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ROLE OF KERALA STARTUP MISSION (KSUM) IN ACCELERATING KERALA'S STARTUP ECOSYSTEM: A REVIEW ON BUSINESS INCUBATION IN KERALA

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ABSTRACT

Kerala State is at the forefront of an eminent startup ecosystem. Kerala is blessed with brilliant youth with exceptional ideas which can be potentially converted into brilliant products. But strong intervention from government are extremely essential to mentor aspirant entrepreneurs into successful startups. Continuous nurturing and support is a prerequisite for the success of these budding business ventures. Incubators and their business incubation programs can induce reverse migration and foster entrepreneurship and accelerate economic growth. Keeping this in mind, Kerala the most developed state in India as per human development index have taken up several steps in fostering startup ecosystem. Kerala startup mission is one of the key step in this regard. This paper explores the startup ecosystem prevailing in Kerala and the interventions made by Kerala government through Kerala startup mission in nurturing entrepreneurs and develop successful startups. As a result of dedicated service Kerala Startup Mission could curate over 1500 startups engaged of which many have been recognized globally for their innovation and growth potential. This paper also highlights various program schemes and funds offered by Kerala startup mission to assist and nurture budding entrepreneurs. This growing innovation ecosystem resulted in attracting seasonal entrepreneurs as well as many of whom now migrated back to Kerala to setup their startup. This reverse migration is one of the biggest outcome of the changing Startup Ecosystem a deliberate consequence of mentoring, networking, education, funding and incubation carried out by Kerala startup mission.

Keywords: Business Incubator, Entrepreneurship, Government Interventions, Innovation, Startups

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INTRODUCTION AND REVIEW

In today's world of globalisation and increased international competition government all over the world are building innovative policies to create jobs and to promote economic development. Business accelerators and incubators provide new hope in this regard. Incubators are the support structures for enterprise creation (NBIA 2004). Business incubators where created inorder to attain the various policy goals which include: reduce unemployment, technology transfer, commercialization of technology, strengthen the local economy, new knowledge creation (Etzkowitz 2003, Chandra and Fealey 2009, Robinson 2010 and OECD 2010). In present scenario almost all countries use business incubators as a tool for economic development (Chandra and Fealey 2009). The US has the largest and the oldest incubation system. The Batavia Industrial Center a farm manufacturing plant was the first American incubator in 1959 (Trzmielak & Gibson 2014). All Universities, governments and corporations from Arctic Circle to South Africa uses incubators to accomplish a range of wealth creation and social goals. Countries like China, East Germany and the Ukraine incubators have been used to facilitate the transition to a market economy. In the case of Israel incubators integrate immigrants from Russia and ex-soviet bloc into the mainstream economy. There are approximately 1400 business incubation programme operating in North America (Knopp 2012) and in Canada it is approximately 130 incubators. According to national business incubation association report, the world's leading business incubation association with 2,200 members from 62 nations offers the following characteristics of North American business incubators from its 2012 State of the Business Incubation Industry survey. About 93 percent of North American business incubators are non-profit organizations focused on economic development, rest 7 percent are for-profit entities, usually set up to obtain returns on shareholders investments. 54 percent are 'mixed-use,' assisting a range of early-stage companies. About 37 percent emphasis on technology businesses. Nearly 6 percent focus on service businesses, or assist other types of businesses. Only 3 percent serve manufacturing firms. About 47 percent of business incubators operate in urban areas, 28 percent in rural areas and about 25 percent in suburban areas (Knopp 2012).

For years agriculture prevailed to be the main sector contributing to Kerala's economy. The expectation of higher income from non-agricultural work and consequent higher investment in human capital discourage people from investment in agriculture. These factors resulted in the decline of employment in agriculture. The Gulf boom further pushed the land prices and major agricultural land was sold to real estate companies. The key problem is hike in unemployment rate especially educated unemployment and migration of educated youth to outside Kerala and foreign countries. One of the main criticism against Kerala model is that the high rate of education resulted in brain drain, many of the citizens migrated to other parts of the world for employment. According to the national sample survey Kerala has the highest unemployment rate

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of educated youth by sex and rural urban category among the Indian states (NSSO 2017). The unemployment problem faced by Kerala is not just an economic problem but a social problem effecting the young minds of the State. The result is precious and powerful human resources which has the potential for the development of state as well as country is been wasted away. Kerala's income is relatively small from the share of manufacturing sector. Several hypotheses put forward for the industrial backwardness of the state are labour disturbance hypothesis, wage cost hypothesis, alternative hypothesis etc. Kerala faced a continuing deceleration in the industrial growth. Thus economy of Kerala has undergone a structural change visualising drastic decline in the agricultural and industrial sectors with an increase in tertiary sector (Prakash, 2018).

In Kerala employed youth mainly focus on pursuing public sector jobs but in an educated society like Kerala job creation and placements of youth in private sector is also necessary to meet the unemployment crisis. In developed countries self-employed entrepreneurs play a major role in generating employment and economic growth. Entrepreneurship, entrepreneurs and Start-ups are now a days portrayed as the engine of economic growth (Audretsch & Thurik 2004). Entrepreneur promotes employment rather than seeking for an employment (Maina 2013). When faced similar crisis the policy makers all over the world should took initiatives for the growth and development of Start-ups. Policy makers of Kerala also identified that promoting entrepreneurs and entrepreneurship as necessary step for generating jobs and increasing per capita income. Start-ups being young companies driven by entrepreneurs can function as the driving force behind innovation, employment generating and economic growth but Majority of the innovative startups fails eventually. The research studies shows that between 80 and 90 percent of startups fail within the first few years and only few will survive. The major reasons for failure are unable to solve market needs, brilliant idea but negative feedback from customers, less plan, sufficient space, shortage of fund, networking difficulties etc. (DeMers 2018). The business incubators can play crucial role in supporting the newly established firm with the necessary elements for them to survive and grow to maturity. Business incubators supports in the development of young startup companies by providing proper management guidance, technical assistance, consulting, office space, shared basic business services and equipment, networking support, marketing assistance, and financing necessary for company growth. Through their incubation programs they target the growth and survival of young start-up firms by generating more jobs and wealth, enhance entrepreneurial climate, create and retain businesses, commercialize new technologies, build or accelerate growth in a local industry, and diversify economies (Mubaraki & Busler, 2011).

Today Kerala focuses on building an innovative and effective startup ecosystem. The youth of the Kerala state are highly enthusiastic in fulfilling their dreams and built their own startup

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enterprise rather than focussing on public sector jobs. Government of Kerala took initiative in creating various programmes to inculcate entrepreneurship culture among the young generations. In India the years from 2010-2020 has been declared as the 'Decade of Innovation''. The latest national science technology and innovation policy 2013 (NSTI) aims at innovation for inclusive growth, ensuring access, availability and affordability of innovation to as large a population as possible. NSTI also bridges the gap between the science technology innovation system and the socio-economic sectors.

Kerala lacks a unique model that connects academics, industries, R&D institutions and startups, apart from other Startup Ecosystems in the country. Thus Government of Kerala initiated the movement through KSUM by designing, formulating and implementing a forward-looking policy for creating a vibrant start up ecosystem in the state that foster technology entrepreneurship and Kerala start up mission (KSUM) initiated various steps for setting up a startup eco system in the state. Recently the number of startups are increasing exponentially and which in turn led to rapid growth in the number of incubators in Kerala. But a proper empirical study in this regard and impact of these incubators is highly scarce. Kerala Startup Mission (KSUM) is a Kerala government organisation for building fertile environment for launching, nurturing and scaling startups. It provides support in technology development, entrepreneurship, acceleration and economic development. This paper focusses on the role of KSUM in startup acceleration and entrepreneurship development. This paper provides an insight to the increase in overall number of startups a deliberate consequence of KSUM.

METHODS & MATERIALS

The study has been based on both primary and secondary data. Primary data has been collected through a qualitative approach - email correspondence, informal questionnaire, minor interviews have been performed inorder to gain full insight of the practices. Secondary data collected from various sources like Kerala startup ecosystem reports, census reports, various national surveys, publications of the state and nationals, department of economic statistics etc. Information collected has been analyzed by focusing on the changing trend, nature and pattern of incubators in Kerala. Primary data was collected through personal investigation with incubators and startups with the help of the detailed pre tested structured schedules from a random sample of 1500 startups chosen from all the 38 incubators.

RESULTS AND DISCUSSION

Kerala is the first state that formulate a "Startup Policy" in the country for the development of Technology Startups. The initial step towards the development of startup ecosystem was initiated in April 2006 with the evolution of "Technopark technology business incubator" which is

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approved by the department of science and technology (DST) and has recently taken by Kerala startup mission in 2015. Kerala startup mission (KSUM) is the known as the nodal agency of Government of Kerala for entrepreneurship development and incubation activities in Kerala. Government of Kerala has initiated in the establishment of Kerala technology innovation zone (KTIZ) which is global innovation startup hub for various technology sectors. The key objectives of KSUM is formation and management of technology business incubators/ accelerators in Kerala. It promotes technology based entrepreneurship activities. It try to create infrastructure and environment essential for stimulating high technology based business activities. KSUM promotes knowledge driven and technology based startup ventures by students, faculties, local entrepreneurs etc. KSUM aim to foster a new generation of young entrepreneurs who are fully equipped to tackle the challenges our world faces today. Kerala's growth as a startup hub is headed by state government.

Today KSUM has nearly 1500 startups which are developing innovative products and services and many of the products got global recognition. Table I shows a list of potential incubators in Kerala and also table II shows the types of startups in each incubator. The entrepreneurs come with the exceptional startup idea and the KSUM provides multiple resources to foster disruptive technology ideas into sustainable business ventures. KSUM has an incubation space of 4 lakhs plus square feet, 30 plus incubators, 1500 registered startups and 200 plus innovation cells. Currently, technology innovation zone (TIZ) has a biotech incubator named Bionest, hardware incubator named Maker Village, a Kerala startup mission IT/Software incubator, scale-up space, a digital fabrication lab etc. KSUM located in three districts: Kochi, Trivandrum and Calicut. KSUM provides advanced labs for sectors like biotechnology, hardware, electronics and advanced computing. After the evolution of innovation ecosystem (KSUM) many migrated people came back to Kerala to setup their own enterprise. Reverse migration which is the biggest indicator. KSUM have collaborations with TiE Kerala which has a similar mission that is fostering entrepreneurship through mentoring, networking, funding, education and incubation. TiE- Kerala was founded in 1992 in Silicon Valley by a group of successful entrepreneurs, senior professionals, and corporate executives with roots in the Indus region. KSUM also have collaboration with other agencies like Kerala state industrial development corporation (KSIDC), various IT parks in the state, various incubators and incubation cells etc.

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Table I: The table represent a detailed list of top incubators in Kerala and their classification (Source: Kerala startup ecosystem report 2018, 2017 & 2016 & NSTEDB 2019)

Name of Incubator	Incubation Space in sq. ft.	Year of setup	Number of firms	Туре
Technopark –BIC	15000	2006	53	Technology
KSUM Kochi	5,75,992	2015	41	Software/IT
Cyberpark BIC	4,82,000	2009	16	Software/IT
Maker Village	6000	2015	55	Hardware
Bionest	42000	2015	17	Medical
KEY Accelerator	2500	2015	4	Software/IT
Startup Village	Virtual	2012	19	Software/IT
Technolodge	16000	2014	80	Software/IT
Infopark Smartspace	7000	2015	90	Software/IT
NASSCOM	6500	2013	12	Software/IT
SCTIMST - TIMed	9500	2015	10	Healthcare/Biom edical
KSIDC Incubation	4605	2014	18	Software/IT
CET TBI	3000	2012	11	Software/IT, Clean
BIC Kannur	400	2015	25	Software/IT, Agriculture
CITTIC Cusat	5000	2015	30	Software/IT
NIT – C TBI	8000	2003	17	Software/IT, electronics
TBI-GECBH	1000	2014	6	Software/IT
IIMK - Live	3000	2016	31	Sector Agnostic
Startups Valley - AJRTBI	10000	2017	34	Rural & Green technology
Amrita TBI	virtual	2015	120	Hardware, Artificial Intelligence
NRI - TBI	2500	2013	16	farming technology/touris m
Agropark MSME	1000	2016	26	Agriculture/food

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Table II: The table represents an overview of the types of startups in Kerala and totalnumber of startups in each category. (Source: Kerala startup ecosystem report 2018, 2017& 2016)

TYPES OF STARTUPS	2016	2017	2018
Software & IT	222	405	950
Hardware	10	93	234
ED Tech	2	52	70
Bio technology	2	12	42
Electronics & Digital Media	14	18	32
Medical & Healthcare	7	59	134
Agriculture & agro based business	2	23	89
Green Technology/Energy	7	13	45
Others	33	82	138

To identify and support technology startups across the state, the government over the past decades designed several schemes and policies. Government of Kerala implemented "Learn to Code" or "Raspberry Pi Programme". KSUM interact with the students undergoing training via a web platform where students can clear their doubts, they can learn about the advanced projects, they can showcase their work so far. KSUM initiated startup boot camp where student community involve directly in the creation of sustainable startup ecosystem. They set mini incubators, in the form of boot camps in colleges. Boot camps foster the culture of innovation-driven entrepreneurship through student projects that will equip the new generation with the necessary science & technology, so that they may obtain gainful employment. The startup policy that supports the Startup ecosystem by means of various components like infrastructure, funding, human capital development, incubators & accelerators, state support, governance, public private partnership, scaling existing and establishing new incubators.

KSUM support the entrepreneurs by providing the right ambiance to build up the technology ventures at global standards. They encourage the entrepreneurs to work efficiently and come up

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with a market viable prototype. They support the entrepreneurs by providing various types of funding throughout the incubation process. The funding can be in the form of grants, loans or equity investment which is distributed directly or through its member incubators, IEDCs or funds in which KSUM has invested. The financial assistance provided at various stages are a) seed funding b) early stage equity funding c) idea, productisation & scale up grant d) patent support scheme e) international entrepreneurial exchange programme f) research & development rant and g) marketing support

KSUM has been providing seed funding to startups. The applications are collected through online portal and all the process are done online this increased the speed and frequency of seed funding. Startups can receive an amount of Rs.10 lakhs as financial assistance in the initial stage. A total of 35 startups have applied for seed funding of which 27 startups have been granted the fund. Selection of seed funding is carried out monthly by sector experts. Other startups are directed to redo their business model or refine their product. The startups can utilize those funds for product development, testing & trials, test marketing, professional consultancy and manpower hiring.

KSUM partnered with Securities Exchange Board of India to provide early stage startup equity fund ranging from INR 25 lakhs to INR 200 lakhs. Startups who have registered in Kerala or ready to re-register in Kerala with technology based product and are in the early stage of product development are eligible for such type of funding facility.

Startups can apply for idea grant at ideas days organised monthly and idea fest at colleges. They can obtain fund up to INR 2 lakhs. And those startups at the prototyping stage, productisation grant provided up to INR 7 lakhs. Those at the scale up stage, grants can be provided up to INR 12 lakhs.

KSUM support student entrepreneurs for obtaining patent for their product. The funding given in three stages during filing, prosecution and award. Patent reimbursement up to INR 2 lakhs for Indian patent and INR 10 lakhs for International patent. Support will be given up to 50 student entrepreneurs. Educational assistance also given up to INR 3 lakhs per annum to continue post-graduation and interest subsidy for five years on loans taken for product implementation based on the patent.

Startups are reimbursed up to INR 1 lakh per programme. This is a combination of schemes which expose student entrepreneurs to the world's most mature startup ecosystems such as Silicon Valley, London, Tokyo. The student entrepreneurs get opportunity to interact with entrepreneurs and industry stalwarts from around the world.

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Research & development grant is given to hardware startups up to INR 30 lakhs. To qualify this grant startups need to have a working prototype for the product, should be member of any approved incubator, applicant need to submit a business plan explaining how they are going to spend the grant received. More preference will be given to startup with patent or are scaling up their product.

Startups are given digital marketing support. They are given opportunity to showcase their product in national and international conferences, support in advertising their product, support in social media marketing and also product launch support.

KSUM offer incubation program for budding entrepreneurs. They provide mentoring support, conduct workshops and training, pitching workshops and investor connects, graduation day, demo days etc. Firstly, the most supportive programme for nurturing startups is international entrepreneurship exchange programme (IEEP) which is an exchange programme executed for talented students and young innovative entrepreneurs of Kerala. The selected participants are given opportunity to visit advanced mature startup destinations like Silicon Valley, Menlo Park, Tokyo, USA, London etc. to interact with startups and clients there which will boost up Kerala's International startup ecosystem and foster entrepreneurship. The aim of the programme to enhance marketing support and funding opportunities for local startups and also provides International platform for their products. This programme also provide great opportunity for selected college faculty member by sending him/her to renowned universities like Harvard University to experience the startup ecosystem there. Some international delegates are invited to work with startups in Kerala for exchanging knowledge and ideas. The supports of this programme are IAMAI, FICCI, CII, TiE etc. The basic eligibility for selection to this programme is the startup should be department of science and technology approved or should registered with KSUM. A maximum of two founders from each startup will be given opportunity to participate in the international programmes like workshops, exhibitions, etc. The startups must submit a business plan for selection and the selected startups are eligible for reimbursement of 50% of the travelling expenses or Rs. 1 lakh whichever is lower. According to KSUM report at present altogether 63 entrepreneurs and innovators were sent to various programmes and visits to various continents worldwide. Second, most programme initiated by KSUM for startups is startup community partner development programme (SCPDP). The aim of the programme is built up an inclusive startup ecosystem in Kerala. This programme connects entrepreneurs, innovators, maker community professionals, students, government officials and academicians, all will act as a single network, will share their experience which will foster and supports innovation in the state. By this interlinked network capacity building can be raised from grassroot level by means of student workshops, conferences, discussions, mentoring and leadership camps and KSUM will provide community partners guidance in financial and technical support for organising such

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events. Technology innovation fellowship programme (TIFP) is the third most programme initiated by KSUM (under Youth Entrepreneurship Programme) for young graduates who are fascinated in technology startups. The application for this programme is invited every six months and the selected candidates will receive a fellowship of Rs. 25,000 each month. For selection they will follow a strict screening process includes open invitation, screening & interview of the shortlisted applicants. The selected applicant should be a campaigner for technology startup activities and should know how to organise events like entrepreneurship awareness camps, maker sessions, hackathons & ideathons in academic institutions. Another programme initiated by KSUM is entrepreneur training workshop (ETW) programme which focuses on behavioural approach to entrepreneurship, a unique methodology designed at Harvard University. KSUM has tied up with UN-EMPRETEC and EMPRETEC India foundation for collaborating in the startup leadership programme. The startups are selected from different incubators across the state. The nominated officers from startup mission and selected candidates were given opportunity to attend entrepreneurship development workshop conducted at different states. Training cost will be abided by KSUM and the travelling & accommodation will be abided by the startups. In association with Indian institute of management – Kozhikode (IIM-K), KSUM organises a 5-day residential management development programme (MDP) for startup entrepreneurs at IIM-K on the theme "aspire, change & transform". The Programme aims is to transform the participants startup enterprise into a viable Business venture model and also addresses the challenges and barriers the startups going to face and teach how to overcome those situations.

Other initiatives taken by KSUM is the distribution of startup box, a toolkit equipped with a computer, a smartphone, a dongle, an e-book reader etc. Government of Kerala has implemented this through KSUM with an aim to encourage and support those young people who may have difficulty in starting their own venture. 50 teams chosen through KSUM bootcamps or from various incubators. A toolkit provided to each team and have to return in original condition once the programme is complete. The toolkit is the property of KSUM. So far, 150 startup boxes distributed across various incubators associated with KSUM. With the support of Government of Kerala, KSUM has started MIT USA electronics fabrication labs Technopark, Trivandrum and KTIZ, Kochi. For the last two years KSUM has been working closely with government departments.

From figure II it is clear that 55% of incubated startups are from the field of software and IT and 13% startups are from the field of Hardware. Only 2% startups are from the field of food, advertisement, and energy. This paper also discussed the funding sources of startups and figure III shows various incubation programs provided by KSUM and also reveals the fact that there is massive increase in the number of startups and only 13% are women entrepreneurs in Kerala which is remarkably low when compared with men entrepreneurs. The graph in figure I clearly

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reveals the fact that there is massive increase in the number of startups during the past 3 years. KSUM plays a crucial role in this huge increase of startups. Moreover, in 2015 only 300 startups were incubated. The evolution of number of incubated startups from 300 to 1500 is truly a tremendous hike. This is an important consequence of the careful effort played by incubators all over Kerala under the leadership of Kerala startup mission.



Fig. I: Graphical representation of growth of startups (Source: Kerala startup ecosystem report 2018, 2017 & 2016)



Fig II: The figure represent the Different sectors of startups in Kerala in 2018 (Source: Kerala startup ecosystem report 2018, 2017 & 2016)

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Fig III: The figure displays some of the incubation programmes offered by KSUM (Source: Kerala startup ecosystem report: 2018, 2017 & 2016

CONCLUSION

Kerala startup mission is on the mission to convert feasible technology ideas into viable business venture by fostering a startup ecosystem in Kerala. In this effort Kerala startup mission has during these 3years of its establishment Kerala startup mission has helped to an extent achieve its goal of providing handholding support to the startups in Kerala. The role played by Kerala government in fostering aspirant entrepreneurs to successful business ventures through Kerala startup mission is grateful. This study also reveals the fact that even though there is remarkable increase in startup companies and young entrepreneurs the number of women entrepreneurs in Kerala is remarkably low. Careful intervention from the policy makers of Kerala startup mission and government of Kerala in this regard will help to promote women in this field.

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