

A Profile of GE's Management Practices Which Contribute to a Culture for Innovation

Corporate
Innovation
Online
Ideas. Self-help and News

Table of Contents

- **Objective and Methodology.**
- **Executive Summary of Results.**
- **Background to GE's Culture.**
- **GE's management practices, organized according to 25 Factors, which support or detract from a corporate culture of innovation.**

‘An innovative climate is not just a sentimental need. It has powerful business implications and can bring real results. There’s a reason why companies like Google and Apple have such a breathtaking record of rapid innovation; you need to look no further than their climate. A climate of innovation ensures that you’ll have the inherent ability to not just innovate with an occasional flash of brilliance, but to do so continuously. That’s an extremely important strategic advantage to have in a fast-moving marketplace that’s overcrowded with competitors’.¹

¹ FutureLinkLLC. See; www.getfuturelink.com

A Profile of GE's Management Practices Which Contribute to a Culture for Innovation

Objective and Methodology

The objective of this review is to identify which of the historic and current management practices employed by GE support, or detract from, a culture for innovation and which of these practices are similar or different when compared to those of other innovative companies. The overall purpose of this and other Profiles is to contribute to a better understanding of the reasons why some companies are innovative and others are not.

The following review is based on an examination of several publically-available sources. Attribution is provided by the addition of footnotes.

- Jeff Immelt and The New GE Way, David Magee – author, published by McGraw Hill,
- 2008 GE Annual Report,
- Breakthroughs!; a book published by Rawson Associates, and based on an international study of innovation by Arthur D. Little, Inc.,
- The Fifth Discipline, Peter M. Senge, published by Currency Doubleday,
- Innovate Like Edison, Michael J. Gelb and Sarah Miller Caldicott, published by the Penguin Group,
- Game-Changer, A.G. Lafely, Ram Charan, published by Crown Business.
- Tesla Museum, Belgrade, Serbia.

The anecdotal information drawn from these sources has been structured according to 25 Factors. The Factors, which are based on earlier research into the management practices of innovative companies, have been identified as being highly significant to having a culture which supports innovation.

Background information can be referenced at the following web site:

<http://www.corporateinnovationonline.com>

Executive Summary of Results

Founded 130 years ago, in 1889, and consolidated into the General Electric Company in 1892, GE has a well established reputation as an outstandingly innovative company. GE's culture for innovation has evolved over the full history of the firm. Thomas Edison, who founded the firm, introduced management practices which fostered a culture for innovation. While, by most measures, GE's innovative performance has experienced both good and difficult periods, influenced by each successive leader, there is no doubt that the company has a solid reputation for innovation.

Over the most recent three decades, GE has experienced 2 leadership regimes; Jack Welch, from 1981 to 2001 and since 2001, Jeff Immelt. By all accounts GE's culture for innovation is currently undergoing a reshaping. Immelt appears to be taking steps to swing the emphasis back somewhat towards 'traditional' innovation – i.e. with the emphasis on new ideas and not so much on the achievement of short-term financial results. It remains to be seen what impact recent changes will have on the culture for innovation, innovative results, and financial performance over the medium and longer term.

GE's performance according to the 25 Factors which make up this Profile.

There is a positive correlation, i.e. GE practices fit well, with 19 of the 25 Factors deemed to describe a culture which supports (or detracts from) innovation. GE's management practices are similar to other innovative companies which have been profiled using the same 25 Factors.

There is, however, little if any correlation with the practices of other innovative companies for the following 6 Factors.

- **Factor #3; Tolerance of mavericks.**
There is little reference to the role of mavericks per se in the innovative process. This is in contrast to a number of other innovative companies where it is often stated that mavericks play a key role in the innovative process. Innovative companies often make special mention of the role of mavericks.
- **Factor #7; Use of career ladders and recognition of innovators and Factor #14; Availability of reward mechanisms for innovation.**
While other innovative companies have a number of monetary and non-monetary (awards, honors, etc.) rewards dedicated to innovators, this does not seem to be the case in GE. Companies such as 3M and John Deere single out innovators for recognition and rewards.
- **Factor #17; Management expectations regarding loyalty to the company versus personal development.**
While Edison seemed to take a personal interest, at least in his closest circle of collaborators, and other companies such as Google and 3M have enunciated a position on the use of 'personal time', GE's does not have an articulated policy on this issue.
- **Factor #21; Ability of retain innovators.**
There is little or no anecdotal evidence to understand whether innovators stay with or leave GE. This is not surprising since the retention of innovators is difficult to measure and would not, in most cases, be available through public sources. Typically though, those in the company have a sense that people who are identified as innovators either stay or leave.
- **Factor #25; Degree to which employee organizations encourage innovation.**
There is no anecdotal evidence to allow the author to understand the role of employee organizations within GE.

Should more information become available (and contributions through the web-site blog are encouraged), this could add to or subtract from this correlation.

With the objective of making the company even more innovative, GE's new leadership (since 2001) has made the following key decisions which impact the culture for innovation.

- Made a very significant make-over and investment in the Global Research centre and in new research locations globally.
- Committed to organic growth and less emphasis on growth by acquisition.
- Turned the culture from a 'push people' to a 'coax'-out-of people value.
- Lowered market (Wall Street) expectations meeting quarter-on-quarter revenue and profit goals.
- Emphasized organizational arrangements that result in cross-fertilization of ideas.

GE, while a different company today than it was under Welch, is a company which continues to highly value its innovative culture; i.e. being at the forefront of innovations where it serves its strategic business interests.

Background to GE's Culture

Why is it important to understand innovation in a company the size and scope of GE? In Peter M. Senge's book, *The Fifth Discipline*, he points out that² one of the distinguishing differences between the public and the private sector is that the latter, 'is the locus of innovation in an open society'. GE, being of the size that it is, represents a major source of new ideas and products globally and has done so for well over a century. We therefore need to understand how this powerful and influential company achieves, or attempts to achieve, its innovation goals³.

GE's overall organization and divisional structure needs careful examination in order that one can better understand innovativeness and the effect that management practices have on the culture for innovation. With a company this scope of GE, and given the size of the individual divisions, there may in be more than one innovative culture in place. Note the difference in thinking between those in the financial industry where the horizon is usually less than a year, and financial rewards mirror this time frame, and the industrial sector where returns from new products or new business models are realized only after several years of effort. Short-term versus long-term thinking, and the type of reward systems, are two Factors which can influence the culture of an organization. Management practices need to reflect the reality of the business sector,

While the new book, *The New GE Way*, focuses on the changes which Immelt has introduced since he took office in 2001, it is very instructive to compare this recent period with the two decade's under Jack Welch's leadership. While the economic times have only recently changed (since mid 2007) and have required unexpected responses, many issues addressed by Immelt are the same as would have been addressed by Welch during his tenure. How each has handled the common issues is an indication of the culture within GE.

While leaders are the makers and the contributors to any company's culture, culture is something akin to a large ocean liner, often taking a long time to turn or change its speed. Culture, since it is well rooted in the whole corporate structure and its people, does not change direction quickly. One should therefore not expect rapid change in the culture of an organization comprising 300,000 people. But there have been changes.

GE's culture, back in the late 1880's, according to Magee⁴, was to hire the best, promote from within, train them well, and build on an existing foundation. Magee describes the culture in GE⁵ as follows; 'can be described as having similarities of a church: the minister may change, bringing different initiatives and leadership styles, but the congregation sticks to the same ingrained, foundational guiding principles'.

Welch's style of innovation was that of transforming a company - GE - through the acquisition (or sale) of divisions. Typically, an acquisition was followed by the application of a very short – at best medium-term – approach to extracting profit from each new acquisition. His style⁶ is well articulated by Magee;

- Sell old-line businesses.

² *The Fifth Discipline*, p 15.

³ As an aside to his book, Senge also notes the difference in the terms used; "invented" - when it works in the laboratory, an "innovation" when it can be practically replicated and if it is sufficiently important it becomes known as "basic innovation" and a new industry is created or an industry is transformed dramatically. His reason for so stating is to make the point that 'learning organizations' have been invented but 'have yet to be innovated'. So it is with regard to understanding why some companies are innovative and others are not. One-offs are often found but hard to replicate. By parsing successful organizations, such as evidenced in this and other Profiles, it is hoped that replication may be encouraged.

⁴ *The New GE Way*, p. 14.

⁵ *The New GE Way*, p. 31.

⁶ *The New GE Way*, p. 13.

- Acquire number one and two businesses in segment or businesses which strengthen GE's number one or two businesses in the segment.
- Cut costs and jobs.
- Eliminate bureaucracy.
- Cultivate bottom-up employee initiative.
- Push management hard from the top down to outperform expectations.

Innovation yes, but not in the usual sense of the word as it relates to experimentation, R&D, idea generation, investment, risk taking, and a culture which fosters innovativeness above many other values.

Immelt's style is apparently different. Immelt's approach to fostering innovation is, as the first step, to 'prepare the organization to innovate'⁷ or in so many words, creating a 'culture' where innovation can take place. Only after this is done can one 'pick the right places to innovate and make them pay. Having a growth culture, according to Immelt, means that 'you have to have a way of nurturing people and not make them fight so goddamn hard'⁸. The style seems consistent with the need to encourage organic growth and was perhaps less important when the emphasis was on growth by acquisition. Contrast the styles of Welch and Immelt; Welch 'pushed managers, sometimes lashing verbally', Immelt 'typically coaches and coaxes managers'⁹.

Can one describe the culture of GE? Magee notes¹⁰ 'When discussing the culture of a company with long-held internal convictions and traditions like GE, the concept can come off as esoteric. What exactly is this cryptic notion that one company of more than 300,000 employees actually possesses such invisible and tangible qualities as being a learning culture or an innovation engine?'. 'Mention GE's culture to long-time company employees, however, and they'll nod in agreement, as if everyone knows what the other is talking about'. They 'know the dynamics of the company's culture because they have lived it' and 'they are taught it through reinforced training throughout their careers'. Osmosis is at work!

Apparently the company believes so strongly in their culture that the 'promote-from-within' is a means of ensuring that the culture is carried forward from one generation of leadership to the next; that one who has 'lived it' is better able to sustain 'it'. 'Shared knowledge gained along the way made them far more valuable to the company than the hiring of someone without that advantage'¹¹. Learning is the force that drives the culture¹².

Immelt learned the culture from osmosis¹³ and can articulate his version in 'three things';

- Integrity,
- Performance,
- Change.

It is, according to Immelt, these three 'things' that are the foundation of the culture of GE and while other things may change, these values do not. 'Constant reinvention' according to Immelt is one of the cultural values of GE¹⁴.

Which of GE's management practices contribute to the company's innovativeness? Are there some management practices which can be improved? How does GE's practices compare with other innovative companies. In this Profile, it is our intention to explore and elaborate on cultural aspects of GE as they relate to innovativeness.

⁷ The New GE Way, p. 108.

⁸ The New GE Way, p.137.

⁹ The New GE Way, p. 135.

¹⁰ The New GE Way, p.133.

¹¹ The New GE Way, p. 167.

¹² The New GE Way, p. 169.

¹³ The New GE Way, p. 134.

¹⁴ The New GE Way. P. 147.

GE's management practices, organized according to 25 Factors which support or detract from a corporate culture of innovation.



Factor #1: Emphasis on short-term versus long-term profits.

Summary

GE has been around since 1889 (technically 1892) which, in most respects, is evidence that its leadership has, over the years, taken a longer-term view and has not been unduly focused on the need for short-term (quarterly) profit gains. Under Jack Welch however, with his emphasis on growth through acquisition and the application of 'the GE way' to newly-acquired companies, the emphasis shifted to the encouragement of short-term market-demanded profits. The new regime, under Immelt, has switched course and is reemphasizing a more balanced view of profits; with less emphasis on the need for quarter-to-quarter betterment.

Edison¹⁵, according to the authors, states that his view was that 'success is a function of perseverance, a perseverance driven by aligning passions with long-term goals. In the early days of GE, Immelt says that GE was viewed by investors almost solely for the longer term with innovation as the driving factor¹⁶.

GE is described as a growth- and bottom-line focused company but at the same time reference is made to the balance with the creative side of the business¹⁷. One example relates to decisions taken in the Energy side of the business. Quarterly results drove Welch during his time and there was little room for investments which represented dubious short-term prospects¹⁸. Shareholder expectations were to be met; no question. Because of the vagueness attached to future profits, entry into the wind business was delayed in spite of much effort on the part of some executives to make it happen. The attitude was to let others do the money-losing experimentation¹⁹ and to follow in later if the business panned out. This strategy was consistent with Welch's practice over the 20-year period, namely to make acquisitions but not seek internal organic growth.

Immelt is more patient than Jack Welch and 'is looking for the breakthrough and (they) will be rewarded according to one employee²⁰.

Immelt received significant criticism from analysts when, in 2008, GE missed and did not recognize a single quarterly earnings miss²¹. Welch at the time was highly critical of Immelt's action. Such a reaction puts in focus a key issue facing GE at all times; how to balance off the short-term interests of the stock market (which under Welch was a central theme of his management style) with the longer-term interests of GE as it takes initiatives which obviously have a multi-year planning horizon. When Immelt took over GE in 2001, 'GE's culture was well established, with both a short-term and long-term focus²² in spite of Wall Street's analyst preoccupation with quarterly results.

¹⁵ Innovate Like Edison, p49.

¹⁶ The New GE Way, p. 69.

¹⁷ The New GE Way, p. 49.

¹⁸ The New GE Way, p. 50.

¹⁹ The New GE Way, p. 51.

²⁰ The New GE Way, p.105.

²¹ The New GE Way, p. 4.

²² The New GE Way, p. 67.

Factor #2: Extent to which management explicitly looks for innovation.

Summary

GE has, over its history, always stressed the need for innovation but the degree of emphasis has varied, particularly in the last 30 years. Immelt is looking for 'breakthrough' innovation in its strategic sectors as a priority whereas Welch was much more focused on the need for financial results than growth through innovation.

Edison 'was the original master of the rigorous, disciplined innovation process, but he also was a wizard when it came to promoting and maintaining a culture of innovation'²³.

It is interesting to contrast the management style of the two leaders; Welch and Immelt. For Welch, one of the reasons for investing heavily in Crotonville, was that he could have well-trained employees so that he could push them to do better²⁴ thus sparking more innovation. For Immelt, the reason for Crotonville seems to be more related to having good people whom you can coax, or having first created an innovative climate, are able to reap the benefits from their own initiative; 'a lot of what we do has to be about the future'.

Immelt's move to emphasize ideas, which are focused on longer-term growth objectives, along with the need to achieve quarterly results, may have upped the ante on pressure in the organization²⁵. Most business people would agree that, on a relative scale, it is easier to cut costs or improve margins than it is to be consistently successfully innovative.

GE's culture broke to the surface when Immelt rolled out his plan for investment in clean technology and reduction of greenhouse gas emissions; the reaction, on the part of his senior executive team, was that 'it was flimsy and soft, more vague than tangible and thus against the corporation's culture'²⁶. Despite the negativity, Immelt proceeded with the 'ecomagination' initiative. To quote Immelt; the 'team that knows when to lead, and they also know when to follow, and that's a real trick'²⁷. In this case the leadership was clearly due to Immelt and not others – until after. This further demonstrates the emphasis which the leader places on innovation and change.

GE is attempting to establish an educational system within GE which inspires creative thinking and gives GE the 'ability to innovate must be valued again'²⁸, a clear indication that the direction of the firm, pre Immelt, did not sufficiently support the notion of innovation as defined by current management. GE goes on to state that the company is 'first and foremost, a technology company' and that the company will 'continue to invest increasing amounts in R&D to develop innovative solutions'.

²³ Innovate Like Edison, p. 11.

²⁴ The New GE Way, p. 79.

²⁵ The New GE Way, p.91.

²⁶ The New GE Way, p.115.

²⁷ The New GE Way, p. 117.

²⁸ 2008 Annual Report.

Factor #3: Tolerance of mavericks.**Summary**

GE does not make reference to the role of mavericks in its organization per se, which is in some contrast to the many references one can find when studying the history of other innovative companies such as 3M and Google.

Welch ‘built a company over two decades run by leaders cultivated as revolutionaries, able to wake up the organization... and that the ‘evolutionary process would continue under Immelt²⁹ yet GE was in need of a make over. It is generally acknowledged that the business model at the time was in dire need of retooling and in handing over the mantle to Immelt, Welch said “Blow it up”³⁰. Sounds like the terms which a ‘maverick’ would use but other than this there is little to suggest that GE places any emphasis on mavericks per se.

While constant change is apparently embedded as a tenant of culture of GE, why, if change is constant, did the model need to be dispensed with so aggressively? What had happened to the culture for innovation during the Welch’s two decades?

Factor #4: Degree to which planning emphasizes rationing of resources versus identifying opportunities.**Summary**

GE has, under the new regime, placed significant emphasis on the need to work on identifying and developing ideas and opportunities.

Edison³¹ ‘was always optimistically looking for opportunities and seeing the possibilities of new directions for improvements’.

GE’s Immelt, while significantly raising investment in R&D has now switched (some might say too much) the pressure point in the organization from an emphasis on quarterly results to an expectation that spending on R&D will generate good solid business ideas. His program, for example, ‘forces³² leadership to deliver three idea proposals each year and deliver these to ‘a high-ranking employee gathering which fosters innovation internally’. The idea is to encourage the growth of proposals which would not survive an annual review per se and to keep the good ones going until they can enter a more normal review cycle. This results in a culture where ‘people are passionate about their ideas for growth’³³.

Immelt is ‘pushing us to examine our investments in R&D to make sure we have enough’ according to John Rice³⁴ - a clear indication of an emphasis on identifying opportunities and not rationing resources.

Immelt makes a point to commit time to innovation. He ensures that he attends a monthly “Commercial Council” meeting with sales and marketing executives. They discuss growth strategies, brainstorm ways to reach new customers, and evaluate bold ideas that the company calls “Imagination Breakthroughs.”³⁵.

GE’s recent (May 12, 2009) announcement that it will invest upwards of \$100 million to build a new factory in upstate New York that will make sodium-based (in contrast to lithium-ion type batteries which are probably less risky technologically) is an indication that GE has, and will invest in new opportunities with a full understanding of the risk profile.

²⁹ The New GE Way, p. 67.

³⁰ The New GE Way, p. 148.

³¹ Innovate Like Edison, p 54.

³² The New GE Way, p.88.

³³ The New GE Way. P.89.

³⁴ The New GE Way,p.106.

³⁵ FurtureLinkLLC. See: www.get.futurelink.com

Factor #5: Tolerance for failure.

Summary

For GE, failure needs to be defined. Missing ones stated, and agreed-upon financial goals, is regarded as a failure and the consequences are significant. Over its history, however, the notion of failure has been looked upon more as a learning experience.

For Edison³⁶ ‘there was no such thing as failure. He viewed all outcomes as fascinating opportunities for learning’. Churchill’s comment that ‘Success is going from failure to failure without loss of enthusiasm’³⁷ represents an equally optimistic view of the meaning of failure.

Under Welch, if you missed your numbers³⁸, for whatever reason, you could expect criticism to be leveled in spades and this was often provided in front of your peer group of senior executives. Did this engender fear? What about tolerance for failure? This style of management speaks to the culture during the two decades preceding Immelt. GE’s results-oriented culture³⁹ meant that a miss brought consequences.

Failure in achieving financial results, where one said that they would be achieved and committed to specific goals, has been little tolerated, under both Welch and Immelt. ‘doing what you say you are going to do, there’s just nothing that replaces that, and we don’t apologize for that. We are a tough-minded, performance-oriented company’⁴⁰.

The performance culture implies that employees take failure, in the sense of not fulfilling expectations, hard⁴¹.

Immelt has carried forth the tradition of Jack Welch when he adopted Welch’s philosophy of ‘Embrace Fear, don’t fear it’⁴².

Factor #6: Emphasis on management of people and their interactions.

Summary

In a company the size of GE, it is widely recognized that special measures are needed to encourage the broadest and deepest interactions amongst people. Accordingly, whether under Welch or Immelt, enabling mechanisms have been initiated and are broadly supported.

GE’s leadership training centre at Crotonville, with its emphasis on cross-company⁴³ and cross-functional training is an excellent example of encouraging, facilitating if you like, the interaction of people. The cross-x message is not lost on employees who, in their career, will have several opportunities to attend Crotonville. This emphasis is stated as being indicative of GE’s culture. Since it is so fundamental to the culture, and while it would be tempting to reduce the cost of this facility in tough economic times, this has not been done.

Magee describes GE’s culture as ‘the strength of its beating heart, found at the company’s leadership training centre in Crotonville, New York⁴⁴. The centre ‘brings employees of all disciplines to one place so together they can find the common good and goals- the culture’. Immelt has, according to Magee, added to this process by bringing in customers to join in the collaboration. The centre is a means of facilitating the culture ‘the culture learns how to quickly and easily move across barriers for mutual benefit’.

³⁶ Innovate Like Edison, p37.

³⁷ Innovate Like Edison, p.75.

³⁸ The New GE Way, p. 24.

³⁹ The New GE Way, p. 25.

⁴⁰ The New GE Way, p. 139.

⁴¹ The New GE Way, p. 142.

⁴² The New GE Way, p. 4.

⁴³ The New GE Way, p. 78.

⁴⁴ The New GE Way, p. 56.

While the expressed desire is to run the whole company as if they were a large number of individual businesses, a number of integrating mechanisms have been put in place to ‘manage people and their interactions’, i.e. to encourage integration and exchange of information. These enablers include; the corporate executive council, the leadership centre, the global research facility, the use of cross-fertilized teams, and the commercial council.

One of the most recent developments which came out of the commercial council’s benchmarking against the world’s best innovative companies was a set of five necessary leadership traits, one of which was to ‘energize teams through inclusiveness and connection with people, building both loyalty and commitment’⁴⁵.

When one visits the Tesla Museum in Belgrade, one is struck with the singular success which Tesla had with the advancement of his ideas and by the difficulties which he experienced in bringing his inventions, some of which presaged Edison’s, to market. Both were endowed with intellects of the first order but Edison was, by all accounts, more of a promoter and most importantly was able to work with other collaborators. Edison, according to Gelb and Caldicott⁴⁶ ‘gained the edge in the market place and in the public mind due to his ability to assemble a team of collaborators and develop a systematic approach to innovation’. Edison was by all accounts, a very effective manager of people and their interactions. Tesla was not.

Factor #7: Use of career ladders and recognition of innovators.

Summary

There is not much anecdotal evidence that GE recognizes innovators in any particular way. Unlike 3M and P&G, along with other innovative companies, there does not seem to be a range of non-monetary recognition of innovators per se. Patents held, where GE has traditionally scored high on a global basis is important for GE but this does not link to a transparent award system for patent originators.

Welch was quick to reward, with generous bonuses and stock options, those in the organization who made or exceeded their numbers⁴⁷. Based on what we know of Welch’s style, this type of reward was probably not extended to those managers who had to take a longer-term view. For decades GE used its top-pay and stringent hiring requirements to hire as well as any company in the world⁴⁸ but this again was not focused on innovators per se.

Factor #8: Tolerance for variance from the corporate norm.

Summary

GE management has long stressed the importance of taking chances and encouraging change.

Welch ‘built a company over two decades run by leaders cultivated as revolutionaries, able to wake up the organization... and that ‘evolutionary process would continue under Immelt⁴⁹. GE, however, was in need of a make over. Immelt has carried forth the tradition of Jack Welch when he adopted Welch’s philosophy of ‘Embrace Fear, don’t fear it’⁵⁰. Differences, or tolerances from the corporate norm were, while not necessarily encouraged, were not discouraged.

⁴⁵ The New GE Way, p. 160.

⁴⁶ Innovation Like Edison, p. 39.

⁴⁷ The New GE Way, p. 15.

⁴⁸ The New GE Way, p.94.

⁴⁹ The New GE Way, p. 67.

⁵⁰ The New GE Way, p. 4.

Of the three cultural ‘things’ that make up the stated culture of GE; integrity, performance and change, there is ‘zero tolerance’ for an integrity violation⁵¹, a cultural value which has been GE’s for as long as the company has existed. Immelt has taken the ‘integrity’ value one level higher and made it clear that, for his management team, one strike and your out.

Passion can be seen as ‘pushing people out of the safe zone’⁵² and it is one of Immelt’s greatest fears that the lack of courage in this regard could stultify innovation. He encourages people, on a personal level, to take risks, and to get over mistakes and move on. Sometimes, he said, the company’s sometimes upright (culture) past may inhibit its imaginative future.

Factor #9: Tolerance for risk (in the planning process).

Summary

GE has a fair tolerance for risk when dealing with investment and product decisions. Specific programs are in place to mitigate the chance that potentially important projects are not downgraded simply because of their risk profile.

One of the most recent developments which came out of the commercial council’s benchmarking against the world’s best innovative companies was a set of five necessary leadership traits, one of which was to ‘take risks on people and ideas’⁵³. Immelt ‘puts a premium on risk taking...not pulling the plug too quickly on good ideas’⁵⁴ and may take on investments which are not likely to make returns for five years.

GE, in introducing, under Immelt, a requirement to bring forth so many new ideas per year, have introduced⁵⁵ a ‘annual ideas standard’, a concept that, since it is so pervasive throughout the organization helps to shift the risk profile from relatively few in the organization to the whole. In other words, since everybody is involved, the possible stigma of failing is less and the tolerance for risk in the planning process is higher. ‘If I want people to take more risks, solve bigger problems’ states Immelt on his desire to have this culture present.

Factor #10: Degree of formal communication within the organization.

Summary

GE places emphasis on trying to break down communication barriers.

According to Gelb and Caldicott, ‘Edison’s second circle (as different from the first circle which represented Edison’s inner collaborators) allowed him to be only “two clicks away” from communicating with any employee in the organization’⁵⁶ - to use a modern vernacular. What was equally important was that members of this second circle comprised a widely diverse set of backgrounds.

Immelt learned early on that ‘direct honesty and clarity’⁵⁷ were effective in dealing with union employees and apparently was good, early in his career, at giving motivational speeches to union workers. Immelt thus showed an interest in and an ability to reach beyond organizational levels to get the job done and to seek clarity in communications through direct contact. Immelt’s desired style is to get close to GE employees and, for example ‘on the factory floors of GE’s many business operations around the world’⁵⁸. He has doubled his time on investors and on internal communication.

⁵¹ The New GE Way, p. 136.

⁵² The New GE Way, p. 161.

⁵³ The New GE Way, p. 160.

⁵⁴ The New GE Way, p.100.

⁵⁵ The New GE Way, p.94.

⁵⁶ Innovate Like Edison, p.151.

⁵⁷ The New GE Way, p. 21.

⁵⁸ The New GE Way, p. 71.

The Leadership Centre in Crotonville is, in part, designed to break down the communication barriers which often arise in large companies. Executives, remaining in the program for three weeks, get a chance to mingle with a wide variety of others, all from GE, and as a result of making these contacts increase their willingness to make contact within the organization

Approaches to simplicity, have allowed the free flow of ideas⁵⁹.

Factor #11: Use of independent work groups.

Summary

GE makes extensive use of teams and independent work groups to accomplish its objectives. There are many examples ranging from top level groups to working groups assigned to address significant corporate issues and new initiatives.

Nowhere is the importance of the use of special work groups more recognized than with the efforts to cross-fertilize than in the appointment of 'research and technology teams including GE employees from multiple disciplines to work on the same project'⁶⁰. Examples of cross fertilization are provided; the lotus leaf for one (a concept for a new material), and the transference of health-care imaging technology to use in baggage scanning is another example. Apparently not much of this cross fertilization was done under Welch. The cross-fertilization of research was marginal under Jack Welch⁶¹.

Marketing teams arrive at the Research Centre to meet with scientists and talk about market needs⁶².

The development of organic light emitting diodes (OLEDs) is yet another example of putting in place a group to carry out a specific project, in this case a cross-functional team under the oversight of the research centre. Adding an outside partner to this effort, namely Energy Conversion Devices, added another dimension of knowledge to the effort and allowed, or at least facilitated, their application to a government agency for additional funding.

Immelt put an in-house team together⁶³ to get feedback on green initiatives and study greenhouse legislation and made use of an outside consulting group in the process. The result was a significant increase in funding for R&D on clean technologies and the reduction of its own greenhouse gas emissions.

Factor #12: Degree to which management decisions are made with input from the rest of the organization.

Summary

GE is characterized as a company which takes its time and applies considerable resources to any major decision. Investment decisions are taken only with careful input from a wide range in internal functional groups. The culture is definitely one of careful and close attention to detail.

Edison 'valued the importance of working with others'⁶⁴ and knew that 'he needed a trustworthy team of collaborative employees to ...complement his talents'. Over the early years he directly supervised the small, but growing team of highly skilled (educational credentials were not stressed) individuals who made up the team. Cross-training and diversity of talent were important ingredients to GE's success..

GE can be characterized as a company which takes its time in making major decisions. 'Such careful consideration is part of the analysis process for GE. GE moves carefully through fact-finding and

⁵⁹ The New GE Way, p.205.

⁶⁰ The New GE Way, p.98.

⁶¹ The New GE Way,p.100.

⁶² The New GE Way, p.99.

⁶³ The New GE Way, p.114.

⁶⁴ Innovate Like Edison, p.149.

information-sharing to invest wisely in new businesses⁶⁵. GE, in contrast to several other high flying companies (Enron, Tyco and Vivendi) makes its acquisition decisions ‘with decidedly more conservative processes and disposition⁶⁶... made only through careful study’.

Immelt’s style is to ‘listen to them’ referencing GE employees and the desire to get to know them and to understand the situation⁶⁷.

Immelt, while he could make acquisitions since GE generates a lot of cash, does not do so ‘using instead GE’s deep accounting department to scale value’⁶⁸. He goes on to state how ‘we comb through details...processes that allow us to comb through details...we look at people like it was not some big obscure company’.

GE’s approach to innovation is to seek input from organizations which it can connect with⁶⁹; a clear indication of a further desire to have as much input in investment decisions as possible. A mapping process is in place which forces GE managers to identify where they need to be connected to outside organizations.

Factor #13: Formality of the decision process.

Summary

GE has formal management practices in place for making key decisions.

Edison⁷⁰, according to the authors, ‘taught his people to use his approach to experimentation’ and ‘...’carefully examine their underlying assumptions’ ...trained to ‘execute assignments’ ... and made ‘ the process of innovation more systematic and reliable’.

GE can be characterized as a company which takes its time in making major decisions. ‘Such careful consideration is part of the analysis process for GE. GE moves carefully through fact-finding and information-sharing to invest wisely in new businesses⁷¹. GE, in contrast to several other high flying companies (Enron, Tyco and Vivendi) makes its acquisition decisions ‘with decidedly more conservative processes and disposition⁷².. made only through careful study’.

⁶⁵ The New GE Way, p. 53.

⁶⁶ The New GE Way, p. 48.

⁶⁷ The New GE Way, p. 74.

⁶⁸ The New GE Way, p. 81.

⁶⁹ The New GE Way, p.198

⁷⁰ Innovate Like Edison, p69.

⁷¹ The New GE Way, p. 53.

⁷² The New GE Way, p. 48.

Factor #14: Availability of reward mechanisms for innovation.**Summary**

There is no anecdotal evidence to suggest that GE has reward mechanisms in place for innovation per se. Monetary rewards seem focused on rewards for financial performance. Edison, the founder of GE, seems to have placed more emphasis on providing rewards for innovation than has recent management. There has also been a shift in the culture from rewarding individuals to awarding groups but these rewards are oriented toward financial and operating performance, not innovation per se.

Welch was quick to reward, with generous bonuses and stock options, those in the organization who made or exceeded their numbers⁷³.

GE 'rewards executives for leadership excellence and sustained financial and operating performance'⁷⁴. The inference is that the reward system is the best way to 'stimulate innovation and ensure solid execution, while guaranteeing that risks are recognized and managed appropriately over the longer term'. 'Executives who demonstrate an ability to assess and manage risk effectively' are rewarded.

In some contrast to other innovative companies, there is little mention of rewards for innovations or for innovators, whether monetary or non-monetary.

In some ways, it would appear that GE has strayed from the use of reward mechanisms which were the foundation of the company under Edison. Edison's 'most generous offers (referring to financial incentives of one kind or another) went to those who helped manage the innovation process'⁷⁵. Edison also, like 3M, often made offers to his key people by letting them get deeply involved in his new ventures and allowing them to buy stock in GE. Edison 'carefully leveraged individual rewards for his people'⁷⁶.

Factor #15: Planning orientation versus action orientation.**Summary**

GE, by all accounts, is an organization which takes its time and carefully examines any major investment or change in direction. Thoughtful, highly analytical, and perhaps, as a result, a little slow to act, is a characterization of GE's planning versus action orientation.

GE can be characterized as a company which takes its time in making major decisions. 'Such careful consideration is part of the analyses process for GE. GE moves carefully through fact-finding and information-sharing to invest wisely in new businesses'⁷⁷.

'But for a company like GE, decisions like this are a process .. we study ...we don't follow a whim or a trend'⁷⁸.. planned cultivation of innovation is part of the new GE way.. and it is now planned to use this process for developing long-term plans and products for the company. This analogy is interesting as the example given is related to an acquisition rather than 'organic growth'.

'a lot of what we do has to be about the future' states Immelt when referring to his desire to balance short-term and longer-term objectives⁷⁹.

⁷³ The New GE Way, p. 15.

⁷⁴ 2008 Annual Report.

⁷⁵ Innovate Like Edison, p.160.

⁷⁶ Innovate Like Edison, p. 161.

⁷⁷ The New GE Way, p. 53.

⁷⁸ The New GE Way, p. 59.

⁷⁹ The New GE Way, p. 79.

GE, in moving forward with plans to invest in clean technologies, demonstrated again its penchant for careful examination of investments; ‘This is not a company, after all, that does much of anything without quantifying expected results and benefits’⁸⁰.

GE does not throw darts at new ideas⁸¹ but carefully considers judges what prospects fit the company’s future and, when it invests, offers support.

Factor #16: Attitudes towards merger, acquisition, joint ventures, and divestiture.

Summary

GE has switched from an emphasis on growth by acquisition to organic growth, a switch which has yet to be tested and, by its nature, may take several years to unfold. Only after several years can organic growth be seen to be the provider of better-than-average financial performance.

GE has switched its emphasis more towards trying to achieve growth through internal process; i.e organically, and not relying so heavily on the acquisition of companies. Similarly spin-offs of slower-developing businesses have taken place.

Jeff Immelt concluded⁸² that GE could grow faster organically.

GE’s performance culture was successfully applied to all or most of the companies which it acquired during the two decades under Welch’s regime. The application of the GE culture to the newly acquired company, which would not have, in all likelihood, the same culture as GE, apparently worked as results above and beyond the ability of acquired company under its prior management were most often exceeded.

GE finds it is better to partner with the number three company than to buy a tiny company or go it alone⁸³ making reference to the Welch manner which was to buy and ‘GE-size’ the acquired organization.

GE makes reference⁸⁴ to ‘core processes centered on organic growth, operating excellence and leadership development’..the aim of these processes is to spread best practices across the Company’.

Factor #17: Management expectations regarding loyalty to the company versus personal development.

Summary

There is little anecdotal evidence on this Factor.

Edison was evidently able to bring some balance into the lives of his staff. ‘Through flex time, occasional group meetings, midnight luncheons, singing, jokes, and other fun activities, Edison orchestrated a balance between the intensity and relaxation’..workers who lived nearby were free to come and go at the laboratory as long as the work was done’⁸⁵.

It is interesting to contrast Edison’s GE with modern day cultures. Apparently ‘Edison did not need non-compete agreements because his process and culture of innovation were leagues ahead of potential competitors’...not needed since ‘his people were remarkably loyal and protective’⁸⁶. While there is no mention of the existence of similar agreements, or their equivalent, in today’s GE, and since it is now very much a common practice among major corporations, it is likely GE has adopted the modern practice of putting management contracts in place for senior officers and key innovators.

⁸⁰ The New GE Way, p. 115.

⁸¹ The New GE Way, p. 200.

⁸² Game-Changer, p 283

⁸³ The New GE Way, p.200.

⁸⁴ 2008 Annual Report.

⁸⁵ Innovate Like Edison, p.117.

⁸⁶ Innovate Like Edison, p. 128.

There is no reference to the use of personal time, as there is in 3M and Google, which have fairly explicit statements regarding this issue; i.e. the 15% rule at 3M.

Factor #18: Decentralization versus centralized hierarchy.

Summary

GE is committed to a policy of minimal hierarchy and as close to a flat organization as you can get given the size of the global organization. Efforts are made to establish businesses within business.

Welch acted by ‘removing layers of bureaucracy’⁸⁷. Immelt learned from Welch to find ways to take bureaucracy out of the company such as having fewer meetings and fewer approval levels on decision making that added no value⁸⁸.

“What we try to do is to not run GE as one big company” Immelt⁸⁹. The idea is not to think about doing business in markets outside N.A. but rather to think about what business is being done in other geographic areas. Fifty percent of the firms business is currently from outside the U.S.

As long as you have the people and the processes you trust, each unit can run as a veritable small company, according to Immelt⁹⁰. The strategy is to break up the company into individual businesses and initiatives and remove size as an impediment to growth.

We decentralize decision making so that local teams can develop products, marketing approaches, pricing and risk assessment for their own local countries. This removes levels of bureaucracy and facilitates localization⁹¹.

Immelt has, at the same time that the organization has grown, reduced overhead and bureaucracy⁹². Apparently by formulating the company into growth opportunities, considerably less overhead is required⁹³. This comment is not totally understood as the link between opportunities and lower overhead is not clear.

The goal is to create a “limber organization”⁹⁴ unencumbered by deep layers of bureaucracy.

Factor #19: Availability of resources (budget, time, etc.) for new ventures.

Summary

GE is a growth-oriented company and relies on the generation and management of ideas and acquisitions to achieve its performance goals. With the constant announcement of new ventures, product ideas, and the in-place management practices directed at dealing with initiatives, it is clear that GE makes it known to its employees and external partners that it is open for business.

GE’s expenditures on R&D have remained close to flat for the last 3 years; 2006 to 2008. On the other hand funds have been made available for acquisitions and for the new ventures. The recent announcement to invest \$100 million in upstate New York in a new factory to build sodium-based batteries – not the lithium-ion type now more familiar to the market place, is an indication of a the availability of new funds for new and some would say riskier ventures. GE is hoping to attract federal funds to assist in the project and downward adjust the risk profile.

⁸⁷ The New GE Way, p. 67.

⁸⁸ The New GE Way, p. 164.

⁸⁹ The New GE Way, p.177.

⁹⁰ The New GE Way, p.183.

⁹¹ The New GE Way, p.187.

⁹² The New GE Way, p.203.

⁹³ The New GE Way, p.204.

⁹⁴ The New GE Way, p. 205.

GE will ‘invest \$10 billion in technology and content in 2009⁹⁵’ and notes that \$50 billion has been invested in product technology since 2000. Most recent management has moved to increase, i.e. ‘hike’ spending on research and development and capital expenditures.

There is a process in place for the evaluation of new ventures and probably well understood by the management team. Like 3M, the existence of a well understood process facilitates and encourages managers to move ahead with new ideas; the process is known, the criteria have been established, and surprises are minimized.

Immelt’s stance on the use of organic growth versus growth by acquisition has probably contributed to a better feeling within the company that bottom-up ideas are more likely to be adopted than under a regime which focuses on acquisitions. To quote Immelt; ‘the ability to innovate must be valued again’⁹⁶

Factor #20: Staff versus line involvement in the decision process.

Little or no anecdotal evidence is available on this Factor.

Summary

GE makes extensive use of its vast line and staff personnel in all major decision making.

While there is no mention of line versus staff functions, and indeed those terms may well be outdated, there is every indication that GE takes its time and makes use of its substantial internal resources, whether direct or indirect, in making key decisions. For example; when GE, in moving forward with plans to invest in clean technologies, demonstrated again its penchant for careful examination of investments; ‘This is not a company, after all, that does much of anything without quantifying expected results and benefits’⁹⁷.

Factor #21: Ability to retain innovators.

Summary

Little or no anecdotal evidence is available on this Factor. There is every indication that GE’s practice is to hire well and pay well to retain the best and the brightest but this may or may not apply to innovators per se.

Factor #22: Extent to which company has an innovative tradition.

Summary

GE is a company known for its innovative tradition begun with Edison, continued under subsequent leaders, and re-emphasized under Immelt.

Edison ‘functioned as the key idea driver and catalyst behind all the inventions that emerged from his labs, but he relied on his team to translate ideas into innovations’⁹⁸. The reliance on one person was typical of how companies have their start. Edison, in his later years necessarily delegated parts of the innovation process while keeping a tight control over the process. The rhythm of the organization was beginning to change as new innovators rose into their chosen occupations. The analogy with today’s Steve Jobs and Bill Gates are clear, with each organization growing beyond the one-person typically associated with start-ups.

In Breakthroughs⁹⁹, which was published in 1986, the research director of EMI Electronics, makes reference to the ‘enormous technical and commercial resources available to’ GE.

⁹⁵ 2008 Annual Report.

⁹⁶ 2008 Annual Report.

⁹⁷ The New GE Way, p. 115.

⁹⁸ Innovate Like Edison, p.137.

⁹⁹ Breakthroughs!, p. 170.

GE has been known for its prowess and innovation¹⁰⁰ and for over a century has been one of the worlds biggest and best. It has transformed itself, long ago, into a multi-division conglomerate, a long way from its start-up single focus on the electric lamp when under its founder, Thomas Edison. Not only does GE comprise a significant percent of the Dow Industrial average but it is also viewed as a bell weather stock for the U. S. economy. Its industrial focus and profile has, however, been modified in the last 20 years by the initiatives in the finance and media businesses.

GE is known as company which has an innovative tradition going back 130 years¹⁰¹ and has only experienced the threat, because it is big, of experiencing ‘stagnant’ and ‘old-school’ – but the inference is that this has not happened. It is clear that under Welch, GE as an innovative company had fallen behind its earlier glory days¹⁰².

The GE Global Research Centre has been a leading innovator with thousands of patents¹⁰³ and was the first company in the U.S. to operate an independent research and development laboratory. It appears that the centre was given much less emphasis during Welch’s term and as mild complacency had crept in mainly because of the emphasis being placed on Crotonville. It was as if ‘business leadership’ was surpassing ‘inventiveness’ as the basic culture in GE. Funding the Research Centre from Divisional revenues, along with Welch’s push for quarter-on-quarter \$ improvements, was no doubt a contributor to a new focus on short-term thinking. Immelt seems determined to restore the ‘innovative, grow-from-within culture’¹⁰⁴. The Research centre is now to ‘foster innovation for the entire company’ and has been upgraded and funded with this in mind.

Whereas Welch pushed for profits through business leadership and tough goal stretching, Immelt is placing pressure¹⁰⁵ on the organization to deliver ideas – anticipating that this emphasis will provide the growth necessary for success in both patents and profits.

A measure of the desire to restore GE’s reputation as an innovative company is the objective of making it the world leader in patents. Until 1986, GE was a leader but on Welch’s watch this obviously was not a priority and on his departure the company did not rank in the top 20 of companies holding patents¹⁰⁶.

Immelt’s approach to fostering innovation is, as the first step, to ‘prepare the organization to innovate’¹⁰⁷ or in so many words, creating a ‘culture’ wherein innovation can take place.

Factor #23: R&D budget levels versus the competition.

Summary

GE spends approximately 5% of its sales revenue on R&D, in line with Deere and P&G but about 50% of IT high tech companies. R&D spending has been a priority since the founding of the company.

Edison established a culture at GE which focused on filing patents as a means of protecting its intellectual property. At age 84¹⁰⁸ Edison applied for his 1,093 patent. While there was a period where Edison became disenchanted with the patent system – because of a perception of insufficient protection for the patent holder – this was put aside and patent filing were resumed in the early 1900s¹⁰⁹. The tradition continued for decades establishing GE as one of the top 20 holders of patents globally. That position was lost

¹⁰⁰ The New GE Way, p.1.

¹⁰¹ The New GE Way, p.80.

¹⁰² The New GE Way, p.108.

¹⁰³ The New GE Way, p.85.

¹⁰⁴ The New GE Way, p.87.

¹⁰⁵ The New GE Way, p.88.

¹⁰⁶ The New GE Way, p.106.

¹⁰⁷ The New GE Way, p. 108.

¹⁰⁸ Innovate Like Edison, p. 42.

¹⁰⁹ Innovate Like Edison, p.127.

immediately during the two decades to 2000. Immelt is now focused on restoring GE's reputation in this regard. GE's Annual Report 2008 makes the point that 'patent applications in 2008 were 8% above the level in the prior year'¹¹⁰.

R&D spending derives from divisions – 60%, corporate – 27%, and the balance of 13% from GE's partners¹¹¹ with decisions on the allocation of funds being built around the annual commercial council meeting Immelt established as the foundation of funding.

GE-funded research and development was flat at \$3 billion for both 2008 and 2007, just up from \$2.8 billion in 2006¹¹². Funding is also supported by customer and U.S. government inputs which raises the level by another \$.7 to \$1.3 billion over the same three-year period. Funding occurs in the Technology Infrastructures business, Health Care, and Energy Infrastructure, but there is no reference to R&D funding for the financial arm nor for the NBC media business.

In 2008, R&D compared to revenues are reported as follows.

Segment	Total Revenues - 2008	GE-Funded R&D U.S. Government Defined	Customer-Funded R&D	GE-Funded R&D based on GE definition
Energy Infrastructure	\$38,571			
Technology Infrastructure*	\$46,316			
Consumer and Industrial	\$11,737			
Total Revenues	\$96,624			
	Research & Development	\$3.0	\$1.3	\$5.3
	% R&D to Revenue	3.1%	1.3%	5.5%

* Aviation business accounts for the largest share of overall R&D spending with funding also supplied by customers. Health care, as part of Technology Infrastructure as well as the Energy Infrastructure business also made significant investments but funded primarily by GE¹¹³.

In other words, R&D expenditures relate to Revenues of \$96,624 billion, which in 2008 accounts for 53% of Total Revenues. Capital Finance and NBC Universal, plus Corporate items and eliminations account for the remaining 47% of sales and are not the subject of R&D spending.

GE's expenditures on R&D are about 50% of a number of 'high tech' companies. Microsoft, Intel, Cisco, Motorola, Oracle, Texas Instruments, Google and Sun spent in excess of 12% of revenue on R&D in 2007¹¹⁴. The comparison is for reference only as the business segments are different.

GE has, under Immelt, significantly expanded the R&D function. Not only have more funds been spent in the U.S. but there have been research centers established abroad, in India, China and Germany. Immelt 'upgraded the center .. through \$100 million..and adding disciplines which did not previously exist'¹¹⁵ as well as adding infrastructure investment. Funding has increased each year since Immelt took over. Part of the increase in funding derives from contributions from GE's partners.

GE's approach to R&D is to make sure that they 'own it' – at least in the priority areas of molecular medicine, nano technology, renewable energy, energy efficiency and environmental technology– and while Immelt states that they are going to own it, they are not there yet¹¹⁶. Immelt's expressed desire to 'own the technology' is reminiscent of Edison's approach to invention. In reference to his vast library at the West

¹¹⁰ 2008 Annual Report.

¹¹¹ The New GE Way, p.108.

¹¹² 2008 Annual Report.

¹¹³ 2008 Annual Report.

¹¹⁴ Source; FT Research, March 17, 2008.

¹¹⁵ The New GE Way, p.107.

¹¹⁶ The New GE Way,p.109.

Orange Laboratory, he began ‘by reading up everything that has been done along that line in the past¹¹⁷. He ‘never began a round of experiments without first reading everything available on the subjects of his studies’. One of the most recent developments which came out of the commercial council’s benchmarking against the world’s best innovative companies was a set of five necessary leadership traits, one of which is to ‘develop expertise in a function or domain, using depth as a source of confidence to drive change’¹¹⁸.

Making R&D effective seems to be one of the reasons Immelt appointed the new head of GE Global Research Centre; ‘Little’s knowledge¹¹⁹ of engineering and understanding of how promising technology comes to market’ made him the ideal candidate.

Factor #24: Perception of innovation as increasing or decreasing.

Summary

While GE’s reputation as an acquirer of patents declined during Welch’s period as CEO, the goal is to now restore the company to the global place which it occupied for decades.

If patent applications is any indication of innovation performance, it is clear that, under Welch, the innovation trend was down even though, or in spite of, the successful financial performance over the same period. It is clear that under Welch, GE as an innovative company had fallen behind its earlier glory days¹²⁰.

Immelt’s approach to fostering innovation is, as the first step, to ‘prepare the organization to innovate¹²¹ or in so many words, creating a ‘culture’ wherein innovation can take place. GE’s Annual Report 2008, makes the point that ‘patent applications in 2008 were 8% above the level in the prior year’¹²².

Factor #25: Degree to which employee organizations encourage innovation.

Summary

Little or no anecdotal evidence is available on this Factor.

<http://www.corporateinnovationonline.com>
pcwhite@corporateinnovationonline.com
 August, 2009

¹¹⁷ Innovate Like Edison, p. 61.

¹¹⁸ The New GE Way, p. 160.

¹¹⁹ The New GE Way, p.97.

¹²⁰ The New GE Way, p.108.

¹²¹ The New GE Way, p. 108.

¹²² 2008 Annual Report.