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## **Identifying Discontinuous Innovations ex Ante**

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### **Abstract**

(1) According to Schumpeter (1942) creative action is a basic requirement for novelty and economic growth as he introduces the "creative destruction" for revolutionary acts which create new market opportunities by destroying old markets. In such a competitive environment a "First Mover Advantage" [Lieberman, M. & Montgomery, D., 1988] may result in superior resources and capabilities?. In turn Christensen (2002) attests the disruption an innovation causes to be the reasoning for higher growth potential or economic wealth. Many different ranges of innovation are categorized in literature [Augsdorfer, P. et al. (forthcoming)] and authors struggle in unambiguously defining radical innovations and other grades of novelty. "The difficulties of defining and classifying novelty are immense?" [Freeman, 1994] The discord amongst researchers is illustrated in the typewriter example, making clear, that the same innovation is classified moderate by one and revolutionary by another. [Garcia, R. & Calantone, R., 2002]

(2) As companies have limited resources to keep their innovative wheel turning it is essential to know what ideas are promising and what are not. For a more effective resource allocation companies should be able to identify their innovation opportunities. An Innovation-Lab experiment revealed that the Lab members disagreed about the degree of novelty of innovations presented and additional research showed that even branch experts find it difficult to evaluate the degree of novelty for ideas in their area of expertise. In the light of these findings it might not be possible at all to clearly identify discontinuous innovations ex ante.

(3) If an innovation is radical or incremental seems to be subjective interpretation. This result is confirmed in literature [Dahlin and Behrens, 2005] but questions the demand for a normative management approach for the organization of innovation [Bessant 2005]. But if we don't know the degree of novelty can we ever apply the right management style or can we only moan afterwards what we could have done better for each particular case of innovation? Due to the interpretational versatility in literature it is questionable how firms actually identify radical innovations in real life. They might not be able at all to distinguish clearly between radical and non-radical innovations. In this context it is to find out what specific attributes characterize a radical innovation and what key measurable can be applied at an ideation stage.

(4) A long term mixed method study with a multinational telco-company should shed light on the rating-ability of company deciders involved during the ideation stage. In the qualitative part Interviews with key individuals should find out about what has an impact on the assessment of an innovation and how an idea is eventually identified as a radical

idea that it's worth to follow up. The advantage of the qualitative part implying semi structured interviews was the more personal interface to the interviewees and thus likelier revealing a truer motive of any statement or decision. Secondly based on the existence of a regularly convening evaluation panel the study included as a quantitative part the mapping and analysis of the overall assessment and rating results of each idea discussed by the designated evaluators. Thereby a triangulation could be drawn up that enhanced the conclusions gained from the interviews. A post study phase was installed to reduce ambiguities.

(5) Most experts believe in their ability to evaluate ideas concerning their innovative dimension. Yet addressing concrete rating figures there was not such a clear result as initially expected. Innovative aspects were certainly discussed regarding new features, markets to explore or the level of uniqueness versus competing companies. Inquiring the motives and criteria applied some rather spongy methods of valuation became evident like the "wow-factor" which is ultimately not more than a gut feeling about an innovation and far from being an objective benchmark. Concrete figures of market potential performance increase or cost reduction could hardly be rendered without dispute. Moreover it becomes conjecturable that those ratings are strongly subjective and influenced by the individual experiences of the evaluator. The rating results of over 60 innovation projects were quite unequal and showed a great variance. This is in line with what literature suggests that it is impossible to predict when an innovation is radical even for experts in the field.

## Identifying Discontinuous Innovations ex Ante

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# 1. Introduction and Framework

Creative action is a basic requirement for any novelty and hence for economic growth and literature intensively looks into the importance of innovations and discontinuities in the sense of dynamic changes and economic development.

On this note Schumpeter (1942, p. 82/83) coined the notion of 'creative destruction' as for economic processes evolving over time assumed that static structures are broken by revolutionary acts which create new market opportunities by destroying old markets.

In an earlier work Schumpeter places the idea of 'creative construction' as a need to change the static moment of economy and he further outlines the necessity of this creative type of economic acting as an impulse and lever out of existing continuities to break new ground enabling the transition to new economic levels. (Schumpeter, 1912, p. 154/155)

It should be clear what the impulse of fundamental innovations means to a company. If radical innovations that disrupt and replace older ones disclose the way to new economic levels, they certainly create jobs but on the other hand they also destroy jobs within the replaced technology. For this reason firms should always bring into focus that it's obviously better to create such radical innovations and the jobs it eventually creates by oneself instead of leaving it to the competitor to endanger ones existence.

In a highly competitive environment it seems to be obvious that the most innovative party will hold the greatest potential to obtain economic wealth.

Supplemental to the innovative arguments it should not be left to take up some marketing aspects and to put on record Michael Porters 'First Mover Advantage' which "tends to be the most potent [opportunity] in industries characterized by durable, irreversible, market-specific assets, either tangible or intangible." (Montgomery and Porter, 1991, p. 37).

Thinking about this 'First Mover Advantage'(Lieberman, M. and D. Montgomery, 'First-mover advantages', Strategic Management Journal, Volume 9, Summer 1988) the question comes up if this advantage is measurably bigger in proportion to the time gap ahead of the competition and if so one could also speculate that the more far reaching an innovation is,

the higher the rate of advantage in terms of growth potential and chances of development. Of course these assumptions must be seen under the conditions of the market environment and if at all amenable to validation factors have to be *ceteris paribus*.

The everlasting hub in the innovation discussion is how to capture and subsequently sustain an advantage over the competitors. Accounting for general industry level factors Montgomery and Porter (1991, p. 38) find "Industries that evolve gradually offer more room to sustain advantages than those that are regularly rocked by drastic changes in technology..." and they further admit that 'wrenching changes' in an industry allow for favorable times to get hold of which permits the reverse conclusion that organizations are well advised to cultivate the ambition to speed up and enlarge their innovation capacity.

The act of creation as such can be seen as an impact momentum for the economic development which is in its effect contingent on the magnitude or radicalness of an innovation, whereas the momentum affects speed, direction, diversity and potential for the market development.

Bearing in mind the perpetual economical evolvement which is labeled by creative stimuli giving way for new markets and destroying old structures Schumpeter's (1942, p.83) term of 'industrial mutation' illustrates the close relationship to a basically evolutionary phenomenon in a biological sense of speaking.

The natural pattern may be cited as an example for industrial or economical patterns, at least it shows marked similarities if one points out evolutionary waves induced through mutation or batch-wise evolution, in both cases labeled by a basic change followed by a number of improvements and adaptations resulting in a well aligned, viable product until it's matured, becomes obsolete and is finally replaced by a new wave of emissions.

Taking the line of evolutionary waves according to the theory of Kondratieffs long cycle waves (Ayres, 1988) Schumpeter (1942) was likewise attracted by industrial revolutions that tumble the prevailing structure in a remarkable regularity. These recurring phases of 'creative destruction' as he named it represent fundamental criteria for economic development and growth. And Mensch (1978) endorses the concept of periodical evolutionary pushes arguing about the forces which influence the drift of innovation periods.

Mensch (1978) concretely points out the salutary effects of basic innovations fed by additional investments and complementary expansion through incremental innovations, altogether forming new up-and-coming growth cycles.

Even when organizations do invest in radical innovation R&D they face a complex task of managing the resources and investing the right amount at the right time into the right

projects. Wolpert (2002) sharply criticizes the cyclical variations of firms' innovation investments and he further points out recurring patterns of high investments in booming times coming along with extensive budgetary trim with economic decline regardless the risk of ceasing promising project as well.

This paradox situation requires a rethinking of innovation resource strategies that also makes allowance either for countercyclical investment or a uniformly continuous investment, or a mixture of all that incorporates a well adapted situational strategy for innovative ambitions.

Managers will carefully have to look into the subject of finding the right portion to invest in 'regular R&D' and in R&D designed to explore radical innovations and it will be a difficult task to appropriately give consideration to both fields and do not risk to overinvest in just one area respectively to lose sight of the other. However investment in radical innovation must be scheduled regardless the risk of excess or rigidities (Humble and Jones 1989).

The fact is that product innovations are substantial preconditions to enable corporate growth and establishment and the simple example from the pursuit of competitive advantage over potential rivals reflects in the bottom line the principle of survival of the fittest, and if fitness in economic life for small firms or large organizations, may be measured by its efficiency of producing innovations it should be more advantageous to innovate at a relatively higher level compared to competing organizations. So definitely there is a need for innovations, especially radical innovations that represent technological discontinuities and that will provide a greater competitive potential for economic growth and variety.

One of the challenging concerns to overcome in the advent of such innovative efforts are the many different ranges of innovation that are categorized in literature [Augsdorfer, P. et al. (forthcoming)] and as authors struggle in unambiguously defining radical innovations and other grades of novelty firms might encounter the same struggles . "The difficulties of defining and classifying novelty are immense..." [Freeman, 1994] The disaccord amongst researchers is illustrated in the typewriter example, making clear, that the same innovation is classified moderate by one and revolutionary by another. [Garcia, R. & Calantone, R., 2002]

## **Research Questions and Hypothesis**

An Innovation-Lab experiment revealed that the Lab members disagreed about the degree of novelty of innovations presented and additional research showed that even branch experts find it difficult to evaluate the degree of novelty for ideas in their area of expertise. In the light of these findings it might not be possible at all to clearly identify discontinuous innovations ex ante.

Considering the immense theoretical foundation and the huge number of definitions tending to disclose the distinctness of innovation, truly illuminating this field of research which is likewise affected by as many as unpredictable factors, the question raises how can radical innovations generally can be differentiated between other forms of innovative creation.

How does one innovation vary from another and what legitimates an innovation to ascend the throne of sacred radicalness?

In this context it would be interesting to know if specific attributes exist that characterize a radical innovation, and if so how do these attributes look like?

In addition it should then be examined if there are key measurable to identify the attributes that constitute a radical innovation.

What are these key measurable and how can they be applied?

Do the identification mechanisms work reliably?

How do firms actually identify radical innovations?

Are firms able at all to distinguish clearly between radical and non-radical innovations?

Who are the deciders and key executives that make an innovation pass or fail for further processing within organizational patterns?

What other factors take influence on a selective decision-making on radical innovations?

## ***Hypothesis***

As the above stated research questions center on the definitional complexity of radical innovations and challenge a general firm's ability to detect such innovations at an early stage I hypothesize the following:

**H1: Innovation-experts are not able to identify radical innovations ex ante**

**H2: Eventual identification results for radical innovations do not get more reliable by a larger number of experts.**

## **Methodology**

In order to test the hypothesis set up this work aims to comprehensively explore existing organizational habits that are targeted on innovation work. Specifically the focus lies on companies understanding of radical innovations and their ambitions or better ability to

identify so labelled innovations out of others to systematically foster the kind of cutting-edge innovations that let the firm shine forth.

Hence leading to a threefold research focus this work intends to take a deeper look on firstly the existence of a generally accepted understanding of radical innovation, secondly company's ability to pinpoint milestone innovations at an idea stage and thirdly how to foster radical innovation in corporations?

This is considered to be an important contribution to the existing innovation research and a major goal is that the obtained knowledge of the conducted study will deliver one device for the large toolbox of organizations that struggle with the right set up related to their innovation efforts. At least the general awareness of identifiable radical innovations should be augmented in the end.

By taking a deeper look inside the companies' principles of operation for innovation this work deliberately abstracts away from environmental factors such as politics and cultural aspects, not factoring out corporate culture, because the clear focus was laid on factors capable on being influenced by the company individuals.

### ***Localization of the survey lot***

Apparently the most appropriate approach to investigate corporate innovation oriented activities and abilities is to start a survey on so called "innovative firms" which are quite simply "*companies in which innovation is settled in corporate and product policy*" following the Gabler Economic Encyclopaedia. (<http://wirtschaftslexikon.gabler.de/Definition/innovation.html>; 08.06.2011)

What firms are willingly sharing sensitive data and information concerning their innovative trumps and will anyone respond if letters were sent out to firms out of a list blindly? Those where two general concerns prior to start localizing innovative companies.

In order to identify Firms who have incorporated this credo the first choice was to get started with look into the Innovation Lab, which represents a hub of innovative firms that have strong interest in learning from each other's experiences in the daily challenge of innovation. The numerous Lab-members compose a colourful profile of national and global acting companies of many different branches which was an eminent criterion for the selection. Moreover as a member self, the accessibility and trust base given was the best originator for collaborating with these firms.

Having attended several Innovation Lab meetings, workshops, presentations and discussions it became more and more apparent that all participants seem to struggle in

framing the radical or discontinuous innovation concretely. So this was the threshold to take up the specific research in methods of seizing the terminology.

At the beginning of the pre studies the claim was clearly to accomplish a broad study in order to get an appropriate lot as to say the batch had to be statistically firm. But after several informal interviews it revealed that most firms have not really installed any mechanisms to appraise the companies' innovation ideas. Unfortunately this fact made the applicability of the research for this work disputable as the prime aim set for this work was to explore eventually existing corporate tools, employed for valuing upcoming innovations.

To pre-test the ability of experts that are active in the innovation management of different companies in different branches an experiment conducted during one of the Innovation Lab conferences could provide a first indication that giving a rating for an innovation idea is much more complex than the interpretation of facts.

A number of very different innovation ideas not specifically related to a certain industry were shown and explained to the participants that independently from their occupation had to give a statement whether an idea was radical or not from their point of view.

Finally no clear predication could be assigned to one of the innovative ideas or product studies. Rather the classifications made by the expert probands turned out to be quite heterogeneous.

The requirements for such a study thus had to be adopted accordingly and in the end a decision was set for replacing the idea of a broad, eventually branch-overlapping study by one deep-diving long-term study which will be specified in the following section.

Finding an adequate company as a subject of study was thus the pivotal point and this company had to meet the set objectives to make it an applicable study. The most representative firm had to be an innovative big player that is positioned globally because this would conjecturally deliver the ideal environment for innovative ideas through versatile input and experience. And subsequent to scanning the Innovation Lab network one apparently perfect candidate could be isolated for this experiment.

One basic prerequisite for a company to fit as a subject of investigation was the existence of an active idea management that preferably keeps records of discussions procedures and voting output. The most determining factors for the company choice are founded in the existence of expert rounds on a regular basis that kept note of the rating decisions that in addition fitted very much into the envisaged research design. These established expert rounds delineate the frame of collectable and relevant data to analyse the research questions best possible.

These regular meetings of an expert commission could provide the qualitative claim of this study in form of the necessary interview and monitoring findings on the one hand and supporting quantitative data in terms of a straight analysis of the documented numerical classification of the innovation ideas discussed.

Due to confidential matters the company name and all company related contributors that participated either through direct interviews or by monitoring during the meetings have been anonymized for this work.

### ***Design of the Study***

In consideration of the research questions put in the outline of this study the issue was not to find out mere numerical prove about innovation activities or success rates of R&D Teams. Thus a straight quantitative approach was not seen to show great promise for obtaining valuable results in terms of how does the estimation work and look like. Accordingly for a better understanding and particularly with regard to the inner course of deliberate decision-making of each individual it would be needful to explore the characteristics of the classifications made on innovations instead of the pure calibre of such.

These primarily qualitative data should be gained by observing particular decision making processes as well as through comprehensive interviews with the persons involved to achieve a better understanding while snatching the motives or insights for certain statements in matters of benchmarking an innovation.

Due to the fact that from own experience most interview modes might reveal rather lukewarm and rarely blazing insights this study expects to disclose a better truth by semi structured deep dive interviews and by accompanying the ongoing valuation processes over a longer period. Semi structured by reason that in opposition to structured interviews where the insight is as limited as the set of questions, the semi structured format allows to flexibly reacting on the interviews progress and direction. Holding up a pre-assembled set of questions seemed not to be adequate for the objective of this work. By the depth of the interviews it was aspired to assure the gain of the most honest and trustful incitement for any statement without entering a psychological level because this claim could not be met within the outline of this study and my personal qualification as an interviewer.

In the course of the survey another source of information turned out to hold promising information to potentially back up findings extracted out of the interviews held. The existence of a unique collection of rating reports on potential innovation magnitudes of ideas bred within the probed company supported the idea of a triangulation approach, to get more

precisely the long term monitoring and interviewing should receive a quantitative endorsement by formatting and analyzing the available expert ratings.

### ***Fieldwork approach***

To investigate the interconnection of the idea-to-innovation process and to analyze the effectiveness of pinpointing milestone innovations in this company the creation and function of expert panels in charge of rating up-and-coming ideas for potential radicalness and newness factor was critically questioned.

By this approach it serves the purpose to presuppose that the foundation for generating big ideas like resources, slack in time and money, corporate culture, willingness and commitment for innovation and many other factors which are not subject to this study is already laid.

The focus here is limited mainly to the efficiency of the evaluation panel as an organizational institution that may serve as a catalyser for milestone innovations. More concrete the core objective is to find out if any true capacity of ex ante identification does exist at all.

The procedure of the analysis was three-fold and implied qualitative data collection by carrying out systematic interviews as well as the analysis of specific quantitative data which resulted from the panel rating sessions as above mentioned.

In a first step a number of in depth semi structured interviews were conducted with carefully selected key individuals such as idea managers and the head of innovation to find out what factors have an impact on the decision making process in consideration of an innovations milestone potential.

The interviewees where asked to freely give an account of how an idea of whatever a dimension is initially submitted by any spin doctor and what kind of checkpoints it has to pass respectively what obstacles it is faced in order to eventually being identified as a radical idea that it's worth to follow up.

Further based on the existence of such an evaluation panel the managers should as objectively as possible give their statement about the set up of the expert group and their own disposal of influence within this process to find out about the internal context and any implication in conjunction with the decision making process.

Secondly the study included the mapping and analysis of the assessment results respectively the ratings of each idea discussed by the designated evaluation panel members with regard to the potentially radical ideas due for approval.

In order to gain a comprehensive insight of the findings the number of enquired innovation assessments had to be big enough to be statistically relevant, further all rating schemes were cross checked with the number of participants engaged, with people who were engaged repeatedly and high attention was paid if any noticeable patterns would take shape out of rejected or supported ideas.

The choice of conducting semi-structured in depth interviews combined with case study analysis has led to some advantages in the quality of the findings as the privacy of interpersonal conversations should open for trust and honest exchange of true data.

Thirdly and finally the field work completed in a post study phase which was installed to reduce the blur remainder by some follow-up semi structured interviews that were not tailored to but in the bottom line to find out about the deeper whys of any specific rating decisions.

## **Project Results**

The pursuit of radical innovations and the deeper look into processes fostering the genesis of those innovations disclosed worthwhile insights to be seen from a different angle than formal academic analysis is able to reveal.

While the everyday think tank seems to work well and ideas are being produced constantly some undervalued factors influence the idea to innovation process to a large extent.

The fear of good ideas remaining in the desk undiscovered or abolished right away by the idea creator itself as a result of lacking motivation or commitment appears to be unfounded for the examined company. Innovativeness is openly communicated all over the company and corporate videos satisfy the internal mission of transmitting the open door, innovative culture to the employees in order to make them feel being part of the overall vision.

The interviews were conducted during several meetings held mostly in the year 2009/10. Each interview situation could benefit from different day-to-day business surroundings as for example general enquiries during a rating session, group-wise interviews in mixed conferences with personal attendance and telephone or video connection as well as individual face-to-face interviews in order to encourage a preferably free flow of statements and information from the participators.

One of the first objectives was to get broad information of what is the approach towards different kinds of innovation and how those innovations are appreciated and treated from an ideation state onwards. That means once an idea is born within the company it has to be assured that the processes are triggered to bring the final innovation to the market and one

of these necessary processes was the implementation of the utilized ideation tool (Hyve) and the execution of regular rating sessions that to observe and analyze was the main assignment of this work.

All participants were aware that innovations in general may come with different grades of characteristic values and acknowledged to deal varyingly with the proceeding of innovations according to the particular dimension admitted.

### ***Discrimination among innovation-ideas***

Usually within the examined corporate group ideas on innovations were winnowed between innovations that vitally improve the existing products and services and innovations that bring up something totally new or completely change the system which may be vital for the future competitiveness of the corporation. The first species of innovations will be named and carried on in this study as “upgrader” the second species is named “interceptor”. Whereat both can also constitute a “completer” (-innovation) in order give consideration to the fact that an innovation not necessarily upgrades nor replaces another existing standard but may also represent something new that coexists and supplements say completes the existing system.

While the existing corporate think tank as an open system that produces the ideas for follow up innovations the innovation management immediately passes through innovations that obviously improve the present systems or technologies to the state of the art whereas new aspects and more radical ideas that promise a certain shift in the technological portfolio are bundled and discussed separately as presented in the results of the rating rounds.

### ***Ideation Tools***

For the technical support of idea generation an idea platform has been installed and serves as a pre filter and hotbed for the development of all kind of ideas radical and incremental.

The last mentioned platform called IdeaNet© is designed for idea management on web 2.0 basis and supported by the Hyve company. *This first Web2.0 idea management solution links the ideas and expertise of all users in a unique way, enforces social interaction and encourages active knowledge acquirement and transfer in an organization.*

*The IdeaNet© supports collaboration (according to the Wiki-theory) within the idea generation process, creates active, stable and growing networks and stimulates motivation to generate new ideas. This is achieved by using Web2.0 functionality as well as a user-friendly and intuitive user interface. Furthermore, by adapting the solution to the requirements of a company, as well as embedding it into the internal process and system structures a consistent appearance and seamless integration is guaranteed.*

*The elementary function of the IdeaNet© is to provide a platform where ideas can be generated, presented, published and evaluated collectively. The evolution of each idea can be traced easily: the integrated work flow management ensures the linkage of all process steps and informs community members accordingly. The IdeaNet© enables the company to easily and professionally manage the collected ideas and to bring them closer to implementation. (see <http://www.hyve.de/ideanet.php>)*

Every employee irrespective of their position may submit his or her idea to the platform. The idea must be described, allocated to a specific department or business unit and given a first independent self-evaluation whether it can be classified as incremental or radical idea.

Ideas which constitute a reasonable improvement for an existing product or service will pass directly in a kind of fast-lane facility on to the development phase.

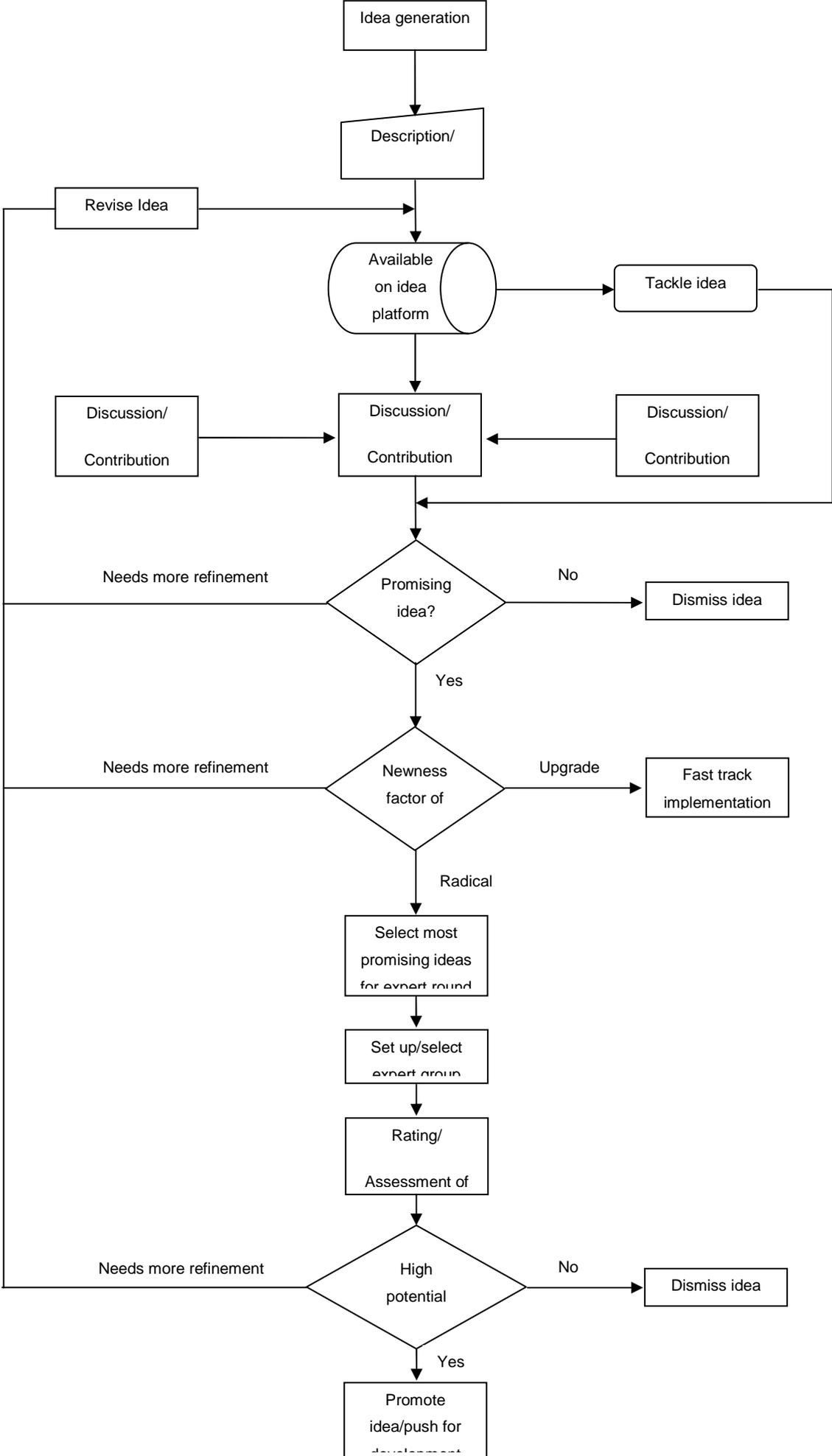
“Bigger ideas” which may fulfil the criteria (new technology and new market) of holding the potential for a radical or discontinuous innovation are destined for an advanced stage gate process.

So the initial step after an idea is born takes place on the idea-platform where the idea has to be described, rated and moreover a statement about the potential benefit should be given by the submitter. Subsequently employees and other idea generators will ideally discuss the idea and give suggestions for the enhancement of certain ideas. It could be ascertained that this stage already may give a clue about the quality or potential of an idea.

As a general rule ideas which turned out to be interesting for the company to pursue where vividly discussed on the platform and entailed multiple contributions from fellow employees, R&D staff or idea managers whereas more doubtful ideas where more criticized or rather not discussed in a deeper manner.

The flow chart given below ought to visualize the processes initialized through the idea-platform.

Abb.1 Process Chart Idea Launch



## ***Key individuals***

In addition to the encouraged discussion on the platform idea managers directly have the possibility to tackle respectively to challenge the submitted ideas in order to find out about their sustainability or vulnerability which is also reflected in the process described (chart) above.

At this level of decision making it shows if an idea might be dismissed, if it needs more refinement or if it's actually worth to subject it to a more detailed elaboration.

An Idea shaping up as to upgrade the existing product at a reasonable basis is very likely to be transmitted to a form of fast track implementation which bypasses the conventional process in order to optimize the development performance within the company and to increase the competitive edge.

## ***Expert panels and rating process***

When an idea pushes close to or breaks into the spheres of a radical innovative potential pledging to eventually discontinue the existing knowledge base it comes in the run for the assessment round which is performed by an expert panel whose members are chosen in each case out of a number of idea managers by the line manager.

The appointed expert group will discuss about the carefully selected apparently high potential ideas and each manager will give his individual rating ranging from "1" (highly radical/discontinuous potential) to "3" (not radical at all).

Each evaluator is supposed to decide on his rating which may also be an in-between rating e.g. "1-2" or "0" for the case that no statement can be given for instance if an idea that is outside of someone's subject area. Finally the average rating out of all idea managers will be taken to decide on which ideas will make it to the next phase meaning that ideas adjudged between "1" and "1-2" may be promoted internally for further development.

Other ideas assessed unsound or not really radical may again pass as upgrade ideas potentially re-entry the loop on the idea-platform if a contribution to its amelioration is imaginable or else the idea will be dismissed.

Declaredly the principle of the idea-platform and the processes involved is to implement the innovative culture and open door politics within the daily operations of the company and by this to clear the way for any company talent to have a share in the firms innovation leadership.

The design of this idea-platform is in no way static, on the contrary dynamic interaction features allow a formalized but very flexible handling of ideas. Any employee is enabled and endorsed to submit his ideas to the platform regardless if radical or not.

By feeding the data into the system and preselecting its determined department or potential processes which might be upgraded the subsequent proceedings are not nailed down like in a tight stage to stage method.

According to the statements given by the head of idea management it can be assumed that an idea which is for example placed as an improvement for the sales department may be concurrently identified as a potentially radical idea implying new markets and new technologies. Hence such an idea can be freely switched in its newness category and may be transferred to the next evaluation panel round.

### **The rating sessions**

The following statistical evaluation of the idea-rating sessions conducted by the expert panel between 01.03.2007 and 31.05.2008 will give authentic information about assessment modalities and the actual outcomes concerning the identification of breakthrough ideas.

The selection committee of each single rating session during the observation period was composed of not less than 6 innovation managers that attended either in person or were linked in via conference call with video support. A maximum of 14 managers was observed during all reviewed rating rounds whereas the number of attendants was not organizationally or technically limited. On average 9 jury members took part in the polls examined during this comprehensive study.

The ratings were held in weekly-intervals. The Ideas discussed were generally first timers which means potentially radical ideas that were newly selected to be rated within this circle. Beyond that ideas which have been selected and already rated or discussed earlier but found to be not elaborated enough in a matter of maturity or lack of information content for that specific idea were rerated as well. Those ideas were reaccepted to the rounds after having worked over the concept.

A total of XY ideas have been rated in XY rating sessions. In order to gain evidence of the ability and accuracy of the jury collective the following figures have been considered and calculated:

On each poll the number of participants and the individual rating was recorded. Every value was then added to the database to calculate the mean value. Seeing that the range given for rating the ideas was only between 1 and 3 it was not necessary to consider runaway values

to be adjusted in the overall data. Where mean value was a suitable fundament of this work it was not significant for any interpretations about the ability of a peer group to locate radical innovation and to make a commitment founded by a homogeneous vote. The only statistical objective of the mean value in this case is to gain a general appraisalment of the potential radicalness of the ideas under examination.

Thus this value had to be nourished by further data that bring an informative value for discovering or not discovering an accord under experts' judgment on innovation ideas.

The range can be seen as a first indicator of the valuation homogeneity in the course of the analysis. In the present study the range could not exceed a value of 2 which as a standalone figure was still not a reliably telling reference regarding a conjectured consensus or dissent. Exemplified this range would have also been the case if nine out of ten evaluators would rate 1 for a most radical idea and one expert was the opposite opinion which is obviously quite homogeneous but ranges at a maximum of the possible grades.

To eliminate the shortcoming of only having a range for the evidence of a grade of harmoniousness it was necessary to complement this part of the analysis by variance and standard deviation in order to find out more about the eventual vagueness of careful decision making within a peer group. (Be it either rational or intuitive.)

Going through the complete sequence of rating data it is remarkable to find that there is no significant correlation neither positive nor negative between the level of variance relating to the total of rating results and the number of participants in the valuation sessions.

**Long term evaluation**

Tab.1 Rating Analysis

DI Expert Panels	Evaluators:	Jo	Se	JaK	JaB	Tu	Es	To	Zh	Ga	We	Ed	Fa	Ti
<b>No.</b>	<b>Hot or Not - Rating of Discontinuity Potential</b>													
1	1 (high) - 3 (low)	1	2	3		2	3	2					1	
2	1 (high) - 3 (low)	2	2	2			2		2					2
3	1 (high) - 3 (low)	2	2				2	2	1			2		2
4	1 (high) - 3 (low)	3	3	3			2	3	3			2		3
5	1 (high) - 3 (low)	3	3	2	3	2	2							2
6	1 (high) - 3 (low)	2	3	1	3	2	3	2						3
7	1 (high) - 3 (low)	2	2	2	3	2	2	2						2
8	1 (high) - 3 (low)	2	1	3		2	1		2					2

9	1 (high) - 3 (low)	2	3	2		2	3		2					2
10	1 (high) - 3 (low)	3	3	3		2	3		3					3
11	1 (high) - 3 (low)	2		2		2	2	2	2	2		2	2	
12	1 (high) - 3 (low)	2,5		1,5		2	1	3	1	1,5		2,5	1	
13	1 (high) - 3 (low)			2,5		3	3	3	2,5	3		2,5	2	
14	1 (high) - 3 (low)	1	1,5				1	2	1	1	1	1	2	2
15	1 (high) - 3 (low)	2,5	3					3	3	2,5	3	2	3	3
16	1 (high) - 3 (low)	2			2	2	2		2			2		2
17	1 (high) - 3 (low)	3			3	3	3	3				1		3
18	1 (high) - 3 (low)	3			3	3		3				2,5		
19	1 (high) - 3 (low)	3			3	3		3				2		3
20	1 (high) - 3 (low)		1			1	2		1	2			1	1
21	1 (high) - 3 (low)	1,5	3		2	2,5	2		2,5	2	3		2	
22	1 (high) - 3 (low)	2	2		2	1,5	1,5		1,5	1,5	1		1	
23	1 (high) - 3 (low)	1,5	2		1,5	1,5	2	2	2	2		2	1,5	1,5
24	1 (high) - 3 (low)	3	3	2,7	3								3	
25	1 (high) - 3 (low)	1	2	2	2			1				2	1	
26	1 (high) - 3 (low)	3	3		3			3		3	3		3	
27	1 (high) - 3 (low)	2	2		2			3		2	2	1	1	
28	1 (high) - 3 (low)	3	3		3			3		3	3	2	3	
29	1 (high) - 3 (low)	1,5	3		n/a	2		2	2	2		2	1,5	
30	1 (high) - 3 (low)	2	3		2	2		3	1,5	2		2,5	1,5	
31	1 (high) - 3 (low)	3	3		3	3		3	3	3			3	
32	1 (high) - 3 (low)	2	2		1,5	2,5	2	2,5	2	2	3	1,5	2	2
33	1 (high) - 3 (low)	2	1		2	2	1	1,5	2	2	2	2	1	1,5
34	1 (high) - 3 (low)	1,5	1		1	1,5	1	1	1	1	1	1	1	1
35	1 (high) - 3 (low)		2		1,5	1,5	2	2	1,5	2	2	1	1	2
36	1 (high) - 3 (low)		1,5		1	1	3	1		2,5		2	1	
37	1 (high) - 3 (low)		2		2	2	1	2	2	2	3	1	1	
38	1 (high) - 3 (low)		2		2	2,5	2	2	2	2	2	1,5	1	
39	1 (high) - 3 (low)		3		2	2	2,5	2,5				2,5	2	
40	1 (high) - 3 (low)	2	2		2	2	1	2	2	2		2	1,5	2
41	1 (high) - 3 (low)	1,5	1		2		1	1	1,5				1	1
42	1 (high) - 3 (low)	3	2		2		2,5	3	2,5			1,5		3
43	1 (high) - 3 (low)	3				2,5		3	2,5					
44	1 (high) - 3 (low)													
45	1 (high) - 3 (low)	3	2	2		3	3		3				2	

46	1 (high) - 3 (low)	3	3	3		3	3							
47	1 (high) - 3 (low)													
48	1 (high) - 3 (low)	1,5	1			1	1,5	1	1,5			1	1	1

## Consolidated insights from Interviews and session monitoring

The predominating notion of the interviews was first and foremost affected by the individual credo that experts within an area of expertise have the ability to evaluate certain ideas concerning their innovative dimension. The criteria employed do sound familiar in consideration of the innovation literature reviewed at the outset of this work. Estimating the extend to what an idea constitutes a new product, process or service alleged to be more routine than a challenge.

Yet addressing concrete rating figures there was not such a clear statement given as initially expected.

Innovative aspects where certainly discussed taking account to where exactly lay the innovation of the product, process or service regarding new features, markets to explore or the level of uniqueness versus competing companies. In the end the digging into how innovation ideas are being evaluated within the expert rounds of the company could be hardly rendered in concrete figures of e.g. relative or total performance increase or cost reduction nor could those ideas in the majority of cases be concretely classified into a new market.

Inquiring into the motives of a certain appreciation and the criteria applied by each of the round members some rather spongy methods of valuation became evident as from one of the managers the “wow-factor” was mentioned. Indeed this is a certain factor that might be applied even by experts to state the overall astonishment about the newness and innovative impact of an idea respectively the footprint left by that idea in the global economic landscape of milestone innovations.

Ultimately the “wow-factor” is not more than a gut feeling about the innovativeness of an idea and the effect entailed with it. Moreover this gut feeling is far from being an objective benchmark.

Contrasting this evaluation method with the numerical ratings given in the total of over 100 ideas rated during the period of more than a year it becomes conjecturable that those ratings regularly go on with the influence of subjective aspects and individual experiences of each evaluator.

Querying what other criteria would influence the individual rating of an idea most of the respondents named expected revenue as the figure that in the end determines how radical an innovation is. The reasonable for expected revenue as an indicator for radicalness is as simple as it gets in the eyes of the interviewees. Namely if a product, service or process innovation leads to a significantly large amount of returns it is supposed to be of a kind that changes the market in such a meaningful extent whereupon the idea has to be categorized radical.

Gazing at the rating procedure in particular the expected cash flow criteria playing a role in each of the polls besides the technical newness aspects discussed and the potential market for an idea it became obvious that radicalness was closely connected with monetary performance for the firm. In a majority (*x out of y*) of the documented sessions a rough estimate of turnover for the idea to be rated had to be given and was at last deployed as an equivalent of the radicalness to say importance of an idea.

The problem with that kind of prospected income data is that it could not be based on real sales figures but was an estimated value stated by the experts during a rating session or being given as a benchmark indicator by the senior officer of innovation. Starting from that point it might be presumed that the rest of the idea discussion is maculation.

Beyond that subjective approach of the rating experts it was also a matter of significant interest to what extends the leading senior expert took the decisions as they came or in how far the discussion about a validation could be influenced or revised.

After repeated interviews and partly informal meetings and unstructured questioning it turned out that the director of innovation management was as gut driven as other managers but had the stronger position inherent to his title. Virtually everyone taking part in the poll had an equal vote but the interviews revealed certain retention capability in respect of the admission of an idea to the expert rounds on the one hand and in respect of overruling the overall estimation.

### ***Further Findings***

The above-mentioned evaluation of carefully selected “big ideas” with the potential for radical or discontinuous innovations rated by experts in a range between 1 and 3 should reflect to a certain extend the most objective approximation to pinpoint the next milestone innovation.

But the question does arise, how can it be assured that the evaluators clearly determine what constitutes a radical idea or a discontinuous innovation, can they rely on a dependable backup system resolving the discrepancies in defining what criteria have to be satisfied?

Indeed the interviews with the head of idea management in the observed organization revealed quite a number of interesting aspects concerning the exertion of influence affecting the conditions of the validation procedure.

Even though it was acknowledged that traditional assessment criteria which measure performance values, give financial forecasts or show potential market volume are taken into consideration the necessity for a very simple but at the same time significant measurement for innovation was expressed to reduce latent ambiguity.

### **Indistinctness inbuilt**

Moreover it became apparent that the personal component plays an outstanding role within these processes thus the individual orientation and composition of the committee seems to be decisive for the progresses and the results from the rating.

To become more precise the interviews with the head of idea management revealed that the decision of which idea is to be assessed and who are the persons involved is considerably dependent on: the head of idea management in terms of the idea selection and furthermore in terms of approaching the potential committee members.

And certainly there is no denying of partly unexpressed intangible personal characteristics of the people employed for the judging. As each individual makes human decisions there will always be a biased component taking influence on the decision making.

As a matter of fact this assumption could be sounded out of the face-to-face interview with the line manager. The interviewee admitted that he is well aware of existing divergences along other idea managers and that the fact of some people being more conservative versus colleagues that tend to be very liberal and straight on thinking might be utilized to exert influence in support of one or another idea, or vice versa.

Other evaluators might come from different departments so outside from the subject area and have as such not the specialized knowledge to give an objective rating.

Furthermore management is familiar with the characteristics of the judging panel members concerning their intuitiveness or reservation compared to spontaneous decision making conducting longer inquiries before judging on a subject. This knowledge in turn may be utilized to take advantage of the decision making process in favour of a quick decision.

To put it bluntly for the assessment process, being forward biased for a certain idea can in the end result in match-fixing or at least the exclusion of more conservative members in the evaluation session.

Contrariwise a repeated submission of ideas which were previously considered as little beneficial or inapplicable to the corporate strategy will breed a negative biased position towards a novel idea of that person which can result that a potentially good idea will be overlooked by the line manager.

Some more delicate marks were also left off the record thus it could be ascertained that besides the above named elements of bias and subjective influence taking the head of idea management is able to tip the scales in the end of the day. To hazard a guess internal relationships and even ties of friendship are also possible interactions that play a role in the assessment procedures.

The indications found for biased decision making clearly endorse the fuzziness of identifying radical innovations and moreover the close connection between the promotion of “big ideas” and the vision or attitude of decision makers reflects the importance inherent to those functional intermediaries. It also accentuates the necessary prudence that should be kept clearly in mind dealing with these sensitive processes.

Expert panels seem to be a common and popular measure for the task of evaluating and rating potentially radical ideas and for determining the go or no-go criteria. The practical tendencies in the company are going away from traditional stage gate processes. Attempts are being encouraged to break new ground with venturing, engaging with an outside in approach to gather fresh, non corporate biased concepts and ideas.

In the end of this investigation it became clear that the facilities to nourish milestone innovations in the company are present and that the commitment and management approval towards radical innovation back up the capability in doing so. Nevertheless the requirement for neutral and easy applicable measures to evaluate radical innovation ideas and to raise the efficiency in the innovation processes was expressed in awareness of actual shortcomings in the idea identification and promotion processes.

## **Conclusion and further Research**

The results of this investigation prove the hypothesis deployed at the outset of this work. The information gained from the conducted interviews demonstrated and verified the bias parameter and the interdependencies between ideas, idea management and innovation processes.

In the subsequent phases of this work the planned research will contain deeper qualitative methodologies to better operationalize the identified interdependencies within groups of experts in this case namely the evaluation panels.

In basing this pilot study in the communication networks industry the following studies should not be inevitably predetermined to this branch as idea management and innovation processes are interdisciplinary and spanning the bridge to other industries will as well lead to worthy consolidated findings.

Also the case study and in depth interview co-approach represent at least an exemplary collection of experiences in this company. The limitation of this survey is clearly the initial focus on one Firm/Industry and the limited number of individual interviews due to time matters as well as some confidential interests that gave reason for minimum constraints.

To compensate this weakness it is the aim of subsequent research to collect data from additional companies either from the Discontinuous Innovation Lab or from outside to narrow the information gap and to make some statistically worthy assumptions that can be generalized.

Especially through the close cooperation with the members of the Discontinuous Innovation Lab, it can be expected that this research will encourage the involved company managers to a fruitful contribution making. Thus worthy insights that allow proposing a model to systematically identify and foster radical innovations are expected.

Drawing the outline of this review it was intended to give a coarse thematically overview and an impression of the conceptual disarray in literature with a focal point on internal affairs and individual issues taking impact on a firm's innovative performance, and to further identify prospect exploratory foci lying in organizational mechanisms or facilities that foster or at least enable radical innovations.

The scope of mechanisms consequently cultivating radical innovation is immense and covers diverse fields of research. The contribution herein before mentioned lays no less in the attempt to make practitioners more sensible for the advent of the unknown which includes a better comprehension of what radical innovation is than it tries to clarify the prominence of the terminology.

Future work should seek to ease the contradictions observed in the preceding review and broaden the individual perceptiveness for radical innovation in its collective patterns throughout all possible levels. To say, if it may be commonly accepted that an organizations operation and strategic alignment is affected by individuals that again are part of a community within that organization, further efforts must contain a purposeful elucidation of managers in particular towards the understanding of radical innovation and the acceptance of unpredictable events.

Further studies which engage in the ability to identify radical innovation should also include if possible long term surveys on the success of the priority selected innovation ideas to draw a connection between the pretended success of innovation-ideas rated radical and the reality of economic success. The feasibility in that field of research will be mainly limited by the time factor as ideas have to be developed, tested and marketed before any benefit can be generated to make a success forecast. It's more likely that studies of historical ideation and distribution data will fill the gap.

## References

Augsdorfer, P.; Moeslein, K.; Richter, A.; Radical, Discontinuous, Disruptive Innovation – What's the Difference? P. 17 in Augsdorfer , P. et al. (forthcoming), Discontinuous Innovation, Imperial College Press, ISBN-13: 978-1848167803

Ayres, Robert U. (1988). Barriers and breakthroughs: an “expanding frontiers” model of the technology-industry life cycle. *Technovation*, 7, 1988, 87-115

Bessant, J. et al.; Managing innovation beyond the steady state; *Technovation* 25 (2005) 1366–1376

Dahlin, Kristina B. and Behrens, Dean M.; When is an invention really radical? Defining and measuring technological readiness, *Research Policy*, 34 (2005), p. 717-737

Freeman, C.; The economics of technical change, *Cambridge Journal of Economics* 1994, 18, 463-514

Garcia, R. and Calantone, R.; A critical look at technological innovation typology and innovativeness terminology: a literature review, *The Journal of Product Innovation Management*, 19, 2002, p. 110-132

Humble, John and Jones, Gareth (1989). Creating a Climate for Innovation. *Long Range Planning*, Vol. 22, No. 4, p. 46-51, 1989

Lieberman, Marvin B.; Montgomery, David B., First-Mover Advantages, *Strategic Management Journal*, Summer 1988; Vol. 9, p.41-58

Mensch, Gerhard (1978). 1984: a new push of basic innovations? *Research Policy*, 7, 1978, 108-122

Montgomery, Cynthia A. and Porter, Michael E. (1991). *Strategy: Seeking and Securing Competitive Advantage*. Harvard Business Press, 1991

Schumpeter, Joseph A. (1912). *Theorie der wirtschaftlichen Entwicklung*, Nachdruck der 1. Auflage, Duncker&Humboldt, Berlin, 2006

Schumpeter, Joseph A. (1942, 1947 and 1950); *Capitalism, Socialism and Democracy*, New York, Harper&Brothers, p. 83

Wolpert, John D. (2002). *Breaking Out of the Innovation Box*. Harvard Business Review, The Innovative Enterprise, August 2002, 77-83