Team 2 "Frequent Flyers"

Where does *Innovation* come from?

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I. Introduction

Innovation can be seen as the process that renews something that exists and not, as is commonly assumed, the introduction of something new.

*"History should be our guide. The United States led the world's economies in the 20th century because we led the world in innovation. Today, the competition is keener; the challenge is tougher; and that is why innovation is more important than ever. It is the key to good, new jobs for the 21st century. That's how we will ensure a high quality of life for this generation and future generations. With these investments, we're planting the seeds of progress for our country, and good-paying, private-sector jobs for the American people." — **President Barack Obama, August 2009**

Innovation being so important for human as well as world development must be studied from its origin, right up to its demise. But, where is its origin? How can we answer this question? Or even better, where is the best place for innovation to originate?

In this report we have tried to simplify and answer this question. Innovation is no doubt created inside the human mind, it's the birth of an idea that triggers a revolution. It is entangled with phenomena such as "Team Work", "Entrepreneurship (Individual Work)", and "Mass Collaborations". We have tried to study and represent the pro's and con's of each aspect with individual, Team and Social perspectives interspersed with examples of innovation that set benchmarks for Global Businesses and New Product Markets.

II. Current State of Research

This area can be best surmised in the legendary best-seller of Hippel (1988) "The sources of Innovation". The author in this book describes that end-user innovation is the most important and critical innovation source. He implies that the user is the source of demands and hence the trigger for innovation. The IT population is not alien to "open-source" innovation and customer required/demanded innovation, but sometimes "Users" become innovators, and in turn result in becoming Entrepreneurs of the new world. This leads again to the Innovator either using "team" or "individual" approach for his goal accomplishment. Similar to this approach, its applications in existing organizations has been studied recently and published as a book titled "The Innovation Equation – Building Creativity & Risk Taking in your Organization", by Byrd and Brown (2003). A framework around this has been proposed by Soumodip et al., in 2007 suggesting Innovation architecture, Market Archetypes and Outcomes pertaining to innovation models (Sarkar, 2007).

III. Examples of Innovation

3.1. Individual Work towards successful Innovation: Facebook

It is difficult to determine where the innovation comes from. After conducting several researches, we discovered numerous success stories behind individual work towards innovation as well as group work towards innovation. Individual work towards successful innovation can be best exemplified through the social network Facebook, created by Mark Zuckerberg. He created this innovation all by himself in his Harvard dorm room. His primary motive behind this creation was to have a better social connection between his friends and other class mates.

Even though Mark Zuckerberg's first intension was to stay connected with his classmates, within few months of creation, Facebook got really popular among the student of his school. This then expanded among other students in other universities and colleges. Within two years of its invention, he was able to raise $37.7 million from venture capitalists and transformed his modest web site into a certified social phenomenon, and it had 7 million users, especially college students across the world.

Zuckerberg wanted to capture not only the college students but also the high school students who were primary using MySpace as primary social communication method. However his attempt was failed. He then attempted to create Facebook as powerful as Google, where millions of people would visit. He also started to fail at this attempt. During this time period, Yahoo wanted to purchase Facebook from Zuckerberg and offered him $1 billion for the social network. Even though Zuckerberg agreed to sell his network at first, he changed his mind and wanted Facebook stand as an independent company.

In 2007, he has transformed Facebook from second-tier to full-fledge platform that access the entire internet. This helped Facebook to attract millions and millions more users across the globe. More importantly, it attracted not only the college students the segment of users who are over 35 years old. By 2007, it also increased the company value from $1 billion to $5 billion.

Therefore, we find his great effort of creating Facebook and bring it to one of the leading Fortune 500companies in the world is a great innovation as an individual person.

3.2. Teamwork towards successful Innovation: Apple

April Fools' Day of 1976, one of the world most innovative companies, Apple was founded by two Steves: Jobs and Wozniak (Sarkar, 2007). Their success story is famous for not only their i-products but harmonious teamwork of two completely different geniuses. Steve Wozniak, ever since he was little, is shown exceptional talents in science especially in electronic engineering. He has an IQ of 200 and interested in turning impossibility into a possibility. Nevertheless, he is introvert and never wants to receive attention (Wozniak and Smith, 2007). On the other hand, Steve Jobs was absorbed in mysticism and once a believer of Zen Buddhism in early childhood. He has worked in ATARI but actually has a superficial knowledge of electronic engineering or computer science. Rather, he is an extrovert and has remarkable ways of persuading people. The only thing they have in common is they do not hesitate to challenge.

Some people say that Jobs takes advantage of Wozniak. However, on the other hand, without Jobs' business sense, Wozniak might not have become famous. Even though Wozniak is an ingenious engineer, he could not have got a chance to give full play to his talent, if Jobs' intuition for the future had not recognized him. In fact, until Apple was founded, Wozniak had been dissatisfied with his work at HP because of being excluded several projects. This fact shows that it is just too much to say that Jobs exploited Wozniak. Rather they were complementary to each other. In respect that successful business requires inventor (make good goods) as well as innovator (make good goods looks better), their teamwork was one of the best examples of cooperation.

3.3. Mass collaboration towards successful Innovation: Wikipedia

Wikipedia defines sass collaboration as a form of collective action that occurs when large numbers of people work independently on a single project, often modular in its nature. Such projects typically take place on the internet using social software and computer-supported collaboration tools such as wiki technologies, which provide a potentially infinite hyper-textual substrate within which the collaboration may be situated (Mass collaboration, 2010).

Then again, Wikipedia is one of the largest examples of mass collaboration we have. Borne from the internet and social media revolution, Wikipedia has amassed the largest single source of information on the planet. Wikipedia has done this by providing a platform and structure for user generated content to be created and verified. Using this platform they have collected the information in rapid time with a small staff. This is in itself an enormous feat.

A key aspect which distinguishes mass collaboration from other forms of large-scale collaboration, is that the collaborative process is mediated by the content being created - as opposed to being mediated by direct social interaction as in other forms of collaboration. This has shaken traditional business and educational models. It is changing the way we live with platforms such as twitter, Facebook and LinkedIn.

In their book Wikinomics, Don Tapscott and Anthony D Williams list four powerful new ideas that the new art and science of Wikinomics is based on, being open, peering, sharing, acting globally (Tapscott

and Williams, 2010). As we enter this new era I'm not sure we know what to expect how this will change the way we work in the future and the unforeseen consequences of these ideas.

IV. Advantages and Disadvantages of each scenario

4.1. Individual work

The greatest advantage of individual work is that innovator has his/her own freedom to act or work as they prefer. Freedom to work on its own way according to their own schedule without any influence from supervisors or from external people can lead innovators to come up with great ideas. Take their own time, find the right location, and manage their own works makes them feel less stressful and give them more and more opportunity to focus on their innovations. Also, if the innovator creates a successful valuable final product, he/she will entitle to the whole profit. However if this was a group effort, the profit will be distributed among its members.

However, work related problems can create psychological stress among the innovators. Generating creative excellent ideas can always be affected by the work related problems, dissatisfaction and discontinuity which workers have to deal with at work every day. Then these problems can cause psychological stressors that make a raised state of arousal in a worker. This will eventually make the workers adapt to the situation and will make them think according to the problems they have. Besides, leads to more conflicts inside the company. Innovative workers are more likely to take the risk of changing the company strategies, goals, tasks, methods that some people in the company want to prevent. These conflicts can leads to frustration, aggression, and hostility that make the innovator to have less positive feelings about the co-workers and supervisors. Lastly, there exists a risk of low accuracy. Individual working as a innovator sometimes can bring the risk of low accuracy. Since the innovator is not sharing or evaluating his/her ideas with any other people what they believe to be perfect often can be a poor invention.

4.2. Teamwork

Most of all, advantage of teamwork is that there exists a wide range of skill sets. As the volume of knowledge grows over time, innovation requires a depth & breadth of knowledge which is impossible for single individual to attain. Especially in the business world, invention usually comes from science & engineering knowledge. However, without being guided by marketing & finance expertise, it would fail to become innovation. In this sense, mutual cooperation in the team provides not only complement work merits but reduced work load. Also, creative ideas are stimulated in cross-functional structure since unconventional thinking can be freely generated while the various experienced people are working at the same place with their own interest. This allows team workers to teach and learn each other spontaneously thereby leading them fuller understanding of their shared goal.

However, there also exist disadvantages of teamwork. First of all, teamwork makes it likely to burn out enthusiasm of originators. Most historical innovation cases show that it is important to nurture the seed of creative idea in order to make it innovative services or products. In the team, however, it's hard to solidify these creative ideas because a sharp creativity from an originator tends to be generalized by various opinions from team workers. Sometimes, this causes unnecessary conflicts and forbid of its implementation. Besides, teamwork often brings about lagging progress of the work. Given that many people participating the work, they first need to understand the work thereby requiring additional time to share information. Also, not to waste time from interpersonal cooperation, it demands 'work for teamwork' such as scheduling, resource allocating, etc.

4.3. Mass collaboration

Mass Collaboration results in the sharing of large amounts of information. The presence of a large online population makes a high degree of connections possible, this gives birth to a high-volume team, which also lowers the barrier of sharing new ideas and encourages mass gatherings, due to the ease generated from millions of connections.

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Mass collaboration, which brings in the "size" advantages, can also generate bottlenecks and problems from that vey virtue. The large can make the sheer amount of information overloading the system. The huge volume of ideas can easily make the team lose their primary focus, and unfiltered ideas can lead to questionable credibility as well as misinformation to sift through. Non-peer, and 3rd Party verified or SME reviewed information, can lead to "truthiness" and "group think"

V. How do you create a culture for innovation?

5.1. How does a company create a culture for innovation?

The challenge is how to draw the creative potential of people in an organization and create the way for finding and solving problems. For building a culture of innovation: the key is to have local autonomy. To build a culture of innovation, there are six essential roles as stated below (May, 2010).

1. Team needs to work in the general territory of something you feel needs attention—something of concern or that clearly advances a current business objective.
2. Team's idea must concern something within your base of responsibility, power and control something you can sanction immediately without further approval.
3. Team is supposed to develop a low-cost solution that can be piloted quickly.
4. Team should work on a problem that they all can touch and have working knowledge of.
5. Team's project must have resulted in a clear value enhancement: quality, cost, speed, etc.
6. Team's project should have an experiment, and nothing gets broad execution until the learning is captured and there's a compelling case for feeding it forward.

5.2. How does an individual set a culture for innovation?

Step one is understanding that innovation is everyone's job, and also starts with understanding that building a team of cross-functional ideas is like building any other high-performing team. As you have your vision, know that a culture of innovation requires a challenging atmosphere (Building a culture of innovation, 2009). It starts with developing your organizational mission. To build a culture of innovation, there are three essential roles as below.

1. Individual person should look for the bright side in order to develop the new idea and add value to innovation efforts.
2. Individual person should build or support the innovation by helping creative people overcome the difficult task that retards their innovation efforts.
3. Individual person needs to define the company's expectation and rules for the best innovation.

VI. Is Innovation planned or unplanned?

There has been substantial controversy on whether innovation is planned or unplanned. Both sides have attracted arguments supporting them, as well as arguments discrediting them. A careful examination of real life examples of how organizations come up with innovations reveals that innovations are both planned and unplanned. This is the case despite the fact that planned innovations occur more often than unplanned innovations. Both innovations have advantages and disadvantages that complement each other due to the differences in their origin.

6.1. Unplanned innovation

Unplanned innovations are innovations in which an organization discovers a new way of doing things in the course of its day-to-day activities. These innovations are not as common as the planned innovations because they are accidental per se. In most cases, they are discovered by a clever individual within an organization, who comes across or thinks of a new way of solving the problems of the organization. Although these innovations build upon existing knowledge, they have substantial originality and thus they

qualify the organization for acquisition of copyrights. In some cases, the individual who comes up with these innovations is not even part of the organization (McNamara, 2010). The individual may be a professional who has a passion for problem solving. After identifying a problem common with organizations, the individual may approach the organizations concerned and present his solutions.

The greatest advantage of unplanned innovations is that they are substantially cheaper than their planned counterpart. This is especially the case if the person who comes up with the innovation is a member of the organizations' staff. If the innovation is from an outsider, the process is also cheaper since it involves a single individual who can easily be recruited into the organization, or persuaded to sell the idea to the organization. Another advantage comes from the fact that unplanned innovations are more or less instantaneous. This is to mean that the innovations are not planned in advance and thus they do not take much of the organization's time. Their implementation is thus time saving, and they do not have the risks associated with planned innovations. Additionally, unplanned innovations tend to be more successful than planned innovations since, for them to be adopted, their usefulness to the organization must be established. In other cases, the unplanned innovations actually lead to planned innovations since after an individual comes up with an idea, the organization may desire to perform systematic checks of the relevance of the innovation and even repeat most of the steps of innovation carried out during planned innovation.

Unplanned innovations may prove to be disadvantageous to an organization in that it may lack the holistic coverage of issues of the organization. This is because an unplanned innovation is mostly the creation of an individual and thus the individual may overlook important aspects of the organization. This shortfall is minimized by customizing an innovation after its discovery in order to make it conform to the needs and circumstances of a particular organization. Another disadvantage is that unplanned innovations may be adopted inappropriately in cases where an organization adopts an innovation just because the innovation is available. This problem comes about because, as stated above, most unplanned innovations are instantaneous and thus an individual may come up with an innovation in an area that does not require change within the organization (Knowles, 2002). In such a case, the organization may face a reduction in its productive potential due to implementation of a new mediocre innovation.

6.2. Planned innovation

This is the most common form of innovation. In this type of innovation, organizations identify the need to have a strategic change in their operations and plan on how to come up with an innovation that will satisfy the need. Thus the innovation is participatory and it makes it easy for the organization to come up with an innovation that touches all aspects of the organization. In most cases, such an innovation is necessitated by competition from other organizations, and the organization may even be required to make use of prevailing ideas on how to offer services or make certain goods. In most cases, the innovation is planned and developed by the staff in the organization, but in other cases, the organization may opt to hire a consultant to come up with the problem-solving innovation (Rao, 2010). In both cases, the development of the innovation is consultative and thus it makes use of inputs from all stakeholders.

Planned innovations are advantageous because they are developed as a response to a need in the organization. Therefore, almost all the planned innovations developed are utilized and have positive results. The positive results are even enhanced by the fact that, unlike unplanned innovations, planned innovations are focused and they have a holistic impact in the organization. Another advantage is the fact that it is likely to increase the competitiveness of the organization than its unplanned counterpart. This is because planned innovations take into consideration the shortfalls the organization is experiencing and thus the innovation takes care of those shortfalls in the best way it can. For instance, if a company realizes that its rival is offering certain services that are making customers prefer the goods/services of the rival, the company can come up with a strategic innovation of providing other related services in order to gain a competitive edge (Anderson, 1992). Therefore, planned innovations are more likely to increase the competitiveness of the organization than unplanned innovations.

The greatest disadvantage of planned innovations is, perhaps, the high costs that are involved in developing them. For instance, if an organization decides to use its employees in the development of the

innovation, the organization will spend money in wages, allowances, and also lose a considerable amount of time doing consultations. On the other hand, if an organization decides to hire a consultant, substantial amount of time will be spent while making consultations and the consultancy fee will also be high. Another disadvantage is the fact that planned innovations may not come out as planned, and thus the efforts in developing a particular innovation may go down the drain.

VII. Conclusion

Innovation is a seed of an idea that takes root in a human brain; every innovative idea has its own dynamics and constraints, thereby developing its own route towards fruition. The route might be "Team Work", "Individual Work", or might end up being a combination of both the cases, which is the case in most of the incidents.

The previous decade as well as this decade we have seen and will be seeing a "Tsunami" of social networks and allied web applications. These social networks have triggered a revolution for new requirements, thereby resulting in research and development of new applications and ideas, which can be looked at as a Mass Collaborative source of Innovation.

Keeping in mind the disparities, cultural differences and constraints throughout the globe and the economic world, it is not only impossible to pinpoint the best location for the birth of Innovation, but would seem unpragmatic. Hence, we may be able to say that the best source of Innovation is the Human nature to change and move forward in the hope of making the planet a better place to live.

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