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“Balancing and Leveraging Management, Leadership and Technology and Fostering Innovation in Changing European High Technology Sector”

Reconstruction of High Technology Organisation

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by:

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Abstract

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Technology and Innovation are the main instruments in wealth creation in any business area. New technologies are changing the process of management. Technological competence is not enough to succeed. Managerial know-how and leadership skills are the essential components of successful businesses. Technologically-based companies face more uncertainty, due to rapid technological progress and discontinuity, risk-taking and risk management, understanding the context of innovation are very important functions of managers and leaders. European integration and increased competition has changed the nature of industry and opened new opportunities and threats. Managers, tasks and organisations alter. Potential gains for enterprises are easier access to European markets and better supply of labour resources, components, tools and equipment. However, increased competition and need to change the strategy makes it very challenging for those, who fail to adapt their managing practices for new business environment. The study does not cover all the aspects of management and leadership, but those areas that are least understood and are most common sources of problems and impedance of leadership capabilities, company prosperity, growth and sustainability in changing environment. The dissertation is an assessment into sociological and managerial implications coupled with High-Tech enterprise managerial practice. The author's personal observations and feelings of being managed and best practices from work experience are linked to the leadership theory. This work tries to prove that the managerial competence of enterprise leaders correlates with the wealth or economic performance of the organisation, its growth potential and employees' satisfaction.

Keywords: European Management, Leadership, High Technology, Innovation, Organizational Change

Tiivistelmä

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Opinnäytetyön nimi: "Hallinnon, johtajuuden ja teknologian tasapainottaminen ja tehostaminen, ja innovaation vaaliminen Euroopan muuttuvassa korkean teknologian sektorissa"

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Tämä työ kertoo korkean teknologian johtamisen haasteista ja niihin liittyvistä ratkaisuista organisaatioissa. Eurooppalainen yritysympäristö on yhä kansainvälistempi ja vaatii useita erityistaitoja organisaation johtajilta. Tämän työn osa-alueena on johtaminen. Se perustuu johtajuuteen, strategiseen johtamiseen, innovaatioon, ja kansainvälisiin haasteisiin. Opinnäytetyö on luonteeltaan empiirinen, se perustuu tietolähteenään yrityksiin, joissa olen työskennellyt urani aikana. Työn näkökulmaksi on valittu eurooppalainen korkean teknologian tuotantoyritys. Työn tarkoituksesta on jakaa olennaista tietoa organisaatioiden johtamisen, innovaation, kasvun ja kansainvälistymisen haasteista ja tarjota strategisia työkaluja näiden haasteiden menestyksekkääälle hoitamiselle. Tutkimus osoittaa kansainvälistyvän tuotanto-organisaation johtamiselle tarvittavat erityiskyvyt. Työhön on kerätty menestystarinat ja löydökset kansainvälistymisen, johtamisen, työympäristön ja työyhteisön sekä hyvälle johtajalle keskeisten pätevyystekijöiden rakentamiseen liittyen. Tutkimus osoitti, että yrityksen resurssien jakamisen ja kehityssuuntien tasapainotus, luottamus ja karisma ovat menestyksekkään johtajuuden tekijät.

Asiasanat

Hallinto, johtajuus, johtaminen, innovaatio, korkea teknologia, tasapainotus, kansainvalistuminen, tuotantoorganisaatio, haasteet.

List of tables and figures

Table 1. Illustrative characterization of Managers' and Leaders' functions	15
Table 2. Top 10 barriers and success factors of innovation	22
Table 3. Roles played across the innovation pipeline	23
Table 4. Convergence types	31
Figure 1. MANAGEMENT SKILLS PYRAMID	5
Figure 2. SURVEILLANCE COST STRUCTURE	8
Figure 3. CULTURAL DIFFERENCES	19
Figure 4. FOCUS OF INNOVATION	22
Figure 4. INNOVATION OWNERSHIP DELIVERY	2
Figure 5. MISSING ENABLERS OF INNOVATION	26
Figure 7. THE PROCESS OF CONVINCING AND PUSHING TO ACTION	27
Figure 8. EIGHT STEPS OF CHANGE	28
Figure 9. BALANCING BETWEEN MANAGEMENT, LEADERSHIP AND TECHNOLOGY	29
Figure 10. EMPLOYEES' FUNCTIONS	37
Figure 11. EFFECTIVENESS OF EMPLOYEES	38
Figure 12. LEADERS' RESPONSIBILITIES IN THE ORGANISATION	39
Figure 13. QUALITIES THAT ARE EXPECTED FROM A LEADER	40
Figure 14. COMPANY'S ABILITIES TO DEVELOP LEADERS	42
Figure 15. NORMS OF INNOVATION	43

Contents

1 Introduction 1

- 1.1 Purpose of the Study 1
- 1.2 Structure and Limitations 1

2 Definitions and Scientific Background 2

- 2.1 Defining Management 2
- 2.2 History of Management 3
- 2.3 Defining Organisation 3
- 2.4 Control 5
- 2.5 Punishment 6
- 2.6 Surveillance 7
- 2.7 Philosophical Background of Management 8
- 2.8 Emotional Intelligence 11
- 2.9. Creativity and Rationality 12

3 Discussions 13

- 3.1 Observations 13
- 3.2 From Management to Leadership 14
- 3.3 Leadership Theories 16
- 3.4 Leadership Styles and Dimensions of Leadership 17
- 3.5 Team Building 20
- 3.6 Innovation 20
 - 3.6.1 Definition of Innovation 20
 - 3.6.2 Drivers of Change 21

3.6.3 Challenges of Change	22
3.6.4. Managing Innovation	22
3.7 Innovation in High Technology	29
3.7.1 Indicators of Innovation in High Technology	29
3.7.2 Technology Convergence and Diffusion of Innovations	29
3.7.4 Innovation Pitfalls	31
3.7.5 Leadership Dynamics in Innovation	31
3.8 Encouraging Creativity	34
3.9 High Technology Context	35

4 Methodology 36

4.1 Earlier Research and Justification of Research	36
4.2 Reliability and Validity of the Study	37
4.3 Research Methods	37
4.4 Analysis of Empirical Findings	37
4.4.1 Employees' Function	37
4.4.2 Effectiveness of Employees	38
4.4.3 Leadership Skills Needed on a Daily Basis	39
4.4.4 Distribution of Leaders' Responsibilities' in the Organisation	40
4.4.5 Qualities that are Expected from the Leader	41
4.4.6 Company's Ability to Develop Leaders	42
4.4.8 Norms of Innovation	43

5 Conclusions 44

Bibliography 45

Appendix 1: Leadership Skills Questionnaire 49

'Management is not knowledge, but performance'

(Peter Drucker)

1 Introduction

1.1 Purpose of the Study

The research area of this work is contemporary management and leadership areas of modern high technology organisation, where major challenges are management and leadership skills with emphasis on change through continuous innovation. The traditional function of leaders, such as providing motivation and fostering creativity, as well as traditional managerial functions are reviewed. The topic is very relevant as many companies are not able to keep the pace of changing technology, volatile markets, proliferated consumer lifestyles, and competition, especially from the Asia. In order to stay competitive organisation has to be flexible and adapt quickly to the new conditions, and continuously balance the distribution of resources depending on the environment. The present knowledge of this topic is widely discussed in professional literature, but is limited to one or few issues in every research, and according to author's observations, many small or mid-sized companies are managed by conservative leaders, who do not have knowledge of modern leadership theory, which becomes major limitation of business growth. The key term of this research is balancing, as increased competition makes it necessary to minimise the use of limited resources and increase productivity. The work defines the processes of management and leadership, explains the specific challenges of high technology sector and analyses common mistakes of leadership. The purpose of this work is to improve the understanding of leadership process in this business area.

1.2 Structure and Limitations

The main body of the research was divided into four parts. In first chapter the theoretical background of the subject was built, beginning from a general overview on the relevant terms, starting with deeper analyses of management, its environment and tools, leadership and then going onto its deeper meanings and implications on organisations of high technology industry. It was useful to review the major theories, because it gives the reader better understanding of the contemporary issues of management and leadership.

2 Definitions and Scientific Background

2.1 Defining Management

In order to understand the management process we need to define it. According to Peter Drucker, we can define that managers practice not economics, behavioural sciences or quantification but management, they use these sciences as tools. 'A person who knows only the skills and techniques, without understanding the fundamentals of management, is not a manager but merely a technician' (Drucker 1977:16). Managers need to master communication within the organizations and be able to make decisions under uncertainty.

Peter Drucker (1977:28) outlines five basic operations that managers are performing:

- Sets objectives and decides what should be done to reach these objectives
 - Organizes the activities and decisions, decides which relations are needed. Manager classifies the work and divides it into manageable jobs
 - Communicates, distributes responsibility and creates motivation
 - Measures, analyses, appraises and interprets performance
 - Thrives to develop people including himself

These operations require more or less of analytical ability, which needs rational approach and other techniques. The most evident exception is the communication, which needs social skills, human perception and insights even more than rational thinking. The rational perspective prevails through the majority of management approaches; Michel Foucault's theories are based on a rational perspective, while constructivist principles better explain the cases of extreme uncertainty or help to make unpredictable decisions to confuse the competitors. The reality shows that some elements in managerial practice cannot be understood or managed rationally.

Rationalizing processes were studied in more detail by Taylor and Ford, their concepts have their own benefits and limitations. The human relations theorists interested in occupational psychology analyse the reason and coherence. One of them, Keith Grint studies the field of organizational analysis and management theory and shows how to improve the models of rationality in management activities. Constructivism is the opposite of objectivism, which is based on the idea that a human can get to know external reality (that exists beyond one's mind). Constructivism considers that the only reality we can understand besides idealistic theories is the one represented by human thought. Reality and the human

thought are independent from each other, but meaning or knowledge is a human construction. As management is a natural phenomenon, it involves both rational and constructivist ideas. Manager should be able to make decisions in order to adapt to change, expect the unexpected, adopt the rules, manage power relations, manage changes in roles, but most importantly maintain control, use the mechanisms for reasoning and rationality in irrational and ambiguous environment.

2.2 History of Management

The early management science has evolved during the construction of pyramids in ancient Egypt. However until the late eighteenth century entrepreneurs were not really concerned about how the organization should be managed, and included the set of coercive measures with a few incentives as food, lodging and clothes. Paternalism assumed that 'workers are human after all and would respond better to a more gentle form of persuasion' (Grint 1991). Paternalists were against brutal measures of coercion, because they were both immoral and counterproductive. The importance of recognizing the workers' productivity and morale was developed. The main reason of both coercion and paternalism was increasing productivity. Since the early 20th century the social engineering tackled the task of increasing productivity. The neo-human relations recognized the importance of social cohesion, attitudes and the unconscious processes, based on McGregor's theory X and theory Y that need different principles of management. 'Theory X neglected the dynamic nature of human needs, for as economic rewards satisfied material needs, so other, higher needs were ignited and a concomitantly higher form of motivation was necessary' (Grint 1991:144). Maslow's and Herzberg's motivational theories have developed this idea further.

2.3 Defining Organisation

The classical school of the organization by Fayol, Urwick and Taylor 'tended to see organizations as the actual or potential epitome of human rationality', while Foucault and the other post-modernists Lyotard and Derrida considered the essence of the organization as 'defensive reactions against inherently destabilizing forces'. While modernists perceive the human history to be the promotion of progress, reason and rationality, with the organization

tending towards certainty, stability and consensus while the post-modernists do not recognize these phenomena and instability uncertainty and dissensus are the norm. According to Nietzsche (1999:134), difference between them is 'not one feature of social relations but the active force underlying them'. The uncertainty and unpredictability of social life is characterised by Derrida (1976:37) arguing that 'the organizations are construed not as mechanisms to advance human control but processes to hide the very uncertainty we live in'. While theorists of labour process base their ideas on assessment of mechanisms of managerial control, the post-modernist theories deny the plausibility of any group being in control. 'To be in control presumes rational intent and means to affect such intent but neither of these can exist within the post-modernist approach.' The post-modernists base their views on the assumption that organizations are actually the results of numerous 'reactive processes, attempts to delimit the disaggregating reality of everyday existence', organizations are built not to advance the human control, but to obscure the reality of having no control. (Grint 1991:145-146)

Foucault's understanding of the organization maintained not by a consensus or any overt coercion of the judicial system, but rather by the 'systems of bodily surveillance and discipline which are built into the framework of organizations'. The employees are compared to prisoners and the managers within the organization to their guards. The theory of power suggests that it originates in the state and its direction of flow is downwards. The micro-physics of everyday life is then the power relations between subjects, with the organization being the extending Panopticon, controlling these relations, where the regulatory practices are based on the power relations (Foucault 1991:146)

We can assume that the less sophisticated and educated are the managed people, the lower they are in the Maslow's hierarchy of need, the more management techniques can be applied from Foucault's theories: Docile Bodies is depicting how the soldier was made, discovering 'the body as object and target of power ... the body that is manipulated, shaped, trained, which obeys, responds, becomes skilful and increases its forces'. Along with the army, the school, the hospital and presumably the other organizations were controlling or correcting the operations of the body. 'A body is docile that may be subjected, used, transformed and improved' (Foucault 1991:136). Organisation concept of Foucault creates good base for further development of understanding of organisational theory, it explains the main processes and clashes of interest in the organisation and ways to gain control on them.

2.4 Control

Tushman and O'Reily (1997:110) remarked, that "without a means to coordinate or control the collective action, organisations would provide no advantage over individual efforts". Michael Foucault explains that control is gained by applying the policy of coercions that act upon the body, creating discipline, which 'produces subjected and practices bodies, docile bodies.' Discipline not only makes the forces obeying and predictable, but actually increases the forces of the body. "If economic exploitation separates the force and the product of labour, let us say that the disciplinary coercion establishes in the body the constricting link between an increased aptitude and an increased domination." Great importance is given to the exercise that is "a technique by which one imposes on the body tasks that are both repetitive and different, but always graduated'. (Foucault 1991:137)

With the help of these measures the body learns not only to do certain things, but the way to do them. Foucault draws a lot of attention on distribution of space, or rather distribution of bodies in the space for optimizing the performance of bodies, controlling the activity in time and space, the Panopticon principle guaranteeing the 'automatic functioning of power', training procedures, the perfection of power is supposed to 'render its actual exercise unnecessary' (Foucault 1991:143)

Nowadays the term "control" Is rarely used, managers prefer calling it "coordination", which excludes coercive measures and surveillance. It implies making sure that everything goes according to the plans to achieve goals by means of scheduling, financial control and people control. Managers "exercise control despite the constraints... [and exercise self-control when they] make a set of initial decisions that define many of their subsequent commitments... adapt to their own ends activities in which they must engage" (Mintzberg 2009:33).

According to Tushman and O'Reily (1997:111) formal control is supplanted or supplemented by social control, which should be integral part of control systems of operations where neither behaviours, nor outcomes can be reliably and accurately controlled. These are the service jobs and jobs with large unprogrammed demands; it allows employees to do things their way, experiment, do mistakes, and challenge the status quo (see p.43 and Figure 15.). With more sophisticated and educated workforce social control becomes more powerful and

less intrusive than formal control, opening the way to innovation that involves unpredictability, risk taking and nonstandard solutions.

Management Skills Pyramid shows that the control function is the basic function of any manager, without effective control the whole organisational pyramid would collapse.

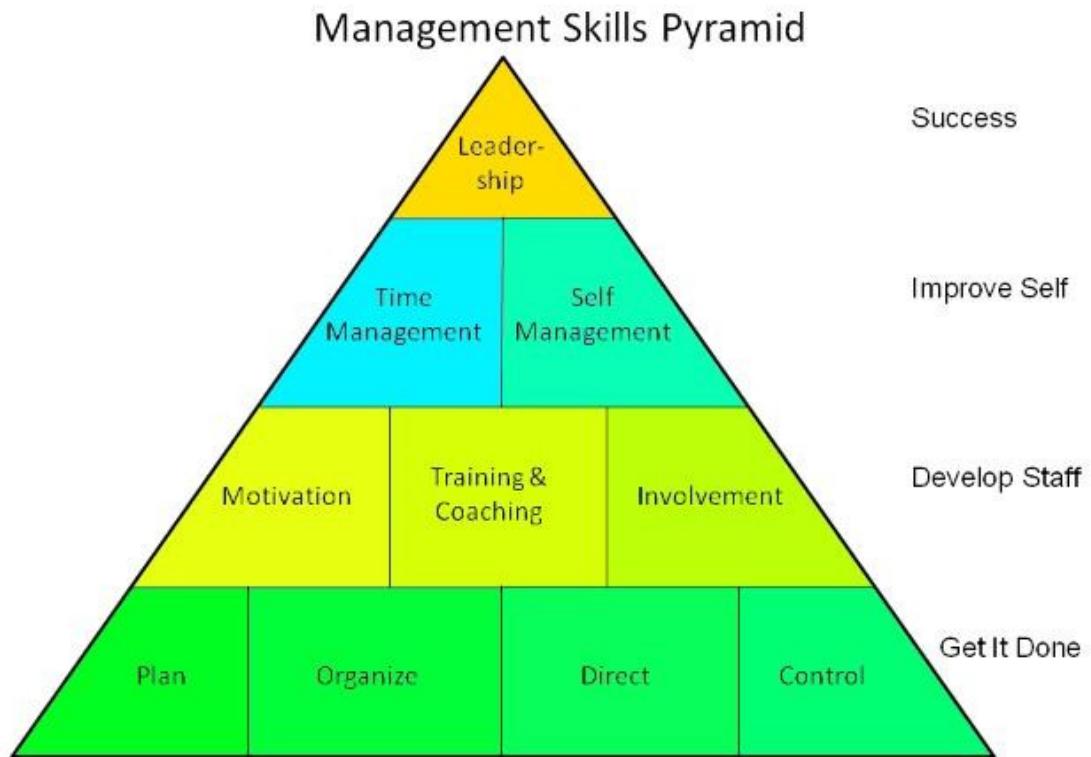


Figure 1. MANAGEMENT SKILLS PYRAMID (Management & Leadership Elements)

The design of control systems is based on measurements of the certain extent of outcomes or behaviour and influencing them by means of rewards and punishment. Rewards systems are well developed and known, but few managers master punishment skills.

2.5 Punishment

The Foucault's art of punishment is describing the set of measures, aimed at correcting the individuals' behaviour! 'To find the suitable punishment for a crime is to find the disadvant-

age whose idea is such that it robs forever the idea of a crime of any attraction!' Go to 'the source of evil, smash the mainspring that animates the representation of the crime. Weaken the interest that brought it into birth'. (Foucault 1991:108) There are few ways of punishment managers can perform in an organization, but they are efficient to prevent the other employees to misbehave. The author recalls witnessing a case of young foreign trainees working in a company, one of the trainees was often complaining about the way the work hours were calculated and overtime hours not paid according to the law. After the end of the next stage of the training period, the ceremony of transfer to the next stage was organized, where all, except the complaining trainee were given contracts, the others have learned their lesson (and became more modest and diligent) without being punished. This reminds 'the spectacle of the scaffold' and is a 'gentle way of punishment' As Le Peltier considered, the visibility of punishment was one of the main principles on the new penal code: 'Often, at certain special times, the presence of the people must bring down shame upon the heads of the guilty, and the presence of the guilty person in the pitiful state to which the crime had reduced him must bring useful instruction to the souls of the people' (Foucault 1991:112)

2.6 Surveillance

Surveillance enables managers to get closer to the reality and apply more rational techniques for monitoring performance, behaviours and personal characteristics and clarifying ambiguous situations, provides high degree of transparency. Human body is characterized as 'flesh made information', and the source of the truth, the behaviour and the traces of the body should be analysed regularly. 'At least three common meanings are attributed to surveillance practice: surveillance as knowledge, surveillance as information and surveillance as protection from threat.' (Derrida 1976:93) A constructivist alternative to surveillance might be using the set of psychological techniques/gimmicks to get the truth out of people. Modern technology has made the surveillance very efficient, the cameras, detectors and special software makes it possible to observe the employees at all times.

Surveillance involves considerable spending for the company; the technical implementation of the surveillance system cost structure is explained in the figure on the following page. The maintenance costs for the system can be minimised by using surveillance subcontractor or the automatic surveillance system, often the dummy cameras are the best choice and deliver desired results through Panopticon-effect.

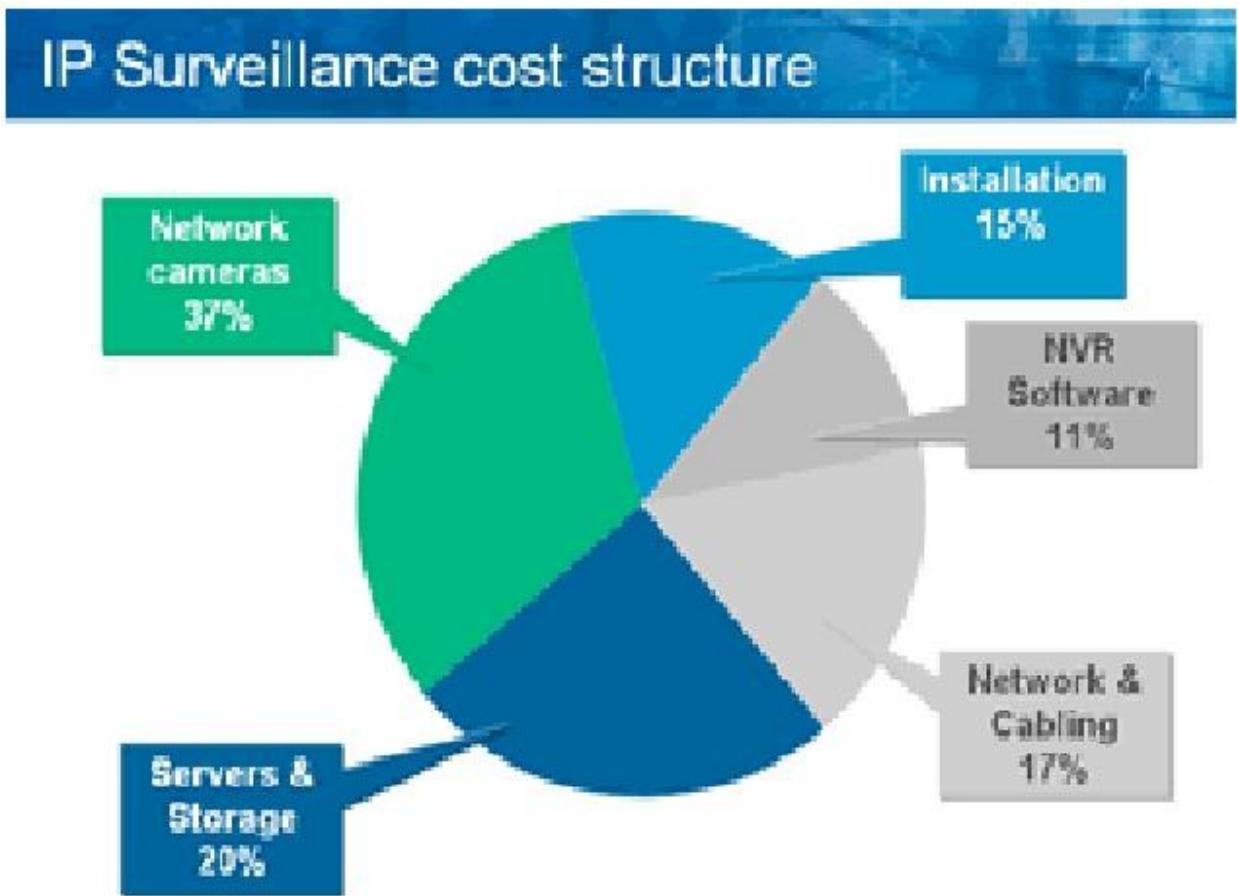


Figure 2. SURVEILLANCE COST STRUCTURE (ARC Surveillance 2011)

2.7 Philosophical Background of Management

Foucault also explains the meaning of the terms regulation, governance, order, resistance, technologies of self, regimes of truth, distributed assemblages, discursively constructed practices, identity, categories, inscribed subjectivities. All of them can be used in a rational perspective of a manager. The deep meaning and application of the discourse, all kinds of different discourses around the role of management are defined. Foucault identifies decentralised human subject. His 'conduct of conduct', the regulatory practice, analysis how things happen. Foucault focuses on categories and subjectification while Derrida describes what constitutes a category and the way a category can change into something other. Derrida focuses on words, grammar and slippery meanings, where changing just one letter in a word changes the whole meaning. The text for Derrida is a metaphor, when an author has an in-

tention to inscribe and make an impression on a reader, he should realize that some people can experience it in a different way. Actions can be re-read, re-written and re-inscribed by the people. Derrida makes observations that everything is paradoxical, an example is a paradox of a gift, as the only gift can be anonymous, otherwise it is not free, as a tag is attached to it. The structure of a term is pointed, it only has meaning in opposition to the others term. Manager can be understood and analyzed compared with non-managers and what the manager is not, what is created in opposition to others. It is called the classification by opposition. Another important point is that there is power within the term; the term 'manager' has all other terms in the background. It is typical for a manager to have features of irrationality, multiple rationality, incoherence, lack of clarity, emotions and sexual factors influencing his decision-making. He can also be frightened, nervous, timid or differently rational. We evaluate the factors via their opposite ones; they are always present in some way. Understanding the opposite is increasingly important if a manager needs to bring about change. Boundary is sipped in the management procedures. Derrida wonders how we can ever be rational and coherent when we are in language, which has multiple slippery meanings, especially in different contexts. Things are not fixed; there is a space to play with meanings, the flickering space for presence and absence. Are managing and controlling or are we just doing the things that we do.

According to Aristotle the spoken word is the reflection of mental experience, and the written word to be a reflection of spoken word. 'The voice is heard (understood) - that undoubtedly is what is called conscience- closest to the self as the absolute effacement of the signifier: pure auto affection that necessarily has the form of time and which does not borrow from outside of itself, in the word or in reality, any accessory signifier, any substance of expression foreign to its own spontaneity' (Derrida 1976:20) This theory explains the problem of management by wire, when the managers send mails instead of talking to the employees sometimes located in the same office, the power of presence has great impact on the management activities. Writing is only the representation of speech. 'A dangerous promiscuity and a nefarious complicity between the reflection and the reflected which lets itself be seduced narcissistically. In this play of representation, the point of origin becomes ungraspable.' (Derrida 1976:36)

Literary Theory of Terry Eagleton explains a lot of mystery in managerial practice, it is known as the systematic study of the essence of literature and of the methods to analyse literature. Eagleton lays out theory in a clear and lucid way, analysing the sources of human

behaviour, among them the sexuality, which is itself a perversion, according to Freud, a 'swerving way' of a natural self-preservative instinct towards another goal. Dreams, jokes, child's behaviour and other terms linking reality, conscious and subconscious are explained and given meaning, helps to understand the connection between the human thought and the reality. According to Eagleton the literary movement of modernism created the structuralist and post-structuralist criticism. 'Some of the later works of Barthes and Derrida are modernist literary texts in themselves, experimental, enigmatic, and richly ambiguous.' (Eagleton 2001:21) The meaning of post-modernity is what comes after the end of modernity, which started after the Enlightenment with its grand narratives of progress, science, reason, truth and emancipation. 'For post-modernity, these fond hopes have not only been historically discredited; they were dangerous illusions from the outset, bundling the rich contingencies of history into a conceptual straitjacket. Such tyrannical schemes ride roughshod over the complexity and multiplicity of actual history, brutally eradicate difference, reduce all otherness to the drearily selfsame, and issue often enough in a totalitarian politics.' Eagleton considers post modernity to be an 'extended footnote' to the philosophy of Nietzsche, a form of culture that 'corresponds to this world of view'. Postmodernist work of art can be described as 'arbitrary, eclectic, hybrid, decentred, fluid, discontinuous, pastiche-like'. [The psychoanalysis of Terry Eagleton is given an important role of a oppressive social control] 'labelling individuals to conform to arbitrary definitions of normality'. (Eagleton 2001:141, 199-202)

The alternative of rational approach of a manager could be the emotional and intuitive approach, which adopts a lot of constructivist ideas. The meaning of rationality, has vast deviations in interpretations, by rational we usually mean something intended, designed or purposeful, happening as it was supposed to. Rationality is a calculated action to achieve certain state of affairs. We distinguish the logic, following formal, fixed rules, which presume deductive and computational nature of thinking, versus creativity, that is following informal, variable rules, with inductive and imaginative way of thinking. Managerial decisions need mostly rational reasoning, strategy, which is the direction for planning, or a part of it has a lot of elements of uncertainty and unpredictability. The rational actor principle can also be opposed to other alternatives: 'bureaucratic', which is also rational in every separate procedure, but can be a 'monkey business' as a whole, 'decision process', rational way of doing things, mostly criticized and less efficient, and "political power", which implies pushing, pulling and tearing everything around and on the way.

The main limitations of manager's rational perspective are caused by ambiguity and unreliability of information. This includes misinformation and disinformation. In some cases the limitation can be turned to a tool. The Collinson Rig case is a bright example how the facts and even very rational statistics can be falsified and manipulated. An oil company rewarded for its Best Practice in safety due to the fact that the accidents are not recorded. Managers 'cannot assume rationality from his subordinates, superiors, or competitors... jealousy, excessive ambition, fighting for no apparent reason, breakdowns in communication and similar irrational behaviour abound in any organization and must be dealt with in a sensible manner in order to neutralize or reduce their negative effects as far as is possible' (Taylor-Gooby 2006:170-171). This is why some economic and managerial theories do not give desired results or often do not work at all. Irrational motives cannot be rationally predicted, however irrational or random decision can often be more successful. The managers need to master the irrationality; they should strive to rationalize it. 'Emotions and rationality necessarily interact in order to direct the decision-making process.' (Taylor-Gooby P., 2006:65) Emotional evaluation is needed in addition to rational assessment to produce sound decisions in reasonable time. 'Emotions at a comparatively low level of intensity can be understood to play the role of an advisor in decision-making.' (Taylor-Gooby 2006:66)

2.8 Emotional Intelligence

'Emotion was characterized by the Greeks as in opposition to thought, and as being sourced in the body... the wisdom of reason is situated as superior to dangerous impulses of emotion, the animal passions, which needed to be suppressed or forced into submission through the steady application of an iron will.' Emotions are considered to be 'distorting or blinding force' where such feelings, as fear, anxiety, frustration, embarrassment, pride, hate, regret, guilt and especially sexuality have great effect on judgement. (Bennett 2005:102)

The term of emotional intelligence was not known twenty years ago, it is the ability to understand and discriminate the emotions of one's own and others is an integral part of management science. It is proved that by sharing feelings organizations or teams are becoming more successful and intelligent. During last decades emotions became 'an aspect of regulation of subjects under neo-liberalism, bringing unreason into central public scrutiny'. (Bennett, T. 2005:104). However, intuitive judgements must be treated with suspicion, as it is

difficult to verify or test them. The only way to do it is to make them explicit, depict them on paper and check for consistency.

2.9. Creativity and Rationality

Creative thinking is the source of unexpected ideas, unconventional thoughts, going outside of the frames of the given, but in many situation creativity is just an excuse for laziness. The answer to the question whether to use rational or creative thinking is obvious: both approaches should always be considered, though they are partially incompatible and contradictory. The rough ratio of priority of these two approaches should be determined and tuned in a dynamic environment. The choice between rational reasoning perspective and generative reasoning perspective is made based on the ability of a decision-maker, the volatility of the environment, amount and the certainty of data available.

The manager intuition is formed by years of experience. It contains huge amount of tacit knowledge, cognitive maps and other techniques that enable managers to 'cut corners' and save valuable time to quickly analyse huge amount of information that otherwise would create halting and hesitation. The main problem of 'cognitive heuristics' is the fact that it is often 'inherently biased', concentrating on just a few variables, interpreting them just one particular way. In order to avoid this limitation, theorists 'urge practitioners to bolster their intuitive judgements with more explicit rational analysis... to avoid falling prey to common cognitive biases ... the ultimate result might be a corporate gravestone with the epitaph 'extinct by instinct" (Taylor-Gooby 2006:34). Cognitive maps need to be reviewed, renewed and tested by re-evaluating managers' views, preventing the formation of false reality models, preventing following obsolete habits and routines. Analytical thinking enables understanding the difference between feasibility and fantasy where assumptions of a cognitive map should be challenged. Strategist should be able to 'break with orthodoxy and make leaps of imagination, that are not logically justified, but needed to generate novel ways of looking at old problems' (De Wit 2005:35)

The theory of Mintzberg is based on the suggestion that 'we have no techniques for predicting discontinuities, we can only extrapolate'. (Grint 1991:131). The theory of professors Gimpl and Dakin is referring to managerial activities and all other future-oriented techniques as a modern superstitious behaviour targeted at relieving anxiety, these activities 'make our

world seem more deterministic and give us confidence in our ability to cope, they unite the managerial tribe, and they induce to take action...' (Mintzberg 2005:92). The situations of extreme uncertainty make people opt for helplessness and hesitate or do nothing, which are very undesirable outcomes, as in this case any action may reveal some elements of control. As the world of uncertainty, unpredictability and ambiguity can be considered a random world, and 'in a random world the best course of action is random action' (Mintzberg 2005:94). Consequently any activity justifying random action is useful. However superstitions are considered dysfunctional. The reason why this approach really works is the powerful and commonly underestimated effect of confidence on performance of individuals and groups. Another reason for constructivist approach is the idea that rationalism is 'without the power to correct its own short-comings; it has no homoeopathic quality; you cannot escape its errors by becoming more sincerely or more profoundly rationalistic' (Van Gunsteren 1976:20; Mintzberg 1994:151). In a competitive environment, where the actors form their strategies according to the same rational principles, the unique or random approach can be very successful.

3 Discussion

3.1 Observations

Analysing managerial experience the research, the author encountered many managers who lacked either rational or emotional skills, all of them failed to become leaders and those who had started their own businesses did not succeed, they blamed bad luck, disloyal partners or employees, changes in environment etc. Poor management skills are the greatest obstacle of business growth followed by the unsatisfied need for balancing within management function, developing the ability to make things happen and shape the future.

3.2 From Management to Leadership

The difference between management and leadership is very vague, we may call management "operational leadership", and leadership "compelling management" the functions are quite similar but this issue is widely discussed in theory. All the discussions about management can be applied to leadership with certain emphasis, based on their slight difference.

Some theorists separate the two terms: "There is a difference between management and leadership, and both are important. To manage means to bring about, to accomplish, to

have charge of or responsibility for, to conduct. Leading is influencing, guiding in direction, course, action, opinion. The distinction is crucial. Managers are people who do things right and leaders are people who do the right things." (Bennis & Nanus 2005:20)

The essence of leadership is more responsibility and guidance. "Leadership functions in two modes – one of networking and one of task orientation. In network mode the concerns, in order of appearance, are the status of the leader, the chain of command, the management style, the motivation of employees and the language of management used to achieve this. In task-orientation mode, the leadership must tackle issues, formulate strategies, create some form of work ethic, and decide on efficiency, task distribution and use of time." (Leinonen H. 2008, Lewis 2001, p. 68)

Managers have subordinates, they have a position of authority given by the company, they are paid to get things done, usually within constraints of time and resources, they pass on this focus to their subordinates. Leaders have followers, giving people instructions is not enough, they inspire people to follow them, they need to appeal to them, to change their behaviours and walk into danger if needed. Many of the leaders have strong charisma, but at least they should be good with people, give credit and be loyal to their followers, and take blame on themselves. However this does not mean being friendly, maintaining a degree of separation enables to keep the mystique of leadership. (adopted Team Technology)

Northouse (2003:8) summarises that "the overriding function of management is to provide order and consistency to organisations... seeking order and stability..., whereas the primary function of leadership is to produce change and movement... seeking adaptive and constructive change".

Rost (1991:149-152) contended that leadership is multidirectional influence relationship and management is unidirectional authority relationship. While leadership is concerned with the process of developing mutual purposes, management is directed toward coordinating activities in order to get a job done.

As illustrated in Table 1. the major activities of managers get played differently compared to the activities of leadership.

Table 1. Illustrative Characterization of Managers' and Leaders' Functions (Changing Minds 2009)

Subject	Leader	Manager
Essence	Change	Stability
Focus	Leading people	Managing work
Have	Followers	Subordinates
Horizon	Long-term	Short-term
Seeks	Vision	Objectives
Approach	Sets direction	Plans detail
Decision	Facilitates	Makes
Power	Personal charisma	Formal authority
Appeal to	Heart	Head
Energy	Passion	Control
Culture	Shapes	Enacts
Dynamic	Proactive	Reactive
Persuasion	Sell	Tell
Style	Transformational	Transactional
Exchange	Excitement for work	Money for work
Likes	Striving	Action
Wants	Achievement	Results
Risk	Takes	Minimizes
Rules	Breaks	Makes
Conflict	Uses	Avoids
Direction	New roads	Existing roads
Truth	Seeks	Establishes
Concern	What is right	Being right
Credit	Gives	Takes
Blame	Takes	Blames

Leadership with poor management gives a vision or direction for development, not considering of how it will be achieved, leaving loads of work for the managers, meaningless and misdirected change for change sake, while management without leadership merely controls resources in order to maintain the status quo or follow the plans with stifling and bureaucratic outcome. (combined ideas of Changing Minds 2009 and Northouse 2003:8)

Managers tend to think incrementally and follow company policy, but leaders think radically and follow their intuition, hence the leader is more emotional than a manager.

"Managers do things right, while leaders do the right thing. ... Leaders stand out by being different. They question assumption and are suspicious of tradition. They seek out the truth and make decisions based on fact, not prejudice. They have a preference for innovation." (Edinborough 1997; Fenton 1990; Richard 1990)

Calas and Smircich (2002:54) explain the nature of Leadership by revealing hidden suppressed meanings, mastering the manipulation of sexual terms as seduction, desire, and domination.

Surprisingly large number of leaders had gained outstanding self-control and personal skills overcoming some form of imperfection or handicap. The real-life tasks of Managers and Leaders are mixed and display some combination of behaviours.

3.3 Leadership Theories

The following theories are known in leadership science:

The Great Man Theory, assuming that leaders arise when there is a great need, they are born and not made became quite obsolete nowadays, good only for anniversary speeches to praise someone's achievements.

The assumption that people are born with certain inherited traits is a Trait Theory, where some traits are suited to leadership. To be a good leader, one should have the right, balanced or sufficient combination of traits. This theory is more progressive than the old one, and can be applied for aged leaders, who are not easy to change.

Behavioural Theory assumes leaders can be made or brought up, rather than are born, where leadership is based in certain learnable behaviour. The theory has a branch of Role Theory, where leaders define and adopt roles for themselves and a branch of The Managerial Grid, defining a mix of concern for the people and for the work.

Participative Leadership is characterised by involvement in decision-making that is improving the understanding of the relevant issues by decision-makers, their commitment to action. People tend to be less competitive but rather collaborative when working on common goals, making decisions together, their social commitment to decisions they make is greater. Decisions are more balanced and responsible than those made by one person alone.

Contingency Theory assumes the leader's ability to make decisions contingent upon different situational factors, such as the capabilities and behaviours of followers and the preferred style, including various situational factors. Situational Leadership assumes the best action depending on a range of situational factors.

Transactional Leadership, implies people being motivated by reward and punishment by social systems with a chain of command. By signing a contract people cede all authority and subordinate their actions to their superiors.

Transformational Leadership assumes people's readiness to follow a person with vision and passion, who inspires them by injecting enthusiasm and energy.

The latest approaches to leadership and innovation discover the term of "rotating leadership", the process opposed to domineering and consensus leadership, and associated with more intense innovation. "It involves *alternating decision control* that access the complementary capabilities of both partner organizations, *zig-zagging [sic] objectives* that engender deep and broad technological search for potential innovations, and *fluctuating network cascades* that mobilize different participants who bring variable inputs to recombination." (Davis & Eisenhardt 2011)

These theories have different points of view on leadership function; in practice leaders have the features from several theories, depending on their background and assumptions. In order to have deeper understanding and ability to improve and adapt leadership abilities, leaders need to know the theories and apply them to make best use of their skills and company resources.

3.4 Leadership Styles and Dimensions of Leadership

Three common types of leadership are depicted in the leadership triangle, with linear-active, multi-active, and reactive extremes. The linear-active leader is described as factual, calm, decisive planner, which it is common trait in Northern Europe and Germany, while multi-active style, common in Southern Europe, Africa, and Arabic countries is described as warm, emotional, and impulsive. The reactive leadership is accommodating, courteous, amiable, and compromising, this style is typical for Asian countries.

Power Distance differences need to be taken into consideration in management and leadership issues as they are the common source of misunderstanding and mismanagement. For example, Finland is considered a small-power-distance country meaning that there are few social diversities, large middle class and most members of the society have equal chances to reach the position he or her is striving for, that this is not applicable for highly educated

eastern and different-race immigrants, who have much better chances to successfully apply their education elsewhere. Lewis argues that Finns are concerned about the equal treatment of every member of the society, but it is evident only in case of women and disabled people. Finland was the first country in the world, where in 1906 women were allowed to vote. Lewis considers the Finnish approach to be situated between the linear-active with its step-by-step planning and action orientation and reactive "due to its reticence, use of silence, humbleness ... good listening without interruptions." being more democratic than the typical British leader, but more autocratic than the average Swedish leader. Typically, the head of an organization relatively easily accessible for the employees, "which allows an unhindered information flow in both directions and therefore fosters a transparent, democratic, and trustful atmosphere" (Leinonen H. 2008; Lewis 2001:183-185)

The country-specific dimensions of Individualism-Collectivism, Masculinity-Femininity, Uncertainty Avoidance, Long-term orientation and Power Distance need to be carefully considered in leaders' actions, to evaluate the dimensions and possible courses of actions especially when going international at any level.

Many multicultural companies all over the world show the tendency of shifting to management styles focusing on the individual as an independent entity, supporting creativity and talent of employees, emphasizing respect and appreciation, encouraging them to share their expertise and experience with a lot of freedom given to their initiative. The leaders' and managers' task is to provide the preconditions and stimulate fruitful working atmosphere. When a manager succeeds in mastering guidelines to overcome cultural differences, such as finding similarities and common goals, moving from tolerance to genuine appreciation, respect and nurturing each other's feeling of self-significance, turns him into a leader. This process requires personal development of a manager/leader, one can find guidelines in the books of Dale Carnegie or his followers or leadership literature found in the references.

Being aware of the different habits and cultural differences of other cultures is a good asset, but being able to understand how the manager's behaviour could be interpreted by their counterparts makes the great manager. When the manager is a high rank leader his behaviour is rarely misunderstood, it is widely discussed by everyone and the any random expression or features are interpreted as a part of national culture:



Figure 3. CULTURAL DIFFERENCES NOTICED AT THE G20 MEETING IN TORONTO... The Canadian: Self-absorbed and disconnected from reality. The American: Businesslike, unwilling to be distracted. The French and the Italian: "LOOK AT THAT ...!" (The Daily Bunnygraph 2011)

3.5 Team Building

Team building is one of the most important functions of modern leader. Bringing together people of different backgrounds is a challenging task. The ability to manage diversity, harness the differences of team members is integral part of innovation process. Leadership should "make all members of the organization feel a sense of worth, security, and acceptance that allows them to give much more of their talents and creativity to the organization". (Pfeiffer 1998:121) A good leader understands, values, respects and turns the individual differences found in every person to benefit the organisation. A team that has

people of dissimilar mindsets has better understanding of complex problems, greater creativity, flexibility, innovation and problem solving skills.

Denning (2003) outlines the following stages of a team creation:

1. Inclusion: defining who is in and who is not
2. Control: defining who is in charge, who is setting objectives and who executes the work
3. Affection: natural phenomena when after some time of working together the individuals feel affection and inclined to take care of and anticipate one another that altogether produces [sic] momentum leading to higher performance

The role of a group leader is to nurture and manage the se stages, declaring mission, compelling vision, suggestions for the contribution of group members. The leader keeps control on the mission accomplishment, prevents and solves the conflict within the group.

A good idea to break the ice of cultural differences is shared activities and informal events outside work that can help build up a strong team of employees or counterparts to increase tolerance and get to know each other.

3.6 Innovation

3.6.1 Definition of Innovation

Innovation means the process of creation of new products, processes, practices, ideas or technologies that are better or more effective.

Innovation means a change of practice of a community, where the new practice is of greater value to the members than the previous practice. To effect innovation, the entrepreneur will need to put together a team and manage it. The team will carry out actions in which the leader is the customer of the team members. (Denning 2003)

Innovation involves major change, which according to Peter Drucker (1999:76) offers seven major kinds of opportunities for innovation:

The first four are visible inside the organization or industry:

- *Unexpected events* (successes, failures, outside events)
- *Incongruities* (between reality and assumptions or expectations)
- *Process need* (improving a process to overcome a breakdown or make it better)
- *Changes in industry or market structure*

The other three involve changes outside the organization or industry:

- *Demographics* (population changes)
- *Changes in perception, mood, and meaning*

- *New knowledge* (both scientific and nonscientific [sic])

3.6.2 Drivers of Change

Change drivers within the High Technology industry today are:

- Price competition, mainly from the Asia and technological Competition from the USA, Japan and Korea.
- Globalisation – the world is becoming smaller, ‘one operation’, cheap communications and affordable transportation costs
- Global workforce – easier to get the right people in the right place
- Global Capital – availability of international funding fosters growth
- Government support – funding, stimulating legislation
- Sustainability through continuous innovation
- Complex operating environment – certifying and patenting new products, however becomes easier due to European integration

3.6.3 Challenges of Change

The difficulty of change is in the fact that it often involves the chain of changes in other levels and dimensions and it is very difficult to coordinate the process. Leaders cannot expect all the people to understand the ideas and adapt to the new way of doing things. The employees have different abilities to adapt and learn and generally these abilities decrease with age. General guideline is to make change as simple as possible, preferably make change in the higher levels, inform and instruct people where needed.

Major challenges of High Technology innovation delivery are:

- Long periods of time needed to make the technology operational, risk of becoming redundant
- Unrealistic expectations: innovation considered ‘silver bullet’
- Leadership-management-technology complex interaction
- Perception of project as being ‘owned’ by team of innovators
- Complex governance of project and special skills required

The High Technology Firms leaders stimulate a spirit of innovation to produce new products and techniques. They are responsible for increasing innovative activity to prepare for market expansion. High technology companies’ challenges are caused by the fast paced changing landscape and strong competition. Innovation and intellectual capital and ability to develop and bring new products to market swiftly are the main sources of competitive advantage and future competitiveness of organization.

Statistics shows that 3 out of 4 new initiatives fail to deliver on their promise; the common reasons of failed and successful initiative are reflected in the table:

Table 2. Top 10 Barriers and Success Factors of Innovation (Deloitte 2011; Gartner 1998)

Top 10 barriers	Top 10 success factors
Competing resources	Ensuring top sponsorship 82%
▶ Functional boundaries 44%	Treating people fairly 82%
Change skills 43%	▶ Involving employees 75%
Middle management 38%	▶ Quality communications 70%
▶ Long lead times 35%	▶ Providing sufficient training 68%
Communication 35%	Using clear performance measures 65%
▶ Employee opposition 33%	Building teams after change 62%
▶ HR (people/training) issues 33%	Focusing on culture/skill changes 62%
Initiative fatigue 32%	Rewarding success 60%
Unrealistic timetables 31%	Using internal champions 60%

3.6.4. Managing Innovation

Managing change requires perseverance; messages should be in line with the target, taking advantage of new opportunities and fast handling of constraints help to keep change moving to the targets. The participants need to be provided with latest information about the change status and activities required for best coordination. The next step is to apply the change, and make it a sustainable practice. In multinational organizations the change procedure should be worked out to function in all subsidiaries with not too much need to be profiled to the local level. Working out the common corporate culture makes this task easier.

Leaders as central decision-makers outline the strategy and create new ways but mostly improve, build on, and protect the things that were in place before, often prior to their arrival, influence the processes of invention, R&D, and commercialization of products and services. This is the reason why requirements for effective leadership in this industry are so unique. The companies often produce a number of inventions and need to push them through the innovation pipeline to commercialize and derive a profit from these inventions by continually monitoring and evaluating opportunities and securing resources. Assessing the gap between

firm's existing and targeted capabilities is needed to decide whether or not the company needs to acquire new capabilities from outside instead of developing them internally.

Limited ownership in delivery across the pipeline is the common reason of damping in innovation project. The shift in the ownership and in the way innovation projects are delivered is needed to make it sustainable.

Table 3. Roles Played Across the Innovation Pipeline (Deloitte 2011)

Role	1. Generate and prioritise ideas	2. Proving the concept	3. Develop the prototype	4. Demonstration	5. Deploy, maintain and enhance
Technology team	Seek news ideas for challenges & opportunities	Prove concept works Lead the Proof of Concept	Prove concept works in required environment. Achieve quick wins.	Prove to business technology works in required environment	Technology advisory/consulting Quick wins highlighted Potential for future enhancements
Business leaders	Provide business strategy challenges & opportunities. Vision!!	Oversight & direction. On track against agreed criteria. Drive urgency. Create metrics	Agree site for demonstration On-boarding of site. Share vision Drive change	On-site leader engagement. Communicate vision meaningfully. Drive change	Site leadership for deployment and maintenance Business leader for enhancement. Drive change
Governance	Innovation steering group. Innovation management team	Technology acceleration team PM's Stage-gates	Innovation champions / advocates	Leadership transition to site based leadership with overarching plan	Full ownership by site with support of technology team. Monitor progress Sponsor team for future enhancements
Communication	Senior stakeholder engagement to achieve funding	Understand the real opportunity Sponsor & Technical team engage site leadership	Generate interest Concise business focused messages	Significant site engagement and formal handover of ownership	Focus on working in operating environment Quick wins communicated
Change and business processes	Facilitate idea generation / prioritisation Understand business case	Understand people / process/technology change. Work with leader sponsoring project	High level Transition plan Develop new business processes, new roles etc with business and technology team Work with site leaders	Delivery/ implementation plan inc people & process focus. Training focus	Change business processes, people initiatives. Track business benefits

Technology team's role is crucial in high technology organisation as a main source of competitive advantage.

However the Innovation Superstars (2010) warn that the focus should be kept not on technology, but on customer demands. In the model below you can plainly see two "wheels," one of internal, one of external focus. The internal focus wheel features such components as Process Focus, Risk Focus, Blame Focus, Tech-Centered focus, and a Reactive Mindset; none of these features of internal focus should be of any surprise to readers who have followed along. The following figure reminds on maintaining the right focus on innovation to succeed.

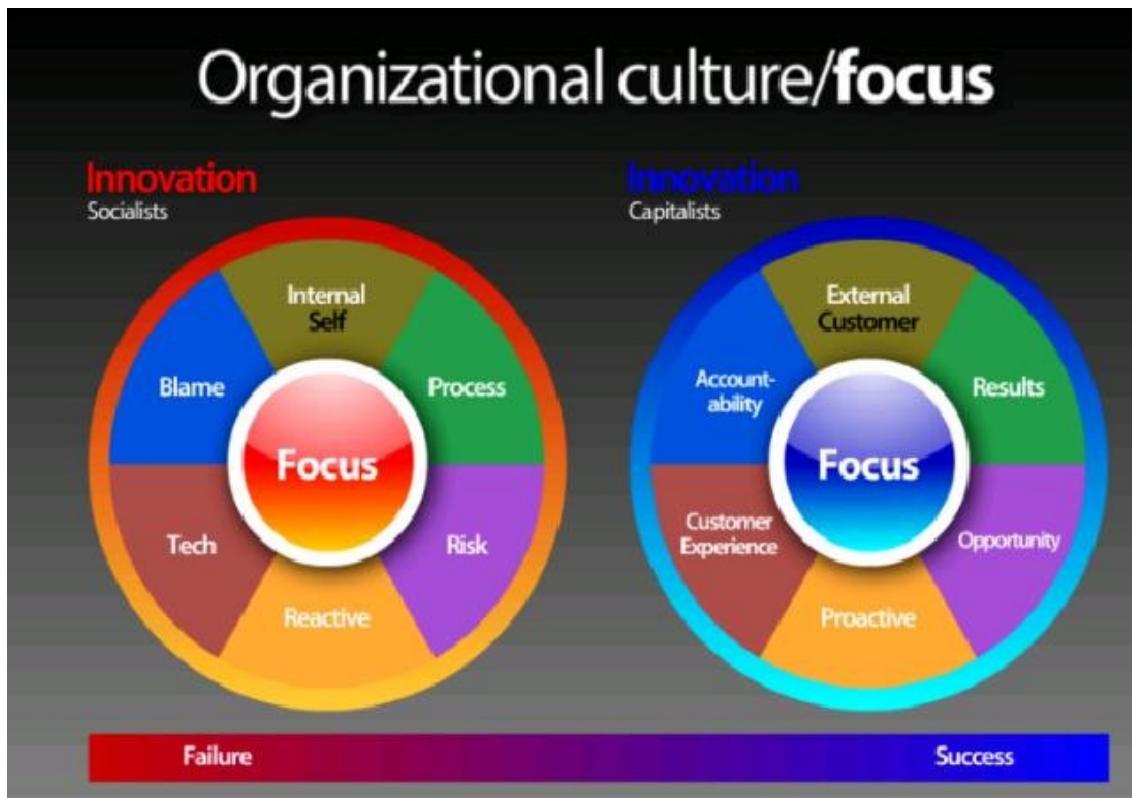


Figure 4. FOCUS OF INNOVATION (Innovation Superstars 2010)

The application of this principle has certain limitations in high technology, one could even say it is myopic approach, as if all the companies are innovating in certain extent and some way in a competitive environment, competing the same way makes this concept wrong. Someone has to concentrate on improving processes and technology, take risks and take a closer look at oneself if this is either the area that needs attention or the one that has opportunity to become a competitive advantage. There are numerous sources of learning available, and many of them are shallow and would work only in few situations. In order to find a working solution own level of understanding the situation should be deep enough to see the problems and opportunities of particular situation.

Building technology roadmaps helps to estimate if technical investments correspond with the future needs or would it be a better option to acquire existing technology to invest more resources to internal innovation processes.

If R&D is one of the main activities of the company, designing and improving the strategy of product development increases its speed and productivity, collecting and assess the intelligence information helps in decision-making process.

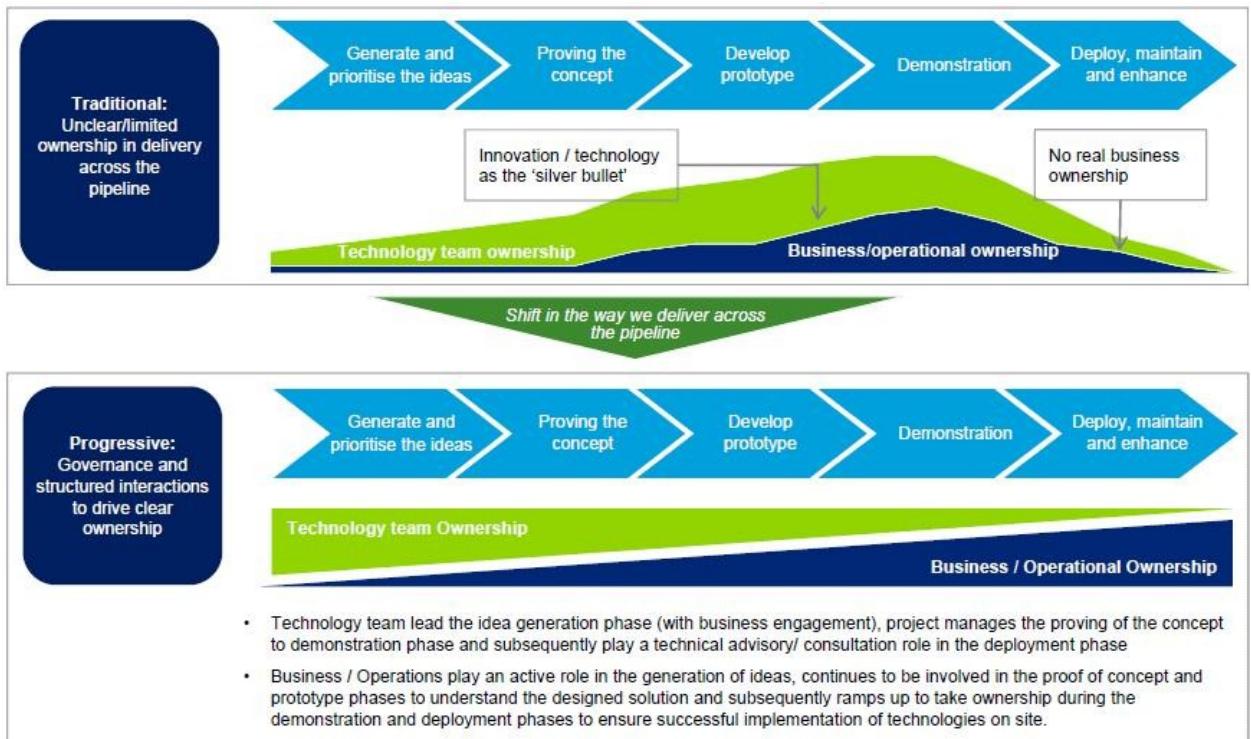


Figure 5. INNOVATION OWNERSHIP DELIVERY (Deloitte 2011)

Common mistakes leadership makes in innovation projects is allowing complacency and poor prioritizing in managing innovation, failing to build up a powerful guiding coalition where the process of change is not properly planned and information not forwarded, underestimating the power of vision and failure to share the vision, failure to break the project into stages and create short-term wins, failure to anchor changes to make the innovation sustainable practice.

Setting priorities and tackling the most critical activities first is sounds evident but still is a common mistake in practice, people tend to cherish some processes and devoting too much time with them, while some unpopular stages or activities are not given proper priority, left for the last minute of forgotten. To ensure success we need to have all the essential change enablers, missing each of them creates different adverse impact indicated in the next Figure.

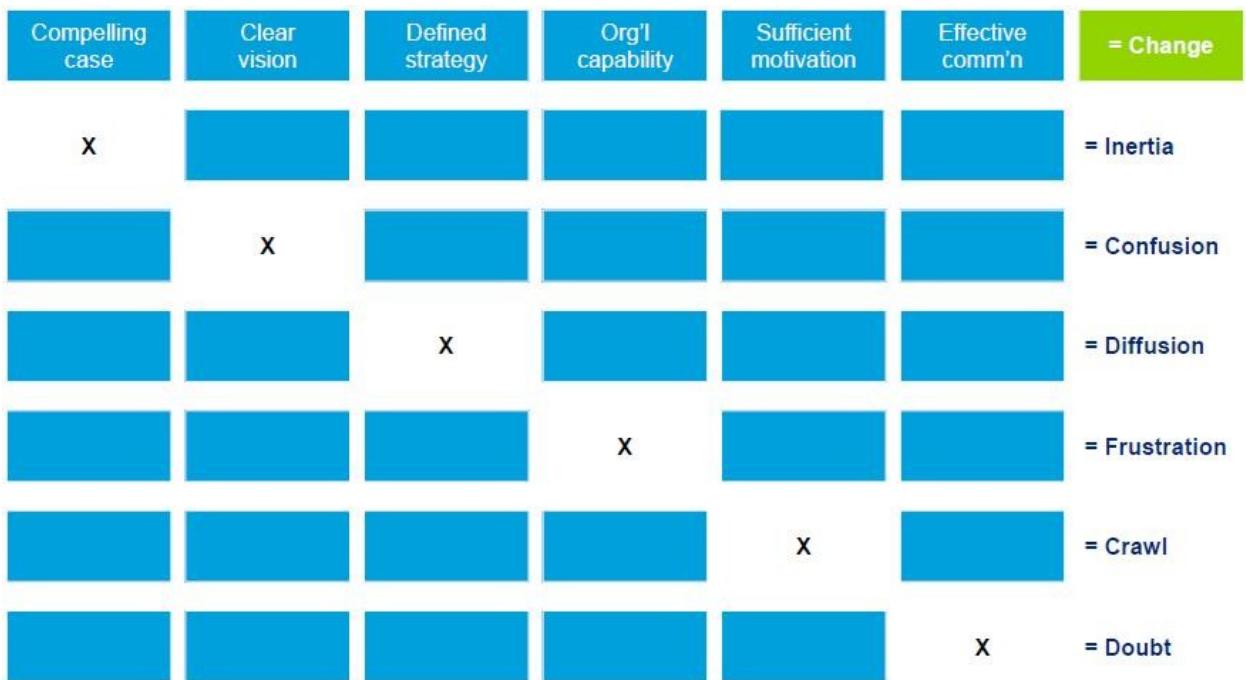


Figure 6. MISSING ENABLERS OF INNOVATION (Deloitte 2011)

Using this table backwards enables to deduct what might be a reason of innovation not proceeding as it should.

The role of emotional intelligence in managerial function is discussed earlier (see 2.4), it has much greater importance in leadership function, and crucial for initiating change because emotion, even more than logic, motivates participants to change their perceptions. Making the problem evident, creating the feeling of urgency to solve is very compelling for the people to act, it influences their feelings. However the transformation may have different affect on each key individual or stakeholder group, some of them can oppose the change, they might need different arguments and techniques to be convinced, common win-win arguments might not always be found and compromise requires an incentive or motivation for those who might oppose the change. This and many other risks should be anticipated. Informing in advance, certain degree of transparency and open talks are needed to avert such situation.

Simple technique indicated in the Figure below can be used to compel people to action.

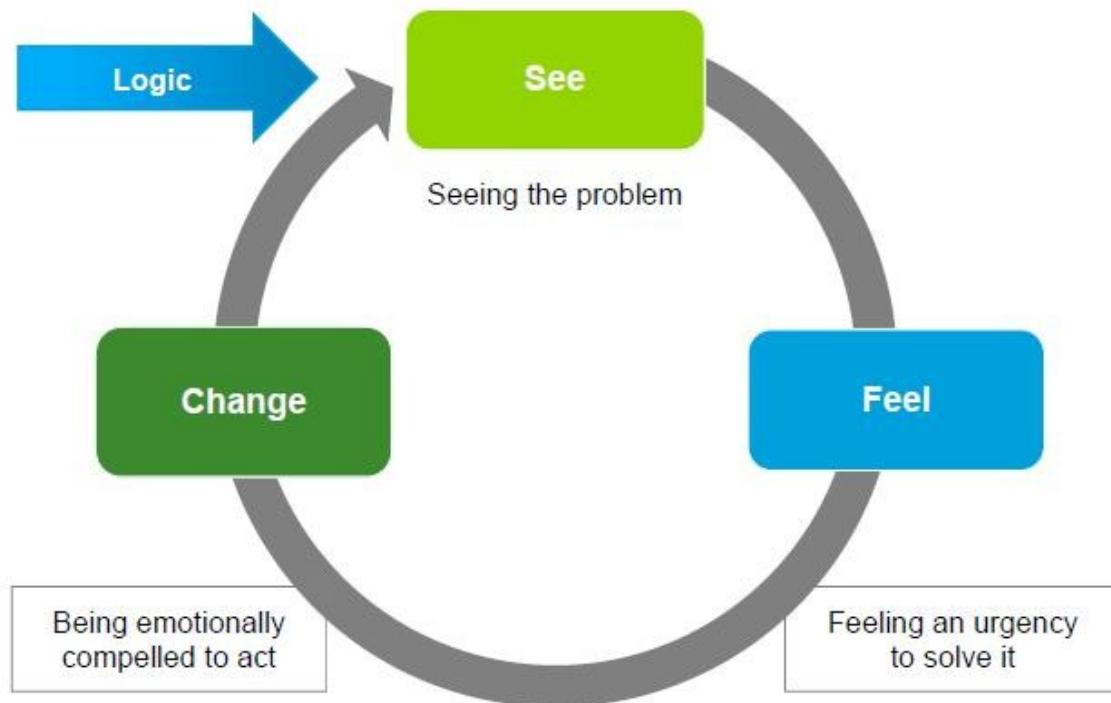


Figure 7. THE PROCESS OF CONVINCING AND PUSHING TO ACTION (Deloitte 2011)

The psychological ability to convince the opponents is multiplied by the rational arguments reflecting tangible advantages of the situation, such as evidence of innovation benefits and negotiating power of decision-makers. Good communication skills are required to share the information effectively.

An approach to deliver change integrating the People Transformation Dimension and strategic framework of change are focused on the people issues and other challenges of organisational change.

The main stages, Kotter's 8 steps of change and processes are reflected in the figure below:

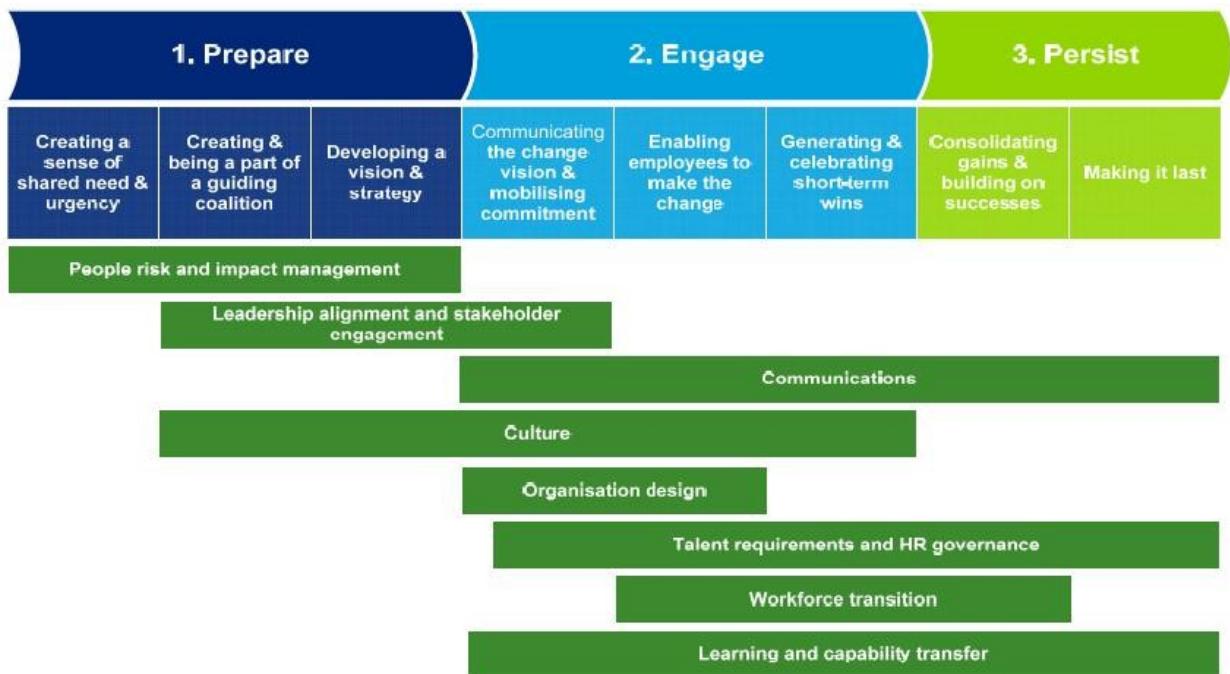


Figure 8. EIGHT STEPS OF CHANGE (Kotter 2002; Cohen 2005)

If the company is not autocratic, and there is a need to align the other leaders and stakeholders by convincing and providing motivation for them, if all the allies of change process are aware of the policy and understand resistance they are more committed to lead the transformation of departments under their influence. There is a need not only for leveraging, but for balancing within the technology and innovation process, the company that is regulating efforts and resources between exploring and exploiting, inventing and applying will outperform the companies that emphasize one procedure at the expense of the other, unless these functions are deliberately shared between the companies. Likewise, the leaders who are able to focus on the external and internal environment at the same time, considering their priority will be more effective.

3.7 Innovation in High Technology

3.7.1 Indicators

Strategic leadership institute's position is that the indicators of innovation quality are the company's investments in science, patents and products that had reached the market. The regulated policy of facilitating innovation, analysing and applying best practices creates cascading effect in developing and marketing new innovations. (Edosomwan 2009)

The following pyramid is created to indicate the innovation process of product design, but can also be applied to other areas of innovation.

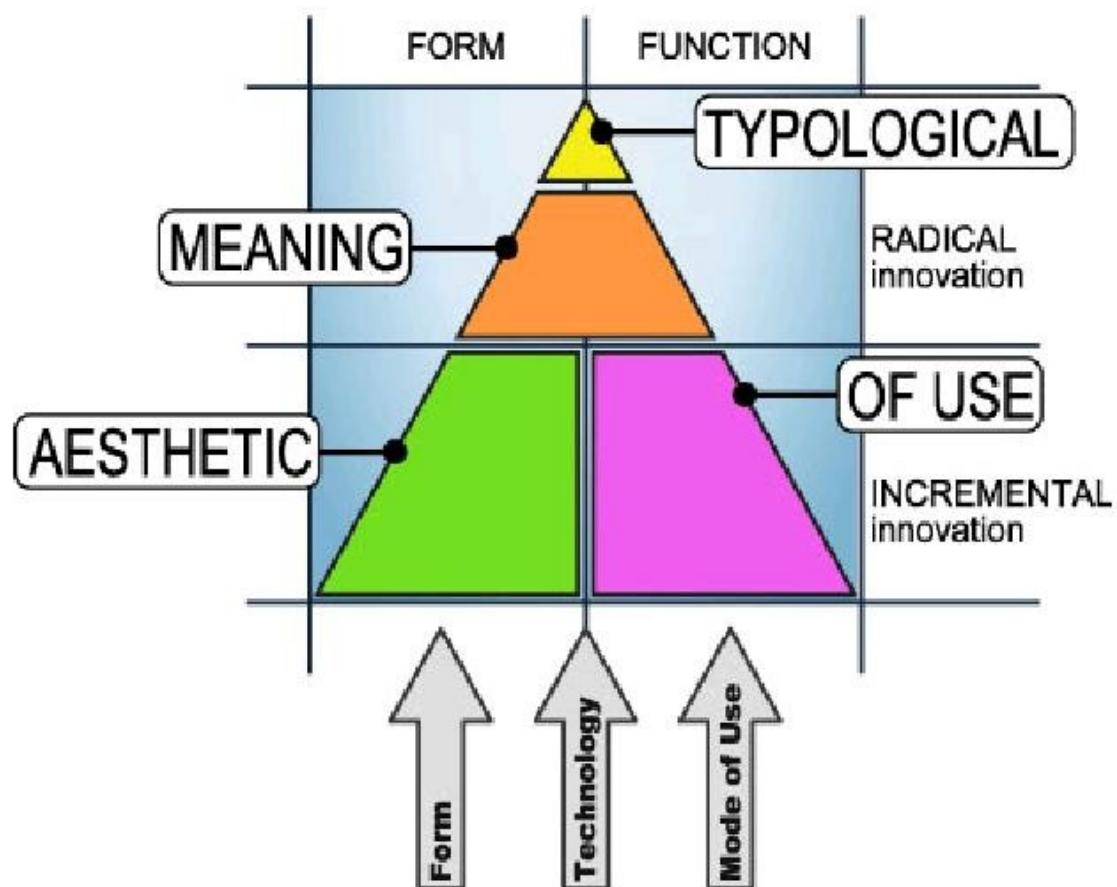


Figure 9. THE INNOVATION PYRAMID (International Journal of Design 2010)

The four kinds of innovation were systematized into a pyramid with incremental innovations at the bottom and radical innovations at the top. The pyramid shape and the areas of each innovation type corresponds with the the recommended share of resources and time for each activity, reflecting the fact that the stronger an innovation, the more rarely it happens. In particular, typological innovation, as intended here, is an innovative

phenomenon that represents a real breakthrough and, therefore, happens quite rarely (10% of the total design-driven innovation phenomena analyzed). For this reason, it is placed at the vertex of the design-driven innovation pyramid. (International Journal of Design 2010)

3.7.2 Characteristics of Innovation in High Technology

The specific characteristics of innovation in High Technology industry and classification of innovation types are widely discussed:

Innovation is the necessity for companies competing in environments characterised by unpredictable, pervasive and continuous change (Brown, Eisenhardt 1997), and it contributes to company's competitive advantage in a number of ways (Tidd, Bessant & Pavitt 2005). In the domains of strategy and organisational theory punctuated equilibrium model of change assumes that long periods of small incremental change are interrupted by periods of discontinuous radical change (Abernathy, Utterback 1978, Tushman, Anderson 1986). In relation to innovation, these changes are correspondingly characterised as continuous and discontinuous innovation. Discontinuous innovations encompass high order changes in scope and breadth able to create new industries, products and markets. Continuous innovations are lower in breadth of impact and constitute augmented changes to products, process improvements in the way existing products are produced, management determined procedural improvements and structural modifications. (Rikkiev & Mäkinen 2009)

3.7.3 Technology Convergence and Diffusion of Innovations

The most challenging is taking advantage of new knowledge, because it "relies on the *existence* of the knowledge and usually on the *convergence* of several different knowledge areas. When the right knowledge converges, there is a surge of interest and many competitors are likely to show up to build a market. This period is called the "window". After a few years, it is no longer possible for a new entrant to come in; the window closes. Then follows a "shakeout" leaving only a few survivors." (Denning 2003) While the window is opened, the innovator cannot afford to waste time or make mistakes; otherwise he will be taken over by competitors. Despite extreme importance of the term "convergence" it is not familiar for many managers and relatively unexplored by theorists. Conceptual definition, types of convergence differing by determinants of innovation, product demand and technology are discussed in the works of leading Nokia engineers Rikkiev and Mäkinen (2009):

Convergence is a popular term in business environment and especially frequently used in relation to technological integration evolution in ICT industry. Recent advances in electronics, digitalization of media, de-regulation of markets and changes in consumer preferences have led technologies and markets that previously followed distinct trajectories to overlap and merge. Due to convergence, markets are enlarging as technological base

of the companies becomes more diverse, number of product features grows and products enter adjacent markets. Therefore, convergence has significant implications on companies' innovation activities posing increasing challenges to continually innovate in altering domains.

Diffusion of Innovations is a theory that explains the process of spreading new ideas and technology. Rikkiev & Mäkinen (2008) outline several attributes of innovation influencing the process of innovation diffusion:

Relative advantage is the degree to which innovation is perceived as better compare to preceding idea. Compatibility is the degree of innovation consistency with existing values or past experience to potential adopters (Narayanan 2001). The need and availability of collateral assets (Tierce 1986) also affects innovation diffusion speed. Collateral assets are defined as complementary products or complementary value constellations. Convergence determinants are outlined in conceptual mode of Table below. Logical induction is used for making propositions to test them empirically and convergence typology is adapted from Stieglitz (2003)

Table 4. Convergence Types (Rikkiev & Mäkinen 2008)

DETERMINANTS / CONVERGENCE TYPES	Technological substitution	Technological integration	Product substitution	Product complementarity
INNOVATION				
Innovation process type	Technology push	Technology push	Market pull	Market pull
Prevalent innovation dimension	Process, Product	Product, Market	Product	Market
Innovation impact	Disruptive	Sustaining	Sustaining	Sustaining
Technological discontinuity	Competence destroying, enhancing	Competence enhancing	Competence enhancing	Competence enhancing
Innovation content	Modular, Radical	Architectural	Incremental	Architectural, Incremental
Innovation newness to	Company, industry	Company, market	Company	Company, market
TECHNOLOGY				
Technological pervasiveness	General purpose	Specific	Specific	Specific
Technology knowledge cumulativeness	Low	High	High	Low
Technological opportunity	High	Low	Low	High
Technology evolution stage	Technological Discontinuity	Era of ferment	Incremental Product innovation	Emergence of dominant design
DEMAND				
Market newness	Old	New	Old	New
Knowledge cumulativeness of demand	Low	Low	High	High
Relative technological advantage	High	Low	Low	High
Customers technological sophistication	Low	Low	High	High
Need for collateral assets	Low	Low, High	Low	High
Compatibility with user values	Low	Low	High	High

Purposeful and systematic innovation involves analysing opportunities, which means careful evaluation of each apparent opportunity including analysis of resources, benefits, costs, and risks. It also involves listening, or going out to potential customers and finding out about their expectations, values, drivers and concerns. Simplicity of the innovation makes it easier to implement and keep it focused on one specific thing. Simple start minimizes the need for start-up resources. Aim for leadership is the key success factor for the

innovation, meaning that innovator is the one whose leadership functions are the most effective.

3.7.4 Innovation Pitfalls

Denning (2003) outlines the warnings of Drucker not to fall into the trap of innovation:

- *Don't be clever.* Innovations have been adopted by ordinary human beings, not well educated MS and PhD holders. If an innovation is to include the great masses, conservatives, and even laggards, it has to [be] understood by all.
- *Don't diversify, splinter, or do too many things at once.* Keep your energies focused on the one simple thing you are trying to accomplish. Often even that one thing takes a huge amount of work.
- *Don't innovate for the future; innovate for the present.* If it's not useful now, you won't be around when it finally gets to be useful.

Being realistic and continuously testing assumptions for consistency makes it possible not to lose touch with reality.

Denning (2003) quoting Drucker explains that the realities shows that innovation is hard work, innovators build on their strengths and that "innovation is an effect in economy and society, a change of behavior [sic] (practice) of a community ... innovators are conservatives who have "risk-tolerant" and "opportunity-focused" approach, they listen to people, meticulously do the analysis, define and confine the risks."

3.7.5 High Technology Context

Microsoft leader Bill Gates maintained clear and consistent focus while his company created a new market and a new industry. In his situation maintaining focus, or as he called it "circle of competence" was a key success factor. Indeed, failing to find, determine and follow a focus is a common mistake of many High-Tech companies, when they tackle too many or too wide areas instead of specialisation, but, as a universal rule, the most important success factor is the balance between different directions of development. In the article "Balancing Technology, Management, and Leadership" the author, Jim Clemmer (2008) argues that though there is a need for managers "to move away from the overstuffed bureaucratic, controlling, and hierarchical approach" there is great number of poorly performing, struggling

and or even "went down the tubes" companies that used to be "entrepreneurial, exciting, people-oriented, customer-driven ... because they used a shoebox for an accounting system and yesterday's technology". The real issue here was balance, with the "triangle model" to consider:

Balancing between Management, Leadership and Technology are explained the three dimensions by Jim Clemmer (2008):

Technology — an organization's core technology is the expertise and/or equipment that produces the products or services that its customers buy. Supporting technology may include web-based applications, software, telecommunications, robotics, production equipment, and the like to produce, deliver, or support the organization's core technology. Personal technology is the technical expertise I bring to the production, delivery, or support of either core or supporting technologies.

Management Systems and Processes — organizational processes are the flow of materials, work activities, customer interactions, or information across an organization to produce, deliver, or support the products or services that its customers buy. Organizational systems are the underlying feedback and measurement loops, performance improvement methods, and organization structure. Personal systems and processes are the methods, habits, and approaches we all use to get things done.

People (Leadership) — this includes those people an organization serves, the people they would like to serve, people in the organization doing the producing and serving, key external partners (such as distributors, strategic alliances, suppliers, etc.), everyone in the organization supporting the producers and serving the servers, shareholders or funding partners, and (very deliberately last), management.

Gary Yukl and Richard Lepsinger (2004) compare leadership with walking on a tight rope, where it makes easier to maintain balance if one looks up and ahead, using anything at hand. In order to achieve and maintain top performance organizations are balancing and constantly improving each area. Just as management issues often overlap leadership, technology dimension is affecting the other two. Jim Clemmer gives a bright example:

"My notebook computer has been a huge help with e-mail, managing my time, storing and easily retrieving information, keeping contact and project records, maintaining our database, developing slides for presentations and workshops, and accessing a multitude of information and research through the Internet. Without it, I'd be 30 - 40% less productive and would need much more administrative help. But as with any technology, just automating sloppy personal habits and disorganization will mean we'll just mess it up faster."

When the decision-maker poorly understands customers expectations, expensive technology and "re-engineered" processes bring only partial results. This is the explanation why "Management by wire" is such a typical mistake in many organisations, face-to-face meetings are always more efficient. If the priorities for the time and other resources are not set, none of

sophisticated devices will do it for us. Systems and processes, and the Management dimension are extremely important areas as well, organising human and technological resources for best performance. "Developing the discipline and using the most effective tools and techniques of personal and organization systems and processes is a critical element of high performance" -concludes Jim Clammer. Finally he quotes an executive in California's Silicon Valley, who said: "we used to say people need to be more technology literate. Now we say that technology needs to become more people-literate.

3.8 Leadership Dynamics in Innovation

Emmanuel Agbor (2009) argues that leaders actively implementing and encouraging strategies to foster creativity are "the catalyst and source of organizational creativity and innovation. ... [They] establish an environment conducive to renewal and build organizational culture that encourages creativity and innovations... manage diversity in the organization, as well as develop an effective leadership structure that sustains the innovation process." The old models of innovation are no longer adequate for modern organizational environment as work processes change faster with changes in technology, unpredictability, globalization, uncertainty and turbulence. In the last century many companies had monopolistic position in market, technology, or brand and they were unable or refused to innovate or did it very slowly. When they faced competition or decline in demand they had to "harness the creativity and leadership that exist in the organization to manage its innovation processes." In order to begin the innovation process the organization needs to put the right innovative leaders, create leadership structure, develop strategies leading to innovation. Leaders' objectives should be innovative, dynamic and ambitious, they need to have "proactive attitudes as well as a capacity to respond to change, this can help bring innovation, renewal, and success to the organization".

Some theorists argue that management tools, such as efficient work processes, effective strategy, corporate culture—not leadership—account for organizational success. Numerous empirical researches prove the importance of culture is a key factor in organizational performance. However the culture is developed by involvement, commitment, and active support of leaders to renew the organization, or adopt the better performing culture.

As a main contribution for organisational development, "leadership is the fundamental and foundational competitive advantage for success because without the right creative and effective leadership in organizations, the strategy, technology, and innovations will not help it succeed ... shared and collaborative leadership, rather than heroic and authoritarian management, is what unlocks the potential of organizations" (JSL 2008). The most needed assets of any leader today is ability to exert broad influence, inspire and empower other leaders, because nobody can have all the skills, ideas, and time to carry out the complex tasks of leadership at every level of the company. Organizations can achieve success by uniting the creativity of all its stakeholders and by harnessing leaders' abilities.

Modern knowledge-based organizations require the diffusion of leadership, when every employee has functions of a leader, shares power, values, responsibility, and aspirations where obsolete command-and-control structure would stifle creativity.

3.9 Encouraging Creativity

Traditional way to encourage creativity and innovation is "building friendly and inclusive working conditions [by forming] the social structure of the organization helps workers feel secure and accepted, it brings out their creativity" (Pfeiffer 1998). Hence "leaders must respect, value, and harness the richness of ideas, backgrounds, and perspectives of every employee and allow them to use their unique personal assets and experiences to work for the organization" (Meurling 2004)

Working out an exciting common vision produces a motivating work environment where every employee can participate, achieve professional and personal growth, and bring out creativity through creating a shared vision of the type of organization they should build, converting them eventually into creative and effective leaders. Instead of treating people as cogs in a machine, the modern leader should show respect and appreciation. "Treating organizations as living systems filled with the innovative dynamics and potential that exists in all of the people [it helps leaders to] create organizations filled with followers who are capable of adapting, alert to changes in their environment, and able to innovate purposefully" (JSL 2008: 43; Wheatly 2001)

A few decades ago "the most difficult roadblock of creativity to overcome is organizational culture that militates against creativity and innovation" (Sonnenberg & Goldberg 1992) the

managers were so conservative, that they assumed that "the way the company functioned before is the way it should always function" (JSL 2008), nowadays it is not the case, and the majority of leaders admit the importance of innovation, but not all of them have skills to execute it.

Mistakes should be treated as integral part of learning process and employees should not be punished for new ideas and failure people should feel free to take risks and make mistakes.

4 Methodology

4.1 Earlier Research and Justification of Research

It might look like a paradox, "consulting firm CSC surveyed 497 firms in the U.S. and 1,245 firms in Europe that undertook reengineering. Eighty-five percent reported little or no gain from their efforts" (Tichy 1997). Rath and Strong, a consulting firm, surveyed Fortune 500 companies who had implemented TQM initiatives and found that only 20% achieved their objectives. Likewise, a survey from the American Management Association found that less than 45% of downsized companies in the last decade reported any increase in profits (Agbor 2009). One of the reasons is that companies that did not succeed in re-engineering projects have failed because of the lack of effective leadership. In many cases the reason might be in personal interests of some stakeholders that contradict with the company targets: restructuring, just like mergers, acquisitions and bankruptcies is a way to confuse the financial reports, minimise taxes, escape from obligations, withdraw or hide funds.

Just like management philosopher Henry Mintzberg in his book *Management Safari* (2000) is comparing managers to ancient tribe cheiftainry, interpreting the cracks on caribou bone as guidelines for hunting, the scientific community today is akin to those shamans, doing great deal of monkey business conducting biased research in subjective areas of knowledge getting the desired or random results, for the sake of personal or organisational interests, shape opinions and push people to action, which is often just a random action the to relieve anxiety and create vision in uncertainty. There are numerous articles discussing why most published research findings are false (Ioannidis 2005). That is why, keeping in mind extremely low reliability and rational pointlessness of researches on intangible issues, and taking onto consideration that very few researches bother to do meticulously research questionnaires, and few people bother to answer them thoroughly, still they have significance being

a modern traditional tool to create mystery, make the researcher or manager look smart, and empower his decisions, push the audience to action (other managers and leaders understand the process). Researching and proving assumptions on such a subjective issue as leadership does not give revolutionary breakthrough, but it shows different angles on the relevant issues, increases the level of understanding and linking theory with practise, discovers ideas, best practices etc. Using statistical methods of quantitative research does not give us reliable results and leaves a lot of space for influencing the results by the way the questions are asked and the way respondents' views and perceptions. Nevertheless, since there are certain research criteria to meet, the researcher has to keep following these orthodox rituals of research.

4.2. Reliability and Validity of the Study

This research was conducted according to given guidelines and international standards of scientific research and hence holds true in terms of reliability as well as validity.

4.3. Research Methods

To prove the above mentioned statements, systematic, specific and goal-oriented research methods were used in this study. Both quantitative and qualitative methods and elements were used, where data was collected by discussions, observations, and a questionnaire to establish the necessary empirical background of study.

The first milestone of the research was to collect information from companies' managers and employees to analyse their expectations about leaders and managers and work attitudes, and their opinion about the main obstacles of company success factors. The task was achieved through the establishment and conduction of a comprehensive questionnaire. The company employees were asked to evaluate their level of agreement on certain statements, the results were used for statistical purposes. There were also some open questions in the end of the questionnaire, where the participants could express their opinions and thoughts into own words concerning management and leadership procedures' contribution to maximise performance. This aspect provided the questionnaire with a qualitative dimension. To re-

ceive a reliable result the aim of the research was to obtain valid answers from 40 participants, which accounts for 48% of 76 company employees. The research questionnaire was made available both in electronic and paper form. The participants were approached through Emails, leaving 19 replies, accounting for 23% of respondents, the rest of the employees were given the paper form to fill, with an outcome of 21 replies. There was no incentive needed, as the employees were the researcher workmates and emotionally compelled to reply. The leadership issues were analysed using quantitative research was based on a structured questionnaire and tried to obtain pre-coded data from a group of respondents, while qualitative part was directed to a smaller target group, whose participants were closely examined to find out how they behave in certain situations and why they behave in a certain way. The second part of research study was focused on gathering relevant data from team leaders by the means of a set of predetermined questions. The respondents were asked to give individual comments. The goal of this part was to gather data from 5 to 8 team leaders and managers to get a reliable statistics. Using these research methods made it possible to collect enough material and answer the main questions of the topic. As we are interested only in some data of this questionnaire, we'll only discuss the relevant findings to keep focus on our research.

4.4 Analysis of empirical findings

4.4.1 Employees' Function

Employees' function in the company according to the questionnaire is distributed according to the graph below. We can see that there is only 5% share of leadership (head management) and 25%, which is rather small share of operational employees, the majority are working on R&D and production, which makes us believe about high effectiveness of

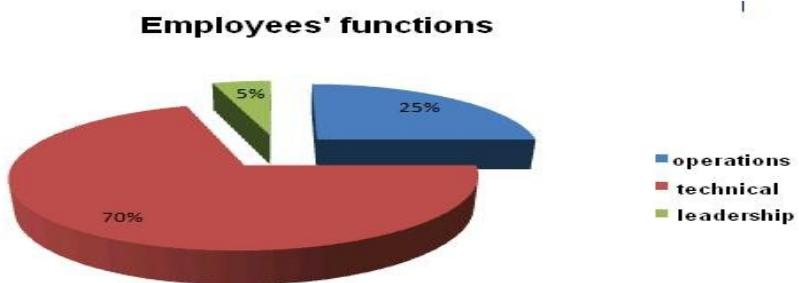


Figure 10. EMPLOYEES' FUNCTIONS

managerial personnel. Some of the employees are responsible both for managerial and technical functions, they have chosen to be technical workers because of their modesty; however the technical employees were well aware about leadership functions and qualities. The ability to combine management and leadership functions account for high productivity.

4.4.2 Effectiveness of Employees

The dimension of employees' effectiveness is evaluated by the respondents. As we can see from the results, there is quite even distribution of responses, showing that top management employees have the highest score for high efficiency, and unawareness and the lowest score for low efficiency; this tells us about respect, low criticism and mystique accordingly associated with top management, which indicates that top management is subjectively performing well. The middle management is closer to the employees, and their functions are not idealised, there is neither mystique nor misunderstanding, the technical employees' functions are well known and performance is thoroughly monitored, which gives more critical responses. This distribution shows us that there is close interaction and mutual understanding among three groups of employees which indicates healthy organisation.

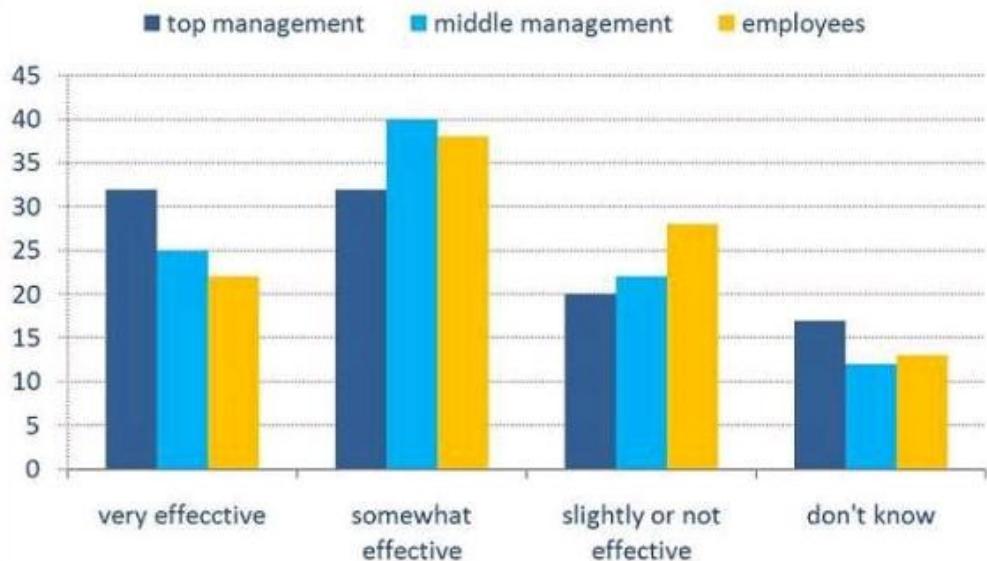


Figure 11. EFFECTIVENESS OF EMPLOYEES

4.4.3 Distribution of Leaders' Responsibilities' in the Organisation

As we can see from next graph, the respondents were well aware of the responsibilities of leaders, however, the share of innovation efforts is slightly lower than it should be in high technology firm. As the company is involved into b2b sales, the respondents are aware about high share of duties targeted at clients, developing human capital share is clearly overestimated as it is mainly a duty of middle management.

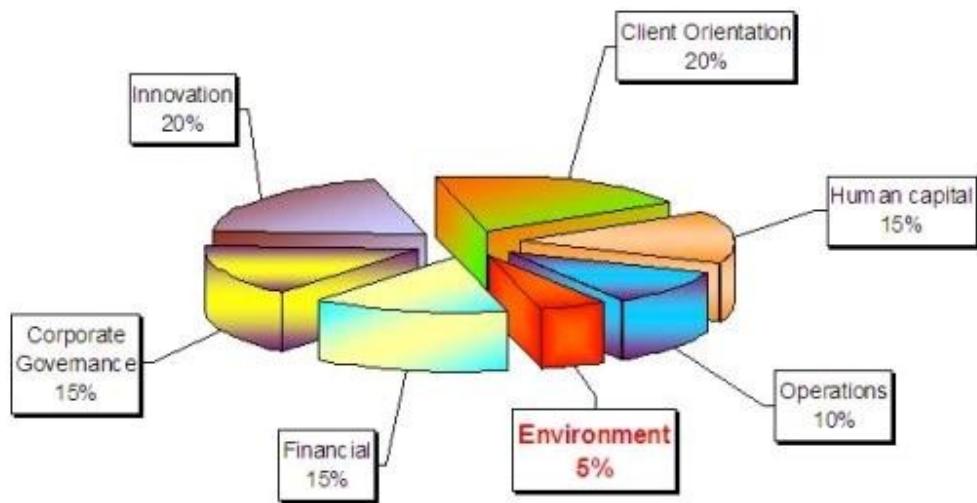


Figure 12. DISTRIBUTION OF LEADERS' RESPONSIBILITIES IN THE ORGANISATION

4.4.5 Qualities that are Expected from the Leader

As we can see from this graph, listening skills and teamwork facilitation are the most valued qualities of a leader, following by professionalism, creativity and empathy, which gives us good guidelines for development if the leader is mainly involved in managing people. Strategic leader would need more preference given to developing his vision and courage.

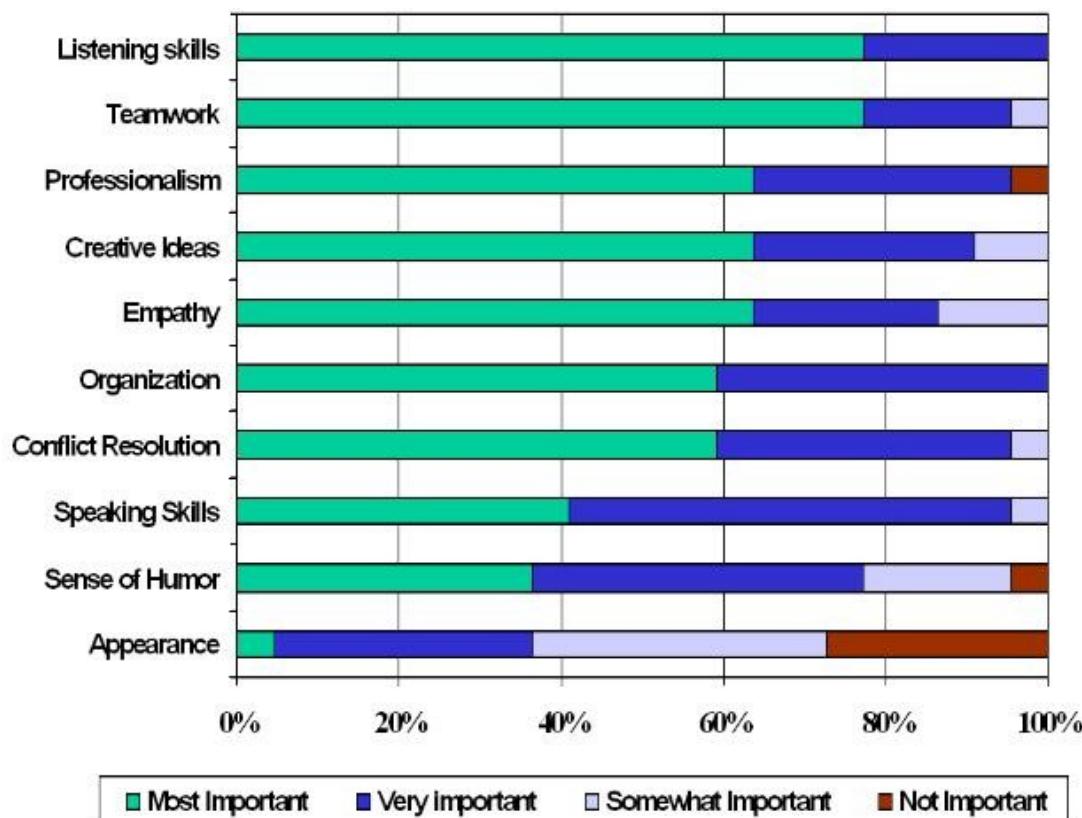


Figure 13. QUALITIES THAT ARE EXPECTED FROM A LEADER

4.4.6 Company's Ability to Develop Leaders

The ability of any company to develop leaders gives it young leaders who become loyal for the given opportunity. Considered to be one of 5 most important factors by the majority of

respondents. The results indicate that the organisation has well developed system of coaching where experienced leaders are sharing experiences and involving young leaders into the decision-making process.

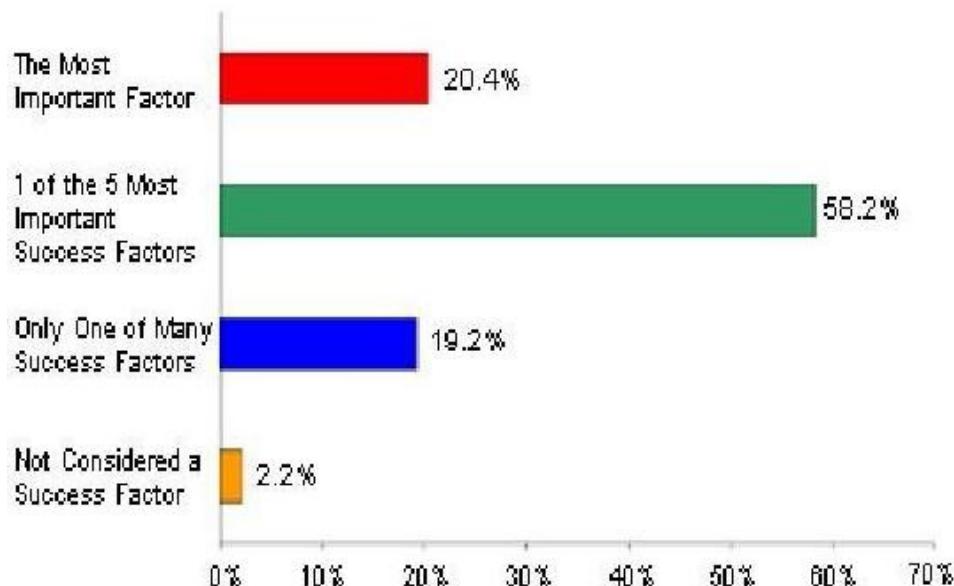


Figure 14. COMPANY ABILITY TO DEVELOP LEADERS

4.6.7 The last of the charts measured the company's norms for innovation:

- 1- Recognition; 2- Allowing mistakes and failures; 3- Rewards; 4- Mutual respect; 5- Open communication; 6- Freedom to experiment; 7- Expectation of change; 8- Challenging status quo; 9- Clear objectives; 10- Teamwork; 11- Commitment from the top; 12- Ideas are valued

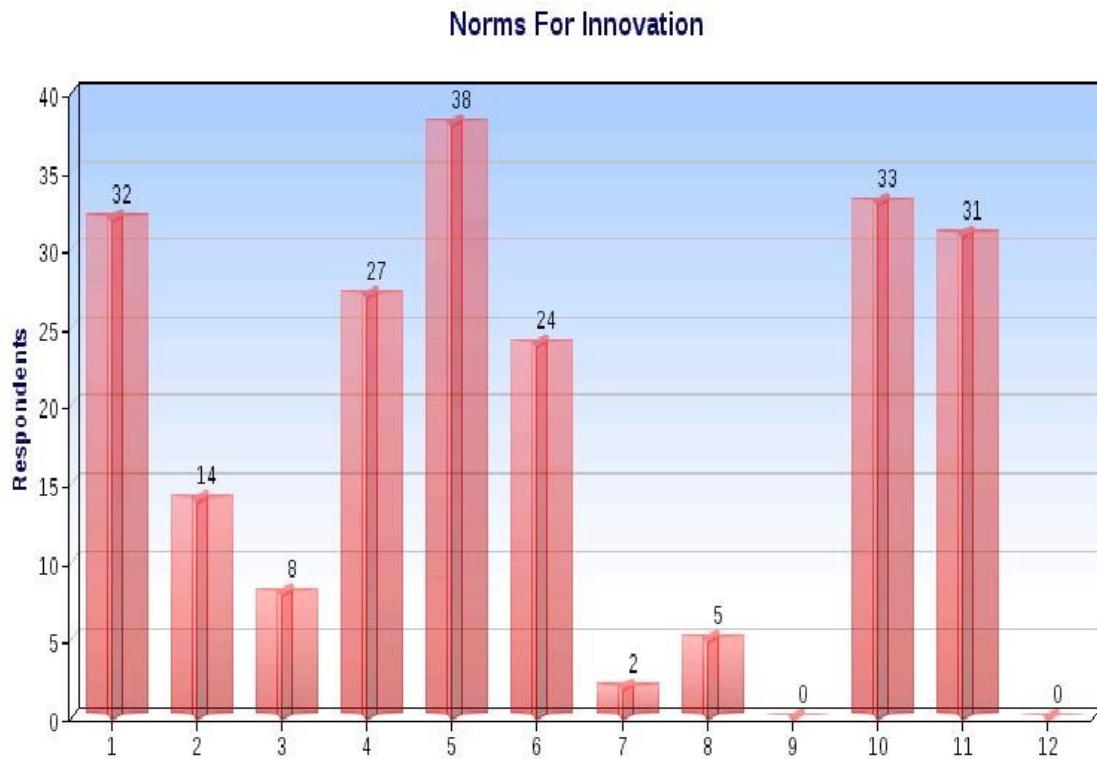


Figure 15. NORMS OF INNOVATION

As we can see the drawbacks are the recognition of employees' ideas and clear objectives, so we can presume that there is too much autocracy in company leadership, which makes it difficult to get through the change.

4.6.8 Open Questions and Leadership Questionnaire.

The open questions gave a lot of ideas about the issues forgotten or exaggerated, new ideas and evident outcomes, confirming earlier assumptions. However, probably most of the respondents were not very enthusiastic about the questionnaire and did not make enough effort to give insightful responses. But the informal discussions following the questionnaire were more fruitful source of findings and discoveries. It also created the feeling of self-significance of respondents, who could express their opinion on the issues of leadership and management of their company and, furthermore, evaluate the performance of leaders.

The leadership questionnaire is adapted for the high technology company leaders to evaluate and develop personal and leadership skills and competences (See Appendix 1).

5 Conclusions

Modern leaders encounter considerable increase in the level of organisational technology which creates the constant need for balancing. Creating and maintaining positive working relationships and providing effective team leadership by understanding motivation, overcoming obstacles and assessing teams' performance and achieved results. Most of the leaders have the knowledge required; they need to improve effectiveness, aim at getting things done, keep developing personal management skills, and tackle the leadership process run into continuous innovation process to maintain competitive advantage in a pursuit of business growth. Improving negotiating capabilities by adopting best practices, positively exercising power relations, managing concessions, taking advantage of the opportunities and avoiding the pitfalls. Leadership is an act of balancing; the appropriate balance depends on the situation, which can be different the next day. Long-term and short-term objectives may change their priorities when new information has arrived, however the long-term concerns and survival of the organisation are the primary concern. Commitment, cooperation and coordination of leaders on different levels have great impact on organisation. Leaders seek to integrate different objectives, reconcile competing priorities and demands. In many cases it is impossible to find a win-win solution, and then leaders need to mitigate the consequences. Main implications for further research are the issues of emotional intelligence and communication in high technology companies that need special approach.

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Formatting Remark: It was not technically possible to set the hyphenation and right contents alignment in the version of text proccssing that has been used in creation of this document.

Appendix 1. Leadership Capabilities Questionnaire

How do you motivate and garner loyalty?

How effective are you in bringing your stakeholders in line with your strategies?

How do you gauge the effectiveness of your staff?

You are the leader. You want respect and you want credibility. How do you ignite the energy, discipline and attitude of your troops to be engaged in your mission?

Are you honest, decent and fair? Do your actions hold up to rigorous scrutiny?

Do you have a personal worldview that you share with others?

Do you care? Can you articulate and ignite others with your zeal, energy and

enthusiasm?

Adapted for high technology leadership from. Harris Kern Leadership Questionnaire
How well can you think ahead, like a chess player, about your next moves?

How do you make decisions? How would you explain your decision-making process to others? To those on your team? To your peers? How do you judge others' decisions?

How skillful are you at handling affairs without arousing hostility? Are you the one to whom others turn for guidance in seeking resolution to conflicts?

How well do you form alliances, both formal and informal?

What is your record for defending and maintaining a position?

Does your style encourage imaginative thinking and lead to innovation? Do

you find another way to get around the hill, to paraphrase a campaign battle?

How well can you view a wide array of data and frame the problems to focus on which can provide the greatest leverage for organizational success?

How are you judged and how do you perform in getting the job done? How about with managing and leading others to get their jobs done?

Adapted for high technology leadership from. Harris Kern Leadership Questionnaire
How do you know the business you're serving? What standards do you recognize and do you uphold them?

What is your management style in delegating responsibility and authority?

How proactive vs. reactive are you? How do you instill proactive thinking in your group?

How well can you create a culture of high performance? How do you inspire and energize?

What is your style and its substance for rewarding positive behavior and results?

Can you identify specialists, consultants and third-party "trusted advisors" who you may need to call for assistance, advice or to hire for their consulting services?

What's your track record in attracting top talent, keeping them motivated and developing staff?

Adapted for high technology leadership from. Harris Kern Leadership Questionnaire
How well do you set expectations and how fair are you perceived as being?
How do you infuse vitality in an organization and identify the next generation of leaders?

Do you know your company's "Big Rocks" when it comes to customers? This is similar to knowing what business you're in, but the question goes further. You want to understand how your business is held accountable by its customers?

Who are your partners? Who should they be? How well do you develop mutually-beneficial partnerships?

Can you relate to different groups and different individuals?

Can you relate to different personality types? Are you a team player? Are you trustworthy?

Do you build win-win solutions? Can you surface conflict in order to resolve it?

How are you perceived as allowing different points of view to be aired? Do you create a "non-punishing" environment for idea exchange?

In addition to formal success plans, what do you do to help others build and nurture their careers?

Basketball coach legend John Wooden was a big believer in tough love, which

served his team well. He gained the respect of his players as he guided them to greatness. In organizations there is a similar playing field where leaders want their players to be the best and deliver the best results. When a player isn't up to the standard, as a leader you have a responsibility

to interject yourself for behavioral modifications. Do you want to develop your people, your team? What's your track record? How are you perceived as a coach?

Most effective leaders and managers are known for being "good listeners" and "easy to talk to." How are you as a listener in terms of understanding and retaining information? Analyzing and criticizing what is heard? Empathizing with the other person?

Do you seek opportunities to reward performance and recognize achievements? Do you share with others their celebrations?

How do you use humor, or how could you be more effective with humor, such as with story telling?

Adapted for high technology leadership from. Harris Kern Leadership Questionnaire

Are you viewed as centered? Are your emotions in balance, or are they driving your thoughts and actions? Can you be a leader whose emotions are out of control and create a long-lasting, healthy organizational dynamic? How do you motivate people?

What are your outside activities and how do they relate to your position?

Are you fair, consistent with others? Are your values communicated and understood?

How ethical are you? How do you judge compliance with ethical questions?

Do you deliver on commitments? Do you operate with decency and respect for others? Do you care about others?

How do you channel ambition to constructive modes? How do you demonstrate passion and instigate zeal and enthusiasm in others for the work at hand?

Can you make meaning through stories and use of metaphor that translates complex ideas into terms people understand?

Adapted for high technology leadership from. Harris Kern Leadership Questionnaire

How do you characterize your courage to take the right actions?

Especially in the fast world of technology, how do you judge, value and measure patience, especially with constant demands for project completion?

Have you done a SWOT analysis (Strengths, Weaknesses, Opportunities and

Threats) analysis on yourself? How do you match opportunities to maximize your talents? How do you seek feedback on your performance? How do you give feedback?

How do you stay abreast of new material? How do you grow? How do you encourage others to grow?
