software licensing of proprietary items. (H1: $p \geq .70$)

This hypothesis has been tested by using the acceptance of startup founders and senior managers associated with startups. It is seen that 86.6% of them have agreed to use open source technology for cutting down cost of software licensing of proprietary items as shown in Figure 1. χ^2 value is found out to be 30.45 which is greater than the table value 3.84 at 5% level of significance. Hence, Null hypothesis is rejected and alternate hypothesis is accepted.

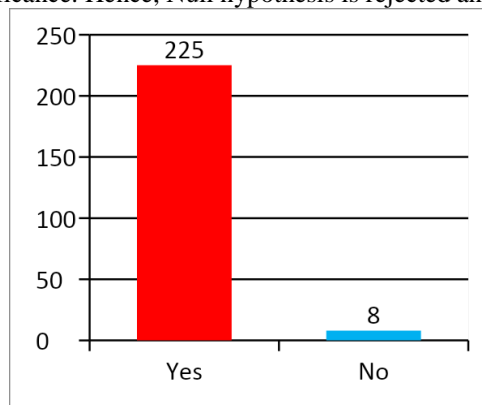


Figure 1: Open source for cost cutting



Hypothesis 2: Does ICT helps in elimination of non-value adding procedures and processes.

H0 Null Hypothesis: less than 70% startups use ICT in elimination of non-value adding procedures and processes. (H0: $p < .70$)

H1 Alternate Hypothesis: 70% or more startups use ICT in elimination of non-value adding procedures and processes. (H1: $p \geq .70$)

This hypothesis has been tested by using the acceptance of startup founders and senior managers associated with startups. As shown in figure 5.5 it is seen that 78.5% of them have agreed to use open source technology for cutting down cost of software licensing of proprietary items as shown in Figure 2. χ^2 value is found out to be 8.16 which is greater than the table value 3.84 at 5% level of significance. Hence, Null hypothesis is rejected and alternate hypothesis is accepted.

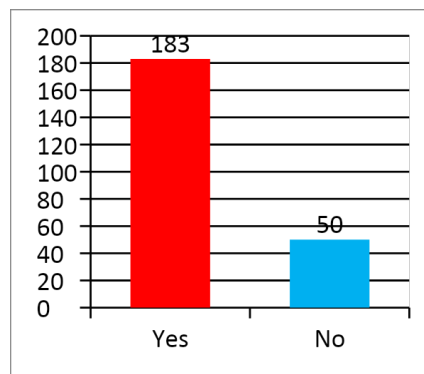


Figure 2: Elimination of non-value

adding procedures and processes

Hypothesis 3: Does startup use data mining tools in profiling markets before a startup venture out.

H0 Null Hypothesis: less than 70% startups use data mining tools in profiling markets before a startup venture out. (H0: $p < .70$)

H1 Alternate Hypothesis: 70% or more startups use data mining tools in profiling markets before a startup venture out. (H1: $p \geq .70$)

This hypothesis has been tested by using the acceptance of startup founders and senior managers associated with startups. It is seen that 93.5% of them have agreed to use open source technology for cutting down cost of software licensing of proprietary items as shown in Figure 3. χ^2 value is found out to be 61.71 which is greater than the table value 3.84 at 5% level of significance. Hence, Null hypothesis is rejected and alternate hypothesis is accepted.

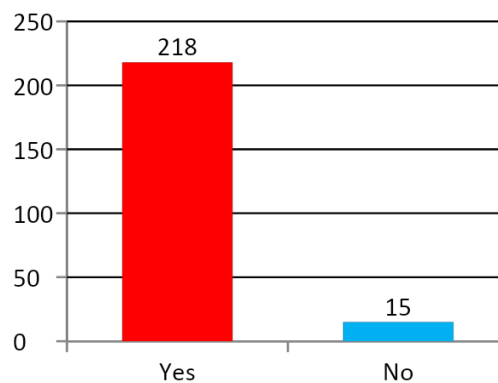


Figure 3: Data minig tools in profiling markets

Hypothesis 4: Can big data analytics be used for carrying out sentiment analysis to understand the market and cultures of various geographies.

H0 Null Hypothesis: less than 70% startups use big data analytics for carrying out sentiment analysis to understand the market and cultures of various geographies. (H0: $p < .70$)



H1 Alternate Hypothesis: 70% or more startups use big data analytics for carrying out sentiment analysis to understand the market and cultures of various geographies. (H1: $p \geq .70$)

This hypothesis has been tested by using the acceptance of startup founders and senior managers associated with startups. As shown in Figure 4 it is seen that 83.26% of them have agreed to use open source technology for cutting down cost of software licensing of proprietary items. χ^2 value is found out to be 19.42 which is greater than the table value 3.84 at 5% level of significance. Hence, Null hypothesis is rejected and alternate hypothesis is accepted.

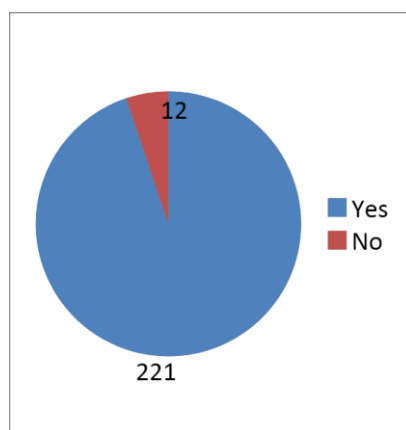


Figure 4: BDA for sentiment analysis

Table 1. Testing of hypotheses- Chi-square test results (N=233,df=1, $\alpha = 5\%$ and $\chi^2 = 3.84$)

Hypothesis	Chi-square (calculated)	Result
1.Open source technology for cost cutting	30.45	H_0 rejected and H_1 accepted
2.ICT for eliminating non-value adding procedures and processes	8.16	H_0 rejected and H_1 accepted
3.Use of data mining tools in profiling markets	61.71	H_0 rejected and H_1 accepted
4. Big data analytics for carrying out sentiment analysis	19.42	H_0 rejected and H_1 accepted

IV. CONCLUSION

It is seen that ICT assumes a significant job in the development of startup. It causes entrepreneurs to conquer the hindrances looked by the customary organizations. ICT empowers the business people to grow new plans of action, expel undesirable methodology and procedures.

ICT likewise encourages the startup proprietors to profile the business sectors ahead of time; it additionally helps in doing assumption investigation too. This paper has demonstrated that there is a solid positive connection between financial development and investment in ICT.

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