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## Taxonomy of VUCA in Indian start-ups: the future of entrepreneurship

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**Abstract:** The purpose of the study is to explore and examine the taxonomy of VUCA in Indian start-ups in anticipation of what the future of entrepreneurship shall be! Researchers have examined fields such as robotics, artificial intelligence, genomics, etc. that will shape the industry. In order to adapt, what kind of entrepreneurship and dynamic capabilities will be required, needs deeper thinking. The world is under turbulence and will be volatile, uncertain, complex and ambiguous, termed as VUCA. We build on our previous studies on 'entrepreneur readiness' and 'Dotcoms' readiness'. Based on our thesis, we investigated around 50 Indian start-ups by deploying qualitative methods, like phenomenological studies supported by in-depth interviews, after examining and drawing knowledge from select start-ups, their VUCA readiness belonging to countries like Israel, China, USA and Singapore. Thus, successful economies with a well-defined entrepreneurial ecosystem, enable organisations to drive innovation, whether they are too fast or too furious but need to be a VUCA learner. The authors diagnose the combined response to VUCA in terms of 'entrepreneur-manager' and not 'manager-entrepreneur'. The study proposes a response model as a foresight required for entrepreneurial businesses for survival and growth in their VUCA journey.

**Keywords:** entrepreneur; start-up; entrepreneur-manager; entrepreneurial capabilities; entrepreneurial ventures; taxonomy; foresight; dynamic capabilities; future; VUCA.

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## 1 Start-ups

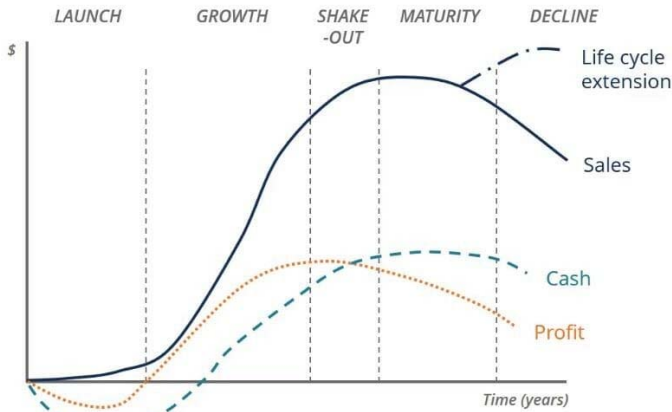
Start-ups have their origin in the mindset of the entrepreneur, that of an explorer. The explorer of the 19th century who went to explore the unknown interior regions of Africa was driven by curiosity of ‘what lies ahead’. Many of them died through fighting with hostile tribes, diseases, wild animals and other causes. But the knowledge they sent allowed other people to enter Africa with more certain knowledge. Our modern-day start-up entrepreneur is also an explorer. He may not die in the process but chances of failure are very high.

Entrepreneurs are helped by other entrepreneurs and this has been possible due to venture funding, which started in the Los Angeles area of USA, now known as Silicon Valley. The widely accepted terminology ‘venture capital’ (VC) is characteristically related with high-risk, high-growth and potential start-ups. Successful entrepreneurs with high net-worth come together to form a VC company, which invests in a range of start-ups, sharing high risk with high rewards. VCs generally spread their funds over a range of start-ups, knowing fully well that a majority of these will fail but the odd successful entrepreneur will make their fortune. Some early examples of companies, which rose on the back of VC include Xerox, Intel, and American Microsystems.

With VC or without VC every entrepreneur in start-up faces volatile, uncertain, complex and ambiguous (VUCA) conditions. To scale-up the entrepreneurial ventures, the entrepreneurs must learn to mitigate VUCA challenges and be competitive in the

Industry. This paper is an attempt to explore entrepreneurial capabilities to survive and grow in VUCA business world of start-ups.

**Figure 1** Business life cycle (see online version for colours)



Source: Corporate Finance Institute (2019)

As mentioned in Figure 1 on business life cycle, a start-up mainly travels through various stages such as its launch, growth, shake-out, maturity, decline and may be life cycle extension. Under each stage the start-up witnesses challenges in the form of VUCA, yet it must exhibit assorted kind of entrepreneurial abilities to stay ahead. Every stage puts forward a typical challenge in the entrepreneurial journey, whether it is a traditional industry or the one in making. The incumbent enterprise undergoes the wrath of VUCA, hence it must be understood closely.

## 2 About VUCA

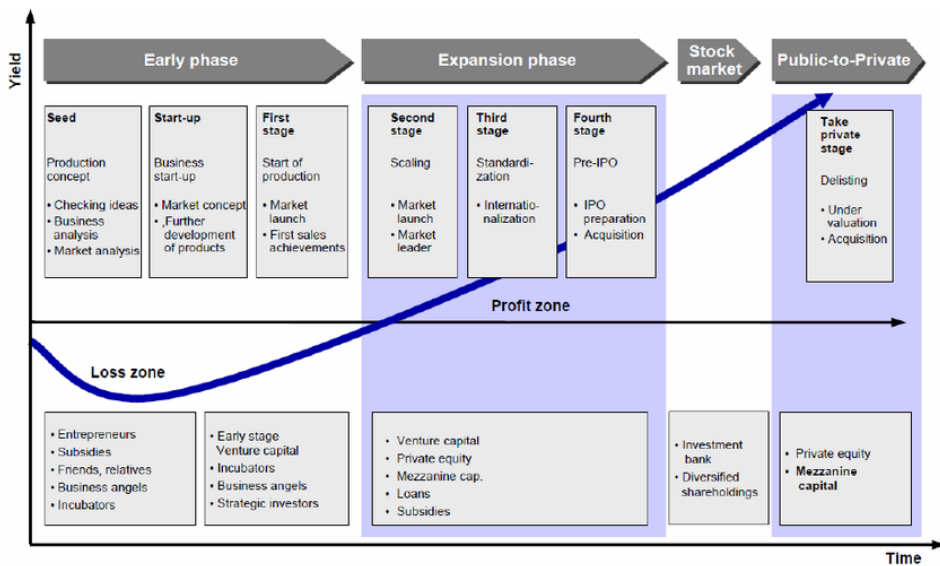
Only a little while back, life was much more stable and simpler. Today VUCA presents a world where leaders must embrace uncertainty and volatility (Johansen, 2017). The failure of firms be it an enterprise or a traditional corporate, is largely due to the ignorance on VUCA, where stability is replaced by chaos. VUCA is an acronym, which comprises of volatility, uncertainty, complexity and ambiguity (Bennet and Lemoine, 2014; Abidi and Joshi, 2015). In this world, only the most agile and adaptable would survive, whether companies or individuals. What could be the various steps for avoiding failure and in creating a future-proof organisation, needs a deeper thinking (Kasparov, 2017)?

As from the Figure 2, the firm undergoes a typical cycle from the early phase to the expansion phase. As scholars we see that the enterprise in making encounters its first VUCA, when the whetting of the idea is in process. The business vertical it represents and the market it aims may be volatile with certain degree of uncertainty associated with it. If the business is around process(es), it might further attract a degree of complexity. Moving from the seed to start-up stage, the incumbent firm would require to gain clarity for its intended customers and markets. The sooner it reaches the first stage, where in

production starts, the market launch may witness a challenge, as there could be similar or substitute products threatening the existence.

Interestingly, when this enterprise moves to the expansion stage it must encounter a few sub-stages.. The scaling may not be an easy one. There could be a challenge by the market leader, if the market has several other players and if there are copycats, as imitators the situations might pose more complexities. It will take a long time before the incumbent firm either establishes an industry standard or becomes a part of the existing ones, where it has to fight even more for its existence. Thus, the question of being an entrepreneur in the same space or adventuring into newer ones remains a challenging question.

**Figure 2** Life cycle of a firm (see online version for colours)



Source: Wilson and Silva (2013)

### 3 Research gap and research problem

With the rapid change in business environment, available resources, and opportunities to embark upon, entrepreneurship has emerged as the hottest field to try one’s luck in creating a business enterprise. The source of richness followed by diversity has also added in making this emerging field so dynamic (Audretsch, 2012). While the entrepreneur is the individual possessing traits that are innate towards business creation (Dana, 2001), entrepreneurship is the process that enables in setting up the enterprise. At the same time history says, that these entrepreneurial firms, to some that were successful, others succumbed to their weaknesses by not translating the signals that were weak, but imperative for their existence.

Can entrepreneurship be described as sheep or as herd behaviour? Even sheep can be entrepreneurial if the context is understood right. In a classical example by Gaddefors and Anderson (2017), Ethiopian shepherds, nonetheless, created opportunity and value for

their children, in conditions of uncertainty. These ‘entrepreneurial sheep’ thus created an opportunity, but the entrepreneurship process was an outcome from the context itself. It being individual, entrepreneurship appeared simultaneously to be both existing in multiple states regardless of the observation and the observer. ‘Entrepreneurship’ thus connected them leading to creation of series of changes (Gaddefors and Anderson, 2017). But, it is sure that the shepherds did encounter all kinds of terrain turbulence (Keegan, 2008) as a result of VUCA and were outmanoeuvred for their existence. Each one did undergo a series of complex change processes adjusting their styles to the terrain, gradually improvising their direction while staying focused at their outcomes. They exhibited similar patterns as experienced by start-ups.

While studying the subject in the above backdrop, it has been observed that the existing knowledge about the entrepreneurship process and its potential to response to VUCA situations in entrepreneurial ventures is inadequate, especially in the Indian context. Some of these Indian start-ups in their entrepreneurship processes made terrible mistakes leading to disastrous outcomes. Failure is in itself not a disaster, but failure to learn from failures, certainly is (Abidi and Joshi, 2015). Were their entrepreneurial intentions (Teixeira et al., 2018) faulty? Will continue to happen, if these entrepreneurs fail to learn from the past?

Thus, the research context explored in this paper revolves around entrepreneurship and its future. The entrepreneur must think like a futurist (Sommers, 2012) in a VUCA world.

#### **4 Objectives of the study**

The business world is continuously confronting VUCA and in entrepreneurial ventures, it is inevitable. The assorted objectives of this scholarly study are:

- 1 to explore start-ups, both traditional and the ones in newer verticals, besides examining the VUCA around them
- 2 to comprehend the future of entrepreneurship, considering the newer industries posited
- 3 to study certain technology areas and ascertain their future
- 4 to examine VUCA in different verticals as identified in point 2
- 5 to create knowledge in the form of a taxonomy of VUCA in start-ups
- 6 to strengthen the model for responding to VUCA by these entrepreneurial businesses, especially start-ups, as in the future of entrepreneurship.

#### **5 Research methodology**

Do we think that Indian start-ups are prepared for the VUCA world? Be it the traditional space or where the future of entrepreneurship lies? This question has been studied through qualitative studies (Dana and Dumez, 2015) of some of the Indian start-ups (Dana, 2000). As mentioned above, the authors investigated around 40 hottest start-ups

from India, emanating from different verticals, especially in the dotcoms space (Chauhan et al., 2019). The number was increased to 50 start-ups in order to cover few more areas and examine the VUCA around their business life cycle (a typical start-up cycle), thereby generalising common learning. Subsequently the authors attempted to study the future of industry, simultaneously examining the verticals where the future is likely to be. We then identified countries like Israel, China, USA and Singapore, having a sound start-up ecosystem (Agrawal et al., 2017; Maroufkhani et al., 2018; Muldoon et al., 2018), providing avenues for a creative dimension and establishment of enterprises that will form the basis of ‘future of entrepreneurship’. Qualitative methods (Dana and Dana, 2005) were used after examining and drawing knowledge from select start-ups, their VUCA readiness from verticals like artificial intelligence, robotics, 3D printing, crypto currency, internet-of-things, genomics and drones, in the above shortlisted countries. Drawing knowledge from these verticals, the authors tried studying around 30 selected start-ups falling under the same verticals and examined their VUCA readiness. Secondary information as from published sources was used to identify and triangulate information, as these fields are still in infancy and nascent in stage.

The phenomenological study was supported by in-depth interviews with selected entrepreneurs and individuals within their respective enterprises. This enabled triangulating the data and neutralising biases, if any. The authors examined the etymology and epistemology perspectives etc., besides deducing by constructivism and content analysis.

## **6 The Indian start-up’s**

Innovation and entrepreneurship (Farinha et al., 2018; Wu, 2017) are connected. Innovation is an outcome of an idea that can be inferred as something new. At the same time those who innovate are termed as ‘entrepreneurs’ or ‘innovators’, who finally lead to creation of wealth. This ‘wealth’ can be new or an equivalent increase from the current. Those not innovating tend to defend their existence. It applies to “something that is new or improved and that which creates value”, implying ‘newness’ or ‘being different from the rest’. Majorly, this growth emanates from innovators who can be also classified as entrepreneurial leaders who lead in creating employment. They confer added value to older assets and create exclusively newer ‘sprouts’ of wealth. Internet start-ups from India like ShopClues, Housing.com, Policy Bazar, Lenskart, Red Bus, Grofers, BookMyShow, Pepperfry, etc. belonging to various verticals have virtually created wealth from nothing. The aggressive ones termed as entrepreneurial firms like Mu Sigma, Flipkart, Inmobi, Quikr, Zomato, Olacabs, Paytm, etc. have scaled to being termed as Unicorn Start-ups with over one billion USD as investment. Others like Hungama, Must See India, Taxi for Sure, Vizury, Cartrade, Common floor, HackerEarth, Culture Alley, Inmonk, Touch Talent, Attero, etc. are advancing forward. The list is exhaustive on all those who have been responsible towards creating this new wealth with barely any base. This wealth creation trend is similar around the world. Is it the competence added to their entrepreneurial abilities and innovativeness?

**Table 1** Leading Indian start-ups

<i>S. no.</i>	<i>Name of company</i>	<i>Nature of business</i>
1	Flipkart	E-commerce
2	Snapdeal	E-commerce
3	Paytm	E-commerce
4	Freecharge	E-commerce
5	ShopClues	E-commerce
6	Jabong	E-commerce
7	Bigbasket	E-commerce
8	Urban ladder	Furniture
9	Hungama	Digital entertainment
10	Book my show	Online ticket
11	Micromax	Mobile manufacture
12	Yatra	Online Travel services
13	Cleartrip	Online travel services
14	Must see India	Online travel services
15	ixigo	Online travel services
16	Ola	Online cab service
17	Taxi for sure	Online cab service
18	InMobi	Mobile advertising platform
19	Komli Media	Digital advertising platform,
20	AdNear	Hybrid geo-location platform
21	Vizury	Personalised remarketing platform
22	Adpushup	Revenue optimisation tool
23	Quikr	Buy and resell goods and services
24	Cartrade	Buy and resell Vehicles
25	Housing.com	Real estate search portal
26	Zomato	Online Food Portal
27	Common floor	Real estate search portal
28	Policy bazar	Insurance-policy shopping
29	Practo	Health care portal
30	Indiahomes	Property advisory services
31	HackerEarth	Skill developing portal
32	PriceBaba	Price comparing portal
33	Wicfy	Share interesting discoveries about prices, products and sellers
34	iimjobs	Job Portal
35	Newshunt	App for news and other knowledgeable services
36	Hike	Messaging app
37	Lookup	Messaging app for customer and sellers

**Table 1** Leading Indian start-ups (continued)

<i>S. no.</i>	<i>Name of company</i>	<i>Nature of business</i>
38	CultureAlley	Mobile app for gaming, chatting and reading
39	iYogi	Digital service
40	Druva	Cloud data protection and management
41	Knowlarity	Cloud telephony for SME
42	Freshdesk	Software integrates cloud computing and mobility with CRM
43	Chargebee	Billing infrastructure
44	Delhivery	E-commerce
45	Inmonk	Merchandise portal
46	ClearTax	Tax solution portal
47	Instamojo	Payment app
48	Touch Talent	Online Exhibition
49	Attero	E-waste
50	Techfront	Tech-Sports management industry

Most of these entrepreneurial firms have moved ahead to being distinctively classified as innovative companies, who underwent the incessant encounter with the VUCA, environment. Looking deeper into a recent survey by Forbes magazine on top 100 innovative firms, North America had 51, Europe 17 and Asia 22, etc. Salesforce.com, Tesla, Amazon.com, Netflix, Incyte, Regeneron Pharmaceuticals being in the top list belonged to USA, while Shanghai RAAS Blood Products from China and Naver belonged to South Korea. Interestingly, Hindustan Unilever and Asian Paints from India got an entry into top 10 innovative firms. These innovative firms were from verticals ranging from technology intensive firms, to non-technological (Mothe and Thi, 2010) like beverages, real estate, pharmaceuticals etc. Its intriguing as to what did they do that was special to stay ahead in innovation and overcome VUCA? It's worth dissecting and learning.

Surprisingly, old horses like Microsoft, Google, Apple, Samsung, Motorola, Samsung, Toyota, Honda, Dailmer Benz, Caltex, Exxon etc. have lost the race of being termed as highly innovative firms, may be for the time being, yet with a great challenge ahead in the vortex of innovation. Is it the speed, precision and innovativeness (Ikeda and Marshall, 2016) that drive firms' existence in a VUCA world? Is innovation not the engine (Dvir and Pasher, 2004) of growth?

The bottom line is that most of the above entrepreneurial ventures will be undergoing a change in space and type. This kind of entrepreneurship may not continue in future and shall undergo a massive change. The future of entrepreneurship is going to be different.

## 7 Future of entrepreneurship

Ross (2017) after travelling to around 41 countries explored advancement in entrepreneurship. We re-examined the data and information as available from different published sources and found that the economic future will be governed by industries belonging to robotics, artificial intelligence, 3D printing, cryptocurrency, internet-of-



things, genomics, drones and few more. The challenge would be how many of us, the economy, the market and the individuals, are ready to foresee the change in nature of work? How much are we prepared for tomorrow?

Most entrepreneurial firms hence would have to remain highly innovative, possessing and harnessing on dynamic capabilities. They remain competitive only when they pursue innovation as the key driver to success. Such imminent transformation will only come by pursuing and adding dynamic capabilities as the nature of innovation has changed. It has emerged as more open, engaging collaborative work followed by deeper insights. Thus, entrepreneurial organisations will have to steer their organisational structures and creative thinking being pushed to limits. Thus, it is essential to understand what dynamic capabilities are all about and how they are connected with the future of entrepreneurship, in the VUCA context.

It is clearly understood that entrepreneurial firms (Zahra and Filatotchev, 2004) create, define, discover and exploit opportunities (Hamel and Prahalad, 1994; Miller, 1983; Sathe, 2003). They do it more consistently than their rivals. Zahra et al. (2006), however, debate the processes associated with this enterprise creation but it is accepted that this adds value to the firm. There is yet to be a compelling explanation on the ability of a few new and established firms to have a continuity towards creation, defining business, discovering of ideas and further exploiting (Zahra et al., 2006) entrepreneurial opportunities.

One of the sources of capabilities (Zahra and Nielson, 2002) that differentiate these entrepreneurial firms from others is the dynamic capability that these incumbents possess. This ability, dynamic in nature, allows the firm to reconfigure the resources and capabilities according to the one who makes pertinent decisions. This is related or corresponding to the entrepreneur, the team considers their willingness to accept the change it intends to harness (Katona, 1951; Penrose, 1959). Penrose (1959) goes further in stating that this ability is directed by individual's motivation, the skill set possessed and the experience by the firm's top leaders. This set of organisational dynamic capabilities may be required to move ahead but may not guarantee success or survival. Thus, it becomes imperative for the firm to think about what could be these dynamic capabilities and what kind of differentiation they offer, how do they come to an existence and thirdly they vary from newer enterprises to the established ones (Zahra et al., 2006).

Literature reflects that established companies benefit from having dynamic capabilities in crafting newer business and corporate strategies (Bowman and Ambrosini, 2003), entering new market arenas (King and Tucci, 2002) and executing mergers. These also help towards learning new skills (Zollo and Winter, 2002) and overcoming inertia (King and Tucci, 2002). These dynamic capabilities also assist in leveraging resources (Bowman and Ambrosini, 2003); introduction of programmes that are innovative (Repenning and Sterman, 2002); and commercialising newer technologies (Marsh and Stock, 2003). These activities further enhance organisational agility towards market responsiveness (Zahra and George, 2002a, 2002b) thereby sharpening the strategic capability of the entrepreneurial firm.

**Table 2** Start-ups – technology vs. countries

TECHNOLOGY	CHINA	ISRAEL	SINGAPORE	USA	INDIA
Facial recognition, AI	1 CloudWalk	1 LawGeex	1 Trax	1 Numerai	1 Niki.ai
	2 iCarbonX	2 Cortica	2 CashShield	2 Spoke	2 Mad Street Den
	3 DeepGlint	3 Eyesight	3 ViSenze	3 Argo AI	3 Embibe
	4 Lulishuo	4 Beyond-verbal-perception	4 Ucare.ai	4 Kridtech	4 Arivatic Data Labs
Robotics	5 Robo	5 Cognata	6 Kissender	6 Ubtech	5 SigTuple
	6 Siasun Robot & Automation Co.	6 Regulus	7 Zimplistic	7 Saildrone	6 Active.ai
	7 HIT Robot Group	7 Autotalks	8 Endomaster	8 Soft Robotics Inc.	7 Uncanny Vision
	8 Midea Group	8 Cortica	9 CtrlWorks	9 Arevo labs	8 ASIMOV Robotics Pvt Ltd
3D printing	9 Sichuan Revotek	9 Oryx	10 Red dot ventures	10 UjPath	9 DIFACTO
	10 Regenovo	10 NoCamel	11 Creopop	11 Drive.ai	10 Gridbots
	11 Tiertime	11 HP	12 Pirate 3d	12 Rothy's	11 Bhramma3 Anvil
	12 Shining 3D	12 Nano Dimension	13 Brahma3	13 Cazza – Construction Technologies	12 LBD Makers
Crypto currency	13 HuaShang Tenda	13 Bancor	14 TenX	14 Veridium	13 KUBE
	14 Regenovo	14 Israeli Bitcoin Association	15 CyberNetwork	15 Caspian	14 Angad Daryani's RepRap
	15 Tiertim	15 DAGLabs	16 Devery	16 Devery	15 Primechain Technologies
	16 WinSun (Yingchuang Building Technology Co.)	16 CoinTree	17 Simplex	17 Caspian	16 Elemental Labs
	17 HuaShang Tenda	17 Simplex		18 Sofocle Technologies	18 Cateina Technologies
				19 EzyRemit	19 EzyRemit

**Table 2** Start-ups – technology vs. countries (continued)

TECHNOLOGY	CHINA	ISRAEL	SINGAPORE	USA	INDIA
IoT	18 Ayla Network	18 Fieldbit	16 Overdrive.sg	17 Altizon	20 DeTectTechnologies
	19 LifeSmart	19 Otonome	17 AEvic Health	18 Armis	21 TagBox
	20 Gizwits	20 Securithings	18 Zimplistic	19 Hologram	22 Covelot
		21 Axonize		20 Losant	23 TempoGo
				21 Bastille	
Genomics	21 Anoroard Genomics	22 Genoox		22 Freenome	24 MedGenome
	22 BGI Genomics	23 Transceptor		23 Helix	25 Mapmygenome
	23 Berry Genomics	24 Emedgene		24 Karius	26 SciGenom
	24 CloudHealth			25 Genoox	27 Jai Health
	25 Gene Plus			26 Verge Genomics	
Drones	26 Dji	25 Flytrex		27 SkydioPrecision	28 IMartian Way
	27 Parrot	26 Percepto	19 Infinium Robotics	28 HawkSwift	Corporation
	28 Yuneec	27 Airbototics	20 Davjones Technology	Navigation	29 Aarav Unmanned
	29 3dr (3robotics)	28 SiteAware	21 Aerolion Technology	Flirty	Systems
	30 Power vision	29 Pixtler			30 Aerialair
	31 Walkera				31 Drone Aerospace
	32 Syma				Systems
	33 Hubsan				

Nelson and Winter's (1982) evolutionary theory is grounded by the dynamic capabilities that an enterprise possesses. Based on probabilistic reasoning and bounded rationality, it is understood that managers make decisions under uncertainty (March and Simon, 1993) thereby trying to 'satisfy' in selecting solutions to different problems, rather than optimising. The implication is that these managers must continuously be in search of candid solutions, while reconfiguring and revising their dynamic capabilities. On account of the business environment being dynamic and highly unpredictable, as in VUCA (Chauhan et al., 2018a), they must read and analyse between the lines. March (1991) states that due to this highly unpredictable environment, firms are challenged in their routines. It is a test of their ability to create and harness newer knowledge, continuously. These entrepreneurial firms must be in a position to integrate this (Zahra et al., 2006) in their culture with an ability to solve a problem as evinced during the entrepreneurial journey and change rapidly. However, from the above it does not imply on the lesser superiority of the firm if it does not have any kind of dynamic capability. It also does not imply that if the environment is not volatile, the dynamic capability of the firm is not in action.

Sirmon and Hitt (2003) state that these dynamic capabilities are embedded latently within the organisation and needs to evince, collaboratively. Entrepreneurs and the managers being important to the enterprise might be engaged in the routine work and could ignore this. These entrepreneurial firms could recombine resources and spin-off newer capabilities for new markets (Kogut and Zander, 1992; Schumpeter, 1942; Sirmon et al., 2006) and also in their international expansion (Zahra et al., 2000). It is clearly understood that these dynamic capabilities over a period of time (Rindova and Kotha, 2001) impact the firm's overall capabilities over a period of time. Yet it is definite, that dynamic capabilities are mostly valuable during VUCA situation (Chauhan et al., 2018b) and also create a source for competitive advantage, whether it is a start-up or in the corporate entrepreneurship (Zahra et al., 1999) journey.

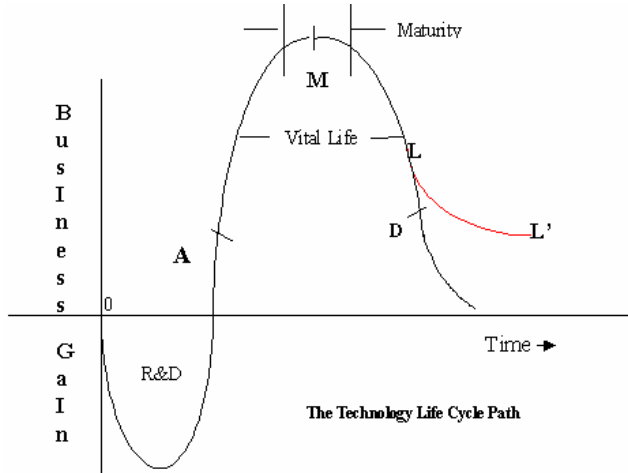
In this context let us examine the technology perspective and its future, thereby connecting the purpose of the study by authors.

## **8 Technology and its future**

With the rapid change in technology, we can anticipate that it will greatly impact our careers and definitely reshape them for the younger ones. In future, we can expect the method of education to change drastically with the advent of technology, which is in rapid progress and dominance. Many jobs of the future will be completely different and currently do not exist. The driving force and the influencer is technology. Artificial intelligence, 3D printing, cryptocurrency, internet of things, genomics and robotics will influence the ways we currently make and manage products and deliver services (Weforum, 2019). Remote working, co-working space, etc., all will be impacted. Cloud based computing will impact the industry and the way we operate, thereby enabling a rapid impact of intent-based service models. Be ready to accept a virtual platform with seamless connectivity and portability with interconnected workspaces. Let us all accept that the fourth industrial revolution will bring disruptive models in the market (Leavy, 2017). Be ready to accept that these business models will recast the way we do our business currently and in future. There will be revolutionary movement in the creation of

technologies and its spin-offs that will bring in a series of new economic activities, never imagined before. Innovation will have to be embraced and accepted as a part of daily living. This will spark and impact the future of entrepreneurship.

**Figure 3** The technology life cycle (see online version for colours)



Source: Wikipedia (2019)

## 9 Innovation in action

It is evident that innovators take the lead in creating industry followed by wealth. These innovators add value to older assets. Adolescent firms engage in this process more frequently than the older and larger counterparts and are able to create more value. Thus, their sectors move upwardly in creating more wealth than others. Enterprises in traditional verticals like Unilever from Indonesia; BioMarin Pharmaceutical, Monster Beverage, Adobe Systems, Autodesk, Vertex Pharmaceuticals, Illumina, Marriott International, Alexion Pharmaceuticals from USA and Amorepacific from South Korea are good examples (Chauhan et al., 2017a). It brings in a strong proposition on “why do some countries perform better than others and what primary reason towards wealth creation is?” If being innovative and creative is the answer in a world of chaos and complexity, riding the VUCA wave (Chauhan et al., 2017b), foresight (Courtney, 2001; Hiltunen, 2013; Lustig, 2017; Toni et al., 2017) and agility are supposedly also an answer!

The VUCA world requires agility and a vision to sustain. It is the leadership by purpose (Chauhan et al., 2018c) and no more management by objectives. ‘Strategic innovation’ is the answer. These innovations have a perpetual impact on a firm’s survival, which is constantly engaged in fostering entrepreneurship (Bhasin, 2007). Creation of newer technologies like artificial intelligence, robotics, 3D printing, cryptocurrency, internet of things, genomics, etc. followed by rapid innovations will have a strategic advantage over its traditional industries. The scope for innovations will run infinitely for firms seeing their existence in times of uncertainties. ‘Innovativeness’ will thus drive as an intangible asset. The innovative firms will overthrow the industry

structures as game changers, while established players will fade slowly. This is what innovative and entrepreneurial firms like Perrigo (Ireland), Magnit (Russia), Anheuser-Busch InBev (Belgium), Norilsk Nickel (Russia), Inditex (Spain), Luxottica Group (Italy), Falabella (Chile), Cielo (Brazil), Experian (Ireland), etc. have created, as game changers. But each industry vertical, new or old, offers a VUCA challenge, which newer incumbents will have to undergo. What is this VUCA challenge?

## **10 The VUCA challenge**

The proposition of agility and precision is widely accepted globally. The days are gone when the organisations had a monopoly and could run their business without being countered by the competition and its volatility. The changing patterns of the competition require a strategic shift from older to newer practices. Business environment is fast changing and uncertain. The context may change depending upon the size of the organisation and its operative platforms. Markets are fast growing and so is the complexity with the size of the customer base. The buying capacity is also witnessing changing patterns and with it the desires and needs. The gap is being fulfilled by the entry of new products and services to this new customer base and the cycle continues with ambiguity around. As a result, there will be a leap in creation of newer markets, newer firms, newer products and services, etc. It is a high time for the local companies to endeavour in acquiring world class competencies appreciating innovation and staying competitive.

The innovative companies have adopted 'innovation' as the heart to their business strategy in challenging the conventional wisdom and in redefining the new rules for the market challenges. It is a key concern to all the firms to drive newer methods for their acceptance by the emerging rules of market and entrepreneurial orientation (Zhang and Zhang, 2012). In the era of the knowledge world, the customer imperative cannot be ignored. It has been steepened by the internet age, amounting to deeper complexities towards satisfying the needs of the customer. 'Innovate or die' will remain as the mantra for all companies. For many people, innovation is just about changes to existing products or services. This may be of incremental nature while the radical or path-breaking innovation would create newer opportunities. Hermès International (France), Ihs Markit (UK), Unicharm (Japan), Genmab (Denmark), Expedia and Starbucks (USA), SGS (Switzerland), Shimano (Japan), etc. are speeding in this direction. Such innovations will disrupt industries and hence are referred as 'disruptive innovations'.

An organisation engaged in innovations and launching them into the market place does not guarantee streamlined revenues at the same time. It is the orchestrated combination between the creation, selection and delivery of ideas that matters most, while the firms engaged assimilate the opportunities to create new and continuously delivered competitive product(s)/service(s). As the new economy is brought in line to the old, the growing fragmentation by the global economy creates a distinctive environment and the firms have to live in this new paradigm, agility, precision and innovativeness in a VUCA world with dynamic capabilities.

Examining some of the technologies and the countries where they are in use or development, we posit different kind of challenges, as in Tables 3 and 4.

Technology wise, in general, most of them require high computing power, expertise with an advancing regulatory framework. There are issues concerning talent scarcity, retention, funding and developing trust, as it engages high level of technology intervention rather than the more acceptable naturally intelligent human beings. There are complexities associated with seamless connectivity, high data usage and specifically security.

**Table 3** Challenges on technology forefront

<i>Technology</i>	<i>Challenges</i>
Artificial Intelligence (AI)	<ul style="list-style-type: none"> <li>• High computing power required</li> <li>• Scarcity in skills required for AI development</li> <li>• Building trust that technology will prevail</li> <li>• It is not a 'naturally' intelligent 'organism' as human</li> </ul>
Block Chain	<ul style="list-style-type: none"> <li>• Regulatory framework</li> <li>• Unstable business model</li> <li>• Talent scarcity</li> <li>• Opinion difference between supporters and speculators</li> <li>• Funding and running costs</li> <li>• Operational issues</li> </ul>
3D Printing	<ul style="list-style-type: none"> <li>• High level of in-house expertise required</li> <li>• Costly equipment</li> <li>• Cost of material high</li> <li>• Choice of materials is limited</li> <li>• Limitations of technology</li> <li>• Complexity in scaling operations</li> </ul>
Internet of Things (IoT)	<ul style="list-style-type: none"> <li>• A complex web of technology environment</li> <li>• Network framework, sensing and signalling</li> <li>• Seamless connectivity</li> <li>• High data connectivity along with use of power</li> <li>• Security concerns</li> </ul>
Drones	<ul style="list-style-type: none"> <li>• Currently limited endurance and payload capacity</li> <li>• Old way of doing business shall give competition</li> <li>• A futuristic technology yet to find acceptable solutions</li> <li>• Privacy, security and safety issues</li> </ul>

Countries identified in our study where these technologies are in existence and have a future, posit a different kind of challenge. There may be a preference for local products, preference by government over local start-ups, which may be deterrence for entrepreneurs from other economies, to establish their venture in China (Li and Matlay, 2006)). Cinar et al. (2018) brings in various attributes of Chinese entrepreneurs. Highly networked business economies are complex in nature and therefore, detailed study of the environment is desired prior to venturing. Israel has a different set of challenges with real

estate being one followed by rapid exodus of talent to other countries. Singapore has deterrence in terms of high costs of operation and a limited market size, yet they have resilience (Cheng, 2007). Here too natives have a high preference, who have a deeper understanding of the culture (Lynn et al., 2012) and the local markets, over others. USA with a wide demographics and being severely prone to cyber-attacks, has highly demanding customers. The technology absorption capacity and capability being high, offers a wider challenge as a result of increasing demand in rapid change of technology. In India, entrepreneurs undergo a different set of challenges in terms of absence of detailed market research, availability of qualified mentors, attracting qualified and experienced talent etc.

**Table 4** Country wise challenges for a start-up

<i>Country</i>	<i>Challenges</i>
China	<ul style="list-style-type: none"> <li>• Consumers prefer products produced locally</li> <li>• Government too has preference over local firms</li> <li>• Consumers need to think beyond their market</li> <li>• Highly networked businesses, difficult entry</li> </ul>
Israel	<ul style="list-style-type: none"> <li>• Newer talent desires to venture out of the country</li> <li>• Expensive real estate</li> <li>• Geographical challenge</li> </ul>
Singapore	<ul style="list-style-type: none"> <li>• High costs of operation</li> <li>• Limited market size</li> <li>• Natives preferred with deep understanding of market</li> </ul>
USA	<ul style="list-style-type: none"> <li>• High technology absorption capacity and capability</li> <li>• Finding right talent and retaining</li> <li>• Wide demography</li> <li>• Highly demanding consumers</li> <li>• Cyber risks</li> </ul>
India	<ul style="list-style-type: none"> <li>• Absence of detailed market research</li> <li>• Crisis of qualified mentors</li> <li>• Absence of branding</li> <li>• Attract qualified and experienced talent</li> <li>• No scenario planning</li> <li>• Fear of failure</li> <li>• Contextualising and developing a winning team</li> <li>• Lack of execution</li> </ul>

Both scenarios (Wade, 2012), i.e., challenges by technology intensive firms and the country that we have studied, bring in assorted VUCA situations and require a different set of planning. Each enterprise in making and the ones established, as in their different stages of business will undergo critical challenges during their organisational / business life cycle.



## 11 Taxonomy of VUCA in start-ups

Taxonomy relates to the classification as in the scientific purview. With above study in mind we believe that these technology intensive firms in respective countries will undergo the VUCA challenge at each stage. It remains similar to the Indian start-ups in the same space.

**Table 5** Components of VUCA in a start-up

<i>Stages</i>	<i>Components of VUCA</i>
Ideation	<ul style="list-style-type: none"> <li>• Understanding economies, markets and customers</li> <li>• Evaluating industry</li> <li>• Understanding Technology</li> <li>• Market research</li> <li>• Creating the right framework for the enterprise</li> </ul>
Concepting	<ul style="list-style-type: none"> <li>• Capability and capacity augmentation</li> <li>• Scarcity in skills</li> <li>• Opinion difference between supporters and speculators</li> <li>• Team building</li> <li>• Scenario planning</li> </ul>
Executing	<ul style="list-style-type: none"> <li>• Regulatory framework</li> <li>• Identifying the correct market</li> <li>• Finding right consumers</li> <li>• Building Trust</li> <li>• Business model</li> <li>• Overcoming Geographical issues</li> <li>• Cost of operation</li> </ul>
Growth	<ul style="list-style-type: none"> <li>• LeadershipAutonomy</li> <li>• Control</li> <li>• Red tape</li> <li>• ...</li> </ul>

Each one undergoes VUCA conditions related to different stages from ideation, conception, execution and growth respectively, as illustrated in Table 5. Some of these VUCA conditions can be classified under business environment (economy), entrepreneur (the individual), and the enterprise perspective, etc. Under environment these can be further divided into regulatory framework, the markets and customer. For an individual, i.e. the entrepreneur, it is chiefly around the characteristics possessed, such as risk taking propensity, behaviour, etc., culminating to decision making. Within the enterprise are areas like identifying the right product, technology, mapping resources and capabilities, team building, etc., as major issues. The taxonomy can be explored and reconfigured accordingly. Enterprises in their growth stages also undergo different crises, as stated by Bennet and Lemoine (2014).

Thus, we can see how the taxonomy of VUCA increases as we explore the start-up and trace its business life cycle. This reminds us of our objectives, that is, are individuals within these technology based start-ups, classified under different verticals ready to respond to VUCA? The enterprise will have both managers and entrepreneurs within the system. Let us analyse from the study if the entrepreneur stands out from a manager, in the wake of a leadership challenge.

## 12 Outcome of the study

In this context, the following five skills will help the entrepreneur-manager to stand out in the crowd and survive in a VUCA world:

### 1 *Are you a change agent?*

Inmobi brought in the world's most powerful mobile advertising platform. They adopted quickly, but have you? Can you adapt quickly or adjust your attitude in times of change? An article from Harvard Business Review on '21st Century Talent Spotting' clearly describes how people succeed when they have the ability to adapt and grow in complex roles and environments. In the technology space, managing change in a dynamic market is a given that the entrepreneur-manager has to be extremely flexible and open to all the possibilities change brings with it.

### 2 *Do you excel in a matrix environment?*

Flipkart as a change agent working in the matrix environment changed the industry. The orchestration from product development to supply chain to sales and marketing, all tied to the underlying technology connecting to the customer, is vital to business success. These are true for all the functional roles in managing any business. Are you ready in the technology forefront? Being change agent is one thing, but working in a matrix environment is another thing. The biggest nightmare of entrepreneurs oriented towards marketing, especially in the consumer products industry, is generating demand for their products, only to discover they're out of stock. The orchestration from product development to supply chain to sales and marketing, all tied to the underlying technology connecting to the customer, is vital to business success. These are true for all the functional roles in managing any business.

### 3 *Have you had any epic fail experiences?*

Micromax recovered from initial offerings, honestly admitted deviations and recovery in their entrepreneurial journey. How many of us are ready to fail and learn fast?

This one might surprise entrepreneur-managers. Today, the business is full of embarrassing pictures, dangerous stunts, and political disasters. But if you can admit to failing, you are being honest with yourself and probably willing to learn from the experience. Successful entrepreneurs do fail. Someone very interestingly explained 'FAIL' as first attempt in learning. These experiences signal your skills about risk taking. In day to day work the entrepreneur-manager should not avoid risks to play safe and be satisfied with under-performance without having an eye on future.

4 *Are you glocal?*

Yatra's one step mission is to create happy travellers, with a bond of "it is a combination that requires empathy for people from other backgrounds, the ability to listen and an understanding that business is driven from a global perspective but operationally is executed at a local level". What is your readiness in this direction? Not a new term, but glocal is more relevant than ever. People with cultural savvy, quickly grasp the nuances of working in a global environment and excel in global roles. This talent, combined with the ability to execute in a specific market, be it a mature market or one of the exciting emerging markets, is an unmistakable sign of effective role of the entrepreneur-manager. It is a combination that requires empathy for people from other backgrounds, the ability to listen and an understanding that business is driven from a global perspective but operationally is executed at a local level.

5 *Are you a team-oriented entrepreneur?*

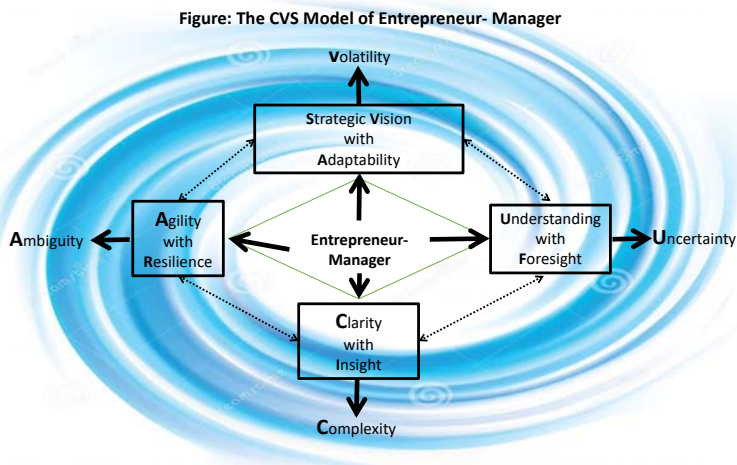
India's largest online food and grocery store, Big Basket inspires many with their team strength. The way to win is through other people. The entrepreneur-manager cannot be successful without the support of his colleagues and team. Have you asked yourself: are you the kind of person others will follow? Do you inspire others to deliver their best? Are you confident enough to surround yourself with people who are different and more talented than yourself? The way to win is through other people. The entrepreneur-manager cannot be successful without the support of his colleagues and team. Someone mentioned that "no one can build an empire alone. It requires a team that is as motivated and committed to business and growth as you are". Maybe more motivated and committed than you.

A VUCA business world of start-ups is unpredictable, but a robust model to respond will definitely help entrepreneurs to be VUCA ready (Joshi et al., 2018) and not too fast or too furious (Joshi and Abidi, 2017). They need to be a VUCA learner (Abidi and Joshi, 2018). We are proposing a 'Centre for VUCA studies (CVS) VUCA response model' for entrepreneur-managers.

Figure 4 is self-explanatory and does not need elaboration. The entrepreneurs must have spirit and courage to follow the above model.

The last objective of the paper is to assess the readiness of Indian start-ups to survive and grow in the VUCA business world. The findings of the above discussed cases (Seawright and Gerring, 2008) and many other cases (Abidi and Joshi, 2015) clearly bring out inadequacy of the Indian start-ups to navigate VUCA conditions of newly started entrepreneurial ventures. In this context the above discussed CVS model of entrepreneur-managers should help entrepreneurs and other managers responsible to scale-up start-ups.

A lot needs to be initiated by these start-ups in order to be in the entrepreneurship space of future and create an anticipatory organisation (Burrus, 2017) as trends in global entrepreneurship (Devinney et al., 2016) are evolving. Thus, we cemented our previous research contributions and for future study on the same theme we propose a 'centre for VUCA studies (CVS) VUCA response model' for entrepreneur-managers.

**Figure 4** The CVS model of entrepreneur-manager (see online version for colours)

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