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Managing Innovation: Are Project Management Methods Enemies or Allies

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Abstract

To achieve the long-term competitiveness companies are invited to a continuous process of innovation. When talking about innovation we are dealing with opportunities that offer the promise of new growth platforms. This high impact level comes with a set of challenges which lead us to the question how to build innovation capability and make these processes more manageable. Innovations are today mostly implemented through projects that require divergent thinking, willingness to devote resources to projects which are likely to fail and these seem incompatible with project management thinking involving the enforcement of strict standards most corporate cultures embrace. To address this problem, the paper examines whether project management methods are obstacles and constraints or can be used to make this process be more reliable instead of high-risk varied attempts of trial-and error. It is shown that it is of utmost importance to find the best fit between innovation project characteristics and project management approach. An overview of the state of the art about this matter is given.

Key words: *innovation management, project management, innovation, innovation project*

1. INTRODUCTION

It is obvious that the only certain thing that characterized today's business is change. Companies are invited to a continuous process of innovation in order to maintain existing and to develop new competitive advantage in a way that will keep up with the pace of technological change, changing demands and customer's expectations. When talking about innovation, we are dealing innovation opportunities that offer the promise of new growth platforms. Innovation has been identified as a key factor for success in the increasingly competitive and complex environment. For the company innovation could create the ability to allocate a significant portion of market share or to create an entirely new market opportunity that. Innovation is hard. Managing innovation is even harder. This high impact level comes with a set of challenges and dilemmas which leads us to the

question how to build an innovation capability, how to make innovation processes more manageable. In the ongoing race to innovate, many companies adopt innovations without clear strategies or defined processes for choosing and managing innovation projects. Initiating projects that are poor fit with corporate resources and objectives and couldn't be effectively support result with high project failure rates as a consequence. Despite the fact that innovation is popular as a freewheeling process that is unconstrained by rules and plans, to be successful, it must be managed in a proper way. All activities, no matter what they are, follow some level of discipline and an underlying set of processes. Every activity today is led as a project but there is no universal project procedure that fits all organisations. There are different types of projects and different types of companies operating in various fields. This necessarily means a diversity of solution is required. Innovation requires exploration,

divergent thinking, willingness to take risks and devote resources to projects which are likely to fail and these seem incompatible with conventional project management thinking involving the enforcement of strict standards and controls that most corporate cultures embrace. Project management methods used in combination with complementary disciplines can provide the best chance of reaching successful outcomes for a wide range of creative and innovative activities (Wintage, 2015) but successful organization has to solve the paradox of how to adjust rigid and conventional project management methods that will lead to successful innovations. This paper builds upon the work of previous research. Basic concept of innovation and innovation management are elaborate in order to emphasize the importance of innovations in today's increasing competition. Linkage between innovation management and project management is outlined and it examine whether project management methods are obstacle and constraint or can be used to maximize return on innovation and make this process be more reliable and certain instead of high-risk varied attempts of trial-and error.

2. BASIC CONCEPT OF INNOVATION

In today's modern society the concept of innovation and innovativeness has become very important and mandatory. Innovation today is the lifeblood of successful companies and a key driver of growth. A clear understanding of what an innovation represents is crucial to assess the innovativeness of organizations.

In the literature, (Schumpeter, 1934; Myers & Marquis, 1969, Drucker, 1996, Trott, 2012 & Schilling, 2013) there are countless different definitions of innovation and they are evolving over time as business and technology advances and innovation opportunities continuo to emerge. In order to obtain a better understanding and explanation of the phenomenon of innovation listed below are some common used definitions.

Basically innovation is typically understood as the introduction of something new. Based on the work by Schumpeter (Schumpeter, 1934), innovation has been defined as the first introduction of a new product, process, method, or system. But innovation is more than the generation of creative ideas. According to Myers and Marquis (Myers & Marquis, 1969) innovation is not a single action but a total process of interrelated sub processes. It is not just the conception of a new idea, nor the invention of a new device, nor the development of a new market. The process is all these things acting in an integrated fashion. Innovation is the specific tool of entrepreneurs, the means by which they exploit change as an opportunity for a different business or a different service. It is capable of being presented as a discipline, capable of being learned, capable of being practiced (Drucker, 1996). Innovation is defined broadly and can encompass the use of

products, services, processes, methods, organization, and relationship or interconnections. The key requirement to be categorized as an innovation is that it requires the use of something completely new or vastly improved to the organization (Wingate, 2015).

Innovation must be understood in the widest possible sense: as a new product, new production process, new production technologies, improved management methods, enhanced performance, workforce qualifications improvement and so on. Innovativeness of organizations is defined as the capacity of an organization to produce innovations continuously (Galunic & Rodan, 1998) and a primary source of sustained competitive advantage. To understand innovation, we must understand where they come from. The 7 sources of innovation were listed by Peter Drucker (2006). The first four describe sources within the organization whereas the final three represent external changes outside the organization:

1. The unexpected– The unexpected success, failure or outside event.
2. The incongruity– Is the variance between actual reality and perceived/assumed reality.
3. Innovation based on process need- Based on specific tasks within a business rather than overall operating strategy.
4. Changes in industry structure or market structure that catch everyone unawares.
5. Demographics- population changes
6. Changes in perception, mood and meaning
7. New knowledge, both scientific and non-scientific.

2.1 Innovation vs. Invention

The words "invention" and "innovation" are often use interchangeably but there's a fundamental difference between them. Most authors distinguish innovation from invention, an innovator from an inventor. It is therefore important to define them.

Invention is the process of converting intellectual thoughts into a tangible new artefact (Trott, 2012). It is primarily about generating new ideas through research or other forms of creativity. The creation of unique products, process, method, configuration, combination, architecture, design, and the development and proliferation of a specific pattern of social behaviour and artistic creativity are examples of activities associated with invention (Wingate, 2015). But all this is not enough to be called innovation.

Research and creativity will lead to inventions. But this is only the first step on the road to innovation. Invention is just an idea. Before becoming commercially viable innovation, it is necessary to invest a lot of time and effort in development. Some inventions will not come to this level, and some will be successful in overcoming it.

Innovation itself is a very broad concept with numerous definitions evolving over time as we

already pointed out. It is simplest to say that innovation is the commercial and practical application of invention. Invention is about creating something new, while innovation introduces the concept of “use” of an idea or method. It is a comprehensive process of interdependent sub processes. It's not just the concept of a new idea or invention of new devices, or the development of new markets. This process includes all those things that work in an integrated way (Myers & Marquis, 1969). Hence the invention is the concept of new ideas while innovation is the subsequent translation of inventions into the economy (Trott, 2012).

Innovation is really what drives economic growth and in that constellation invention would be engine of economy and innovation is the fuel, you need both for success. The challenge is to build innovation capability because innovation is a process with a number of distinctive features that have to be managed. Companies that learn to integrate innovation in corporate strategy and the strategy in the innovation process will gain a competitive advantage and optimize wealth creation (Prestwood & Schumann, 2002).

2.2 Types of Innovation

Innovations could be characterized in many ways. Scholars have over the years proposed a number of different innovation typologies. By distinguishing among the many typologies of innovations, we can better manage their development and better predict their sources and their impact. Schumpeter

(Schumpeter, 1934) has identified five types of innovations:

1. New product - product innovation
2. New production methods - process innovation method of production
3. New market - market innovation
4. New sources of supply - input innovation
5. New forms of organization - organizational innovation .

Innovation can be considered as a complex phenomenon including technical (e.g., new products, new production methods) and non-technical aspects (e.g., new markets, new forms of organization) as well as product innovations (e.g., new products or services) and process innovations (e.g., new production methods or new forms of organization) (Armbruster, Bikfalvi, Kinkel, & Lay, 2008). Meanwhile Melissa Schilling and Trott distinguished innovations according to their character.

OECD (Oslo manual, 2005) also categorizes innovations as product innovations (major and incremental) and process innovations, but distinguishes ‘technological innovations’ as a diverse category of innovation that contains both product and process innovations. According to OECD technological innovations comprise new products and processes and significant technological changes of products and processes.

Table 1. A typology of innovations (Schilling, 2013)

Type of innovation	Definition
Product vs. Process Innovation	Product innovations are embodied in the outputs of an organization – its goods or services. Process innovations are innovations in the way an organization conducts its business, such as techniques of producing or marketing goods or services.
Radical vs. Incremental innovation	The radicalness of an innovation is the degree to which it is new and different from previously existing products and processes. Incremental innovation may involve only a minor change from or adjustment to existing practice.
Competence-Enhancing vs. Competence destroying Innovation	Competence-enhancing innovations build on the firms existing knowledge base. Competence- destroying innovations render firms existing competencies obsolete.
Architectural vs. Component Innovations	An architectural innovation entails changing the overall design of the system or the way components interact. A component innovation entail changes to one or more components of a product system without significantly affecting the overall designed.

Table 2. A typology of innovations (Trott, 2012)

Type of Innovation	Example
Product innovation	The development of a new or improved product The development of a new manufacturing process such as Pilkington's float glass process
Organizational innovation	A new venture division; a new internal communication system; introducing a new accounting procedure TQM systems; BPR
Production innovation	Quality circles; just-in-time manufacturing system; new production planning software New financing arrangements; new sales approach
Service innovation	Internet – based financial services

The degrees of novelty vary from minor, incremental improvements to radical changes that totally change the way a product is perceived or a process is held in an industry (Tidd & Bessant, 2009).

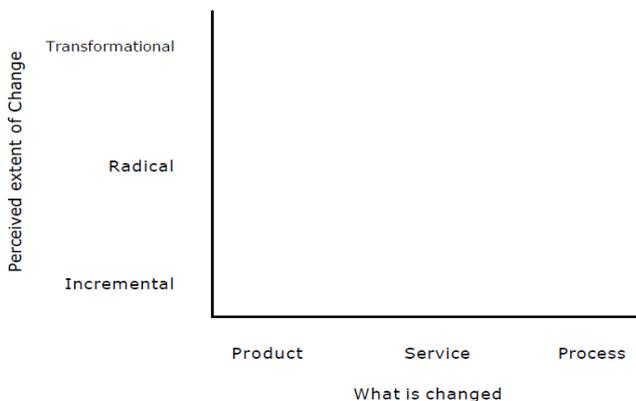


Figure 1. Dimensions of innovation space (Tidd & Bessant, 2009)

Understanding the various different types of innovation is a prerequisite to be able to manage them in appropriate way and to allocate resources (time, people and money) adequate.

3. INNOVATION MANAGEMENT

Innovation management is the process of capturing and managing organizational innovation. Due to increased recognition that innovation is essential for driving business growth and maintaining competitive advantage the importance of innovation management is rapidly rising.

Innovation management is a process, which needs to be managed in the right way as with any other process. Innovation should not be considered as a separate event, it's a process because it does not depend only from the level of technology, but also from production, marketing, sales, distribution and human resources. This process includes the whole range of decisions, activities and measures to be taken to enable conversion of an idea into business value. This is where the role of managers at all levels rises, their ability to act proactively, and to

detect possible events on time and to respond to them. Innovation management helps an organization grasp an opportunity and use it to create and introduce new ideas, processes, or products industriously (Kelly & Krenzburg, 1978). By utilizing innovation management tools, management can trigger and deploy the creative capabilities of the work force for the continuous development of a company (Clark, 1980).

The process can be viewed as an evolutionary integration of organization, technology, and market, by iterating series of activities: search, select, implement and capture (Tidd & Bessant, 2009).

Innovation management involves changes, critical thinking, anxiety, and may be unpleasant for business. But innovation is essential for growth, and for the organization is very important to have someone who can manage innovation processes in a proper way. Innovation management involves two simultaneous, interconnected objectives of competitiveness: product quality improvement (a precondition for success) and improving technological quality of companies (a precondition for a lasting success) (Pratali, 2003).

Successful innovation management is based on the management of the knowledge flow between the functions that are essential to the process of innovation, and that should be supported and communicate with the environment in order to increase profitability, competitiveness and the creation of business success.

The process of managing innovation can be applied to all kinds of ideas, be it a product, process or service. The main objective of innovation management is to provide a set of measures, tools and techniques that will enable inventors to meet the challenges throughout the innovation cycle and to turn their ideas into innovations on the market. Innovation management tries to turn the uncertainty into a calculated risk (Tidd & Bessant, 2009). It is necessary to look beyond the other and to see deeper. Management system for innovation must differ from the one that supports ongoing operations.

Table 3. Difference between managing ongoing operations and breakthrough innovation (O'Connor, Leifer, Paulson & Peters, 2008)

Differences Between Managing Ongoing Operations and Breakthrough Innovation		
Management Issue	Ongoing Operations	Innovation Function
Innovation Objective	New products to extend existing businesses	Breakthrough innovation based on advanced technologies and business models yielding platforms to create new businesses
Time orientation	Present and near future (one to two years)	Far future (three or more years)
Strategic objectives	Efficiently and effectively satisfy and even delight current customers; plan for next generations	Create new markets based on new - to - the - world performance features or order - of - magnitude improvement in known features or cost; develop strategic intent for domain focus and allow opportunism
Culture	Operational excellence: customer intimacy and execution skills	Cultivation; employee intimacy and new business creation skills
Risk profile	Risk averse with a focus on system efficiency	Risk mitigation through staged learning
Opportunity Selection	Customer driven, based on voice of the customer market research	Vision and possibilities tied to strategic intent
Investment timing and revenue focus	New products in six to eighteen months; profit - and - loss management with in - year revenue streams	New businesses in three to five or more years; return on investment over long term with portfolio management to hedge bets
Project management processes	Phase gate and concurrent engineering	Discovery - driven processes and learning plans

Understanding how you can wire innovation into your organization and build a robust internal innovation capability is an imperative for any firm doing business in today's dynamic world (Keeley, 2013). So we are coming to the question how to build an innovation capability, how to make innovation processes more manageable and select the right approach to the specific innovation project?

4. INNOVATION PROJECTS

Most activities in today's business world are organized in projects but there is no universal project procedure that fits all organizations. Innovations are mostly implemented through projects. As the conceptual distinction between invention and innovation is given above, innovation project could be defined as a mechanism of the transition from invention to innovation. Innovation project is a new way of doing something; aim to take something that has been designed, developed, or created and then applies processes to them in some way to achieve a particular outcome (Wingate, 2015).

Several typologies and classification of projects have been developed over the time. To determine the position of innovation projects Filippov and Mooi classified the project in a following way.

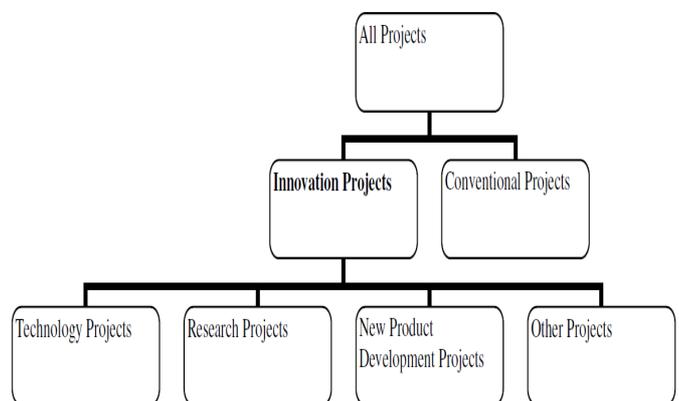


Figure 2. Classification of projects (Filippov & Mooi, 2009)

Innovation projects by their nature differ from conventional projects. The diversity is fully presented by Filippov and Mooi (Filippov & Mooi 2009):

- **Objectives.** Conventional projects tend to have clearly defined goals and targets while innovation projects often do not. Innovation is often intangible end goals and the commercial success of an innovation project can be highly uncertain. In fact, innovation is often a result of trial-and-error.
- **Risk-taking** is low in conventional projects since the objectives are clearly defined and processes are established. In innovation projects, objectives are loosely defined and ambiguous, and processes are more experimental and exploratory, hence the risk-taking is high.
- **Expenses** for innovative and research activities are characterized as long-term, with increased insecurity regarding the eventual amount of generated **earnings**.
- **Project teams** leading innovation projects are made up of people with diverse backgrounds.

Innovation projects are uncertain endeavours making it difficult to gauge ex ante the net present value of such projects (Keegen & Turner, 2002) and require more systematic and professional efforts, as shown by the large percentage of organizations that fail to complete innovation projects successfully (Carr, 1996).

The lack of project structure to fit the project type may explain the failure of many projects, because the wrong structure for the wrong project type is being used, whereas using the right structure for the right project type could lead to better overall project success (Poli, Cosic & Lalic, 2010).

The uncertainty, complexity, and uniqueness of project activities make control more difficult and deviation from plans more probable, because plans are formulated for a set of contingencies that cannot be preconceived because they have no precedent (Sydow & Staber, 2002).

In recent decade scholars done much research in order to find the best way to manage the risks and uncertainties related to innovation projects. The related dilemma in this paper is the trade-off between rigid and tightly defined conventional project management involving the enforcement of strict standards and controls that most corporate cultures embrace and the freedom within such systems to encourage creativity, exploration, willingness to take risks and innovate.

5. PROJECT MANAGEMENT APPROACH TO INNOVATION

Project management practitioners are aware that different types of projects need different project management approach. A systematic project management consists of methods, toolkits and models. It can be viewed as the sequential application of structured processes for the purpose of institutionalizing standardized practices (Carvalho, Patah, & de Souza Bido, 2015) and as the process of controlling the achievement of the project objectives.

Utilising the existing organisational structures and resources, it seeks to manage the project by applying a collection of tools and techniques, without adversely disturbing the routine operation of the company (Munns & Bjeirmi, 1996).

Projects are the means by which all organizations accomplish business change, as well as the means by which some organizations deliver profit to their shareholders (Cooke-Davies, 2007).

Over the past few decades' project management offers a variety of methodologies, models, classifications, approaches which provides managers with different techniques and tools to use during project implementation. When it comes to innovation management we cannot say the same thing. Innovation is mostly implemented through projects and the interplay between these two areas is obvious.

5.1 Innovation management vs. Project management

People like predictability, but innovation projects come with additional risk and uncertainty that should be taken into consideration. All these things need to be managed with some reasonable level of discipline, as we live in a world where we need cost cutting, efficiency, speed and focus as much as at any previous time.

Managing innovation projects does require a whole different approach. Interesting comparison between innovation management and project management is given by Jeff Belding as we can see in the table given below.

As we can conclude analyzing this comparison, innovation management approach is a fundamentally different way of thinking and it is obvious that innovation and project management as distinctive disciplines have been developing in a relative isolation from each other. However, the interplay between them exists and its importance rises triggering more academic research.

Table 4. Five Key Factors of Successful Project Execution (Jeff Belding) (Belding, 2013)

Traditional PM Theory	Innovation Management Thinking
Project End Result-The “what “of the project, why it's important to the organization and what the deliverables are.	Searching-In this phase, ideas that meet needs respond to opportunities, or advance the organization’s strategic goals are deliberately hunted and gathered. At the end of the phase, there will be many ideas, needing to be evaluated.
Critical Success Factors-The make-or-break issues that need to be resolved for the project to success. This includes management of risks that could be damaging to the project.	Exploring-Ideas and opportunities are organized and analyzed in order to understand them in depth. Ideas may need to be tested to demonstrate that they are practical and viable.
Project Scope-The interdependence of resources, time, and features of the project. This is the tool most project leaders use to understand the impact of changes on the project.	Committing-Here’s here we move from “what could we do?” to “what should we do?” The focus is on what to do, not on how.
Key Relationships- Managing the politics-gaining support and resources from internal and external team members to get the deliverables of the project accomplished.	Realizing-The emphasis moves to execution-from the “what” to the “how”. What are all the things that lead us toward our defined goals?
Schedule-The planning and articulation of the deliverables and milestones of the project.	Optimizing-Maximizing benefits>increasing the degree to which the idea has been exploited. Like PDCA, this continuous prototype-pilot-assess-learn-re-do cycle is central to the concept of innovation.

5.2 Flexible project management approach to innovation

Applying project management effectively on innovation projects includes incorporation of techniques from the discipline of flexible project management.

For decades both the academic and corporate sectors have been engaged in improving traditional management methods. Traditional project management assumes that events affecting the project are predictable and stresses the importance of requirements and strict change control.

Ultimately, traditional project management is often best in a stable environment, where a defined deliverable is needed for a fixed budget (Wingate, 2015) and introducing change is not desired. In situations where the level of ambiguity in requirements is significant, where customer involvement in the end product is heavy, and where the level of experience with the tools and techniques being used within the development environment is minimal, a less rigid method of project management method is needed.

The solution is be a more flexible and agile approach to new product development, process improvement, or building new services, adaptable to the contingencies of the project environment. This new conceptualization of

project management enables to embrace the non-linear nature of innovation.

Applying project management effectively on innovation projects includes (Wingate, 2015):

- Appreciating that innovation projects can emerge from many areas of the organization
- including preproduction, production, distribution, training, and organization.
- Understanding the unique elements of idea generation, marketing and logistic requirements, and diffusion.
- Incorporation of techniques from the disciplines of flexible project management and system engineering.
- Ensuring scope reflects theory and hypothesis, requirements define experiments and tests, and that are clear descriptions of decision points.
- Ensuring the complexity and interconnectedness are adequately addressed in plan.

5.3 Fit between innovation project characteristics and project management

Innovation projects have clearly become a central activity in most organizations, and companies are investing increasing resources in projects such as new product development, process improvement, or building new services. Specific characteristics of innovation projects were pointed out in previous section in order to understand the necessity to select the right approach to manage them.

When important projects fail often the problem is rooted in management's failure to select the right approach to the specific innovation project. Factors influencing the adoption of project management tools and techniques and selecting the right approach are (Iakovleva, 2014):

- Project size – giant, large, medium and small
- Size of a company, where a project is being implemented – big, small, medium or start-up company, where the company is equal to a project
- Field of industry
- Level of project management maturity

When we consider and think about these factors, it is possible to draw a conclusion that there is a necessity to introduce extra criteria for innovation project classification, influencing the choice of project management techniques during the innovation project implementation process. Scholars (Henderson & Clark, 1990; Shenhar & Dvir, 2007; Wheelwright & Clark, 1992) re-examine the concept of fit between innovation project characteristics and project management. In literature different frameworks of project management are proposed in order to contribute to this goal. One of the main frameworks found in literature is Henderson and Clark's for innovation and change. Proposed framework argues that different types of technological change have fundamentally different organizational consequences and influences on different project management capabilities (Henderson & Clark, 1990). They divided the technological knowledge required to develop new products and introduce innovations, along two new dimensions: component knowledge and knowledge of the linkage between them, called architectural knowledge.

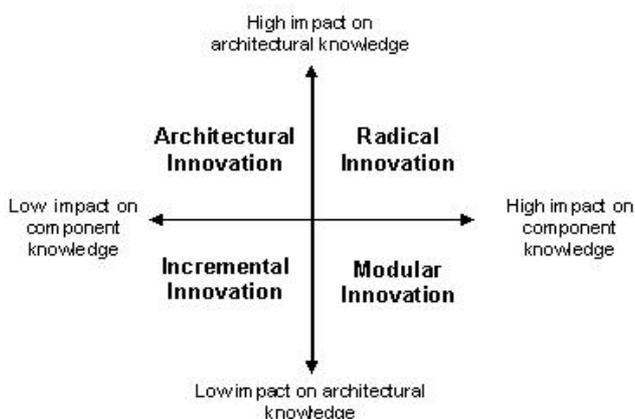


Figure 3. Henderson-Clark model

These individual innovation dimensions are defined as (Sausser, Reilly, & Shenhar, 2009) :

- **Radical innovation** influences an organization's existing project management capabilities, requiring greater attention to a project's knowledge of core concepts and linkages between these core concepts and components. This significantly impacts a project's technical evolution, recurrent tasks, organizational experience, information processing, product architecture, problems solving strategies, and communication channels.
- **Incremental innovation** has a minimal impact on an organization's standard project management operations and requires no advanced knowledge of core concepts or component linkages.
- **Modular innovation** influences a project's knowledge of core concepts. This has the most impact on the projects technical evolution, organizational experience, recurrent tasks, and technical knowledge as they relate to component knowledge and less impact on product architecture and communication channels as they relate to component linkages.
- **Architectural innovation** influences a project's knowledge of linkages between core concepts and components. This has an impact on the projects technical evolution, organizational experience, recurrent task, and technical knowledge as they relate to the component linkages in addition to the product architecture, communication channels, and problems solving strategies.

Companies, therefore, must be careful in distinguishing between incremental and architectural or modular innovations because the competencies and management techniques, tools and knowledge required to exploit one might not suit perfectly the other, if at all. In view of this state of affairs, in their book "Reinventing Project Management", Shenhar and Dvir suggested 'Diamond' project management approach to successful growth and innovation. This framework suggests classifying complex projects according to four dimensions such that the values attributed to each of these dimensions indicate a recommended style of management for increasing the likelihood of the project's success. Its categorization is established on initial characteristics of project and identifies independent dimension comprised in the NTCP acronym. Shenhar and Dvir's project uncertainty model has four dimensions are defined as follows (Shenhar & Dvir, 2007):

- **Novelty** – How new the product is to the customers and to the market (derivative, platform and breakthrough).
- **Technology** – The extent of use of new or even non-existing technology at the time of project initiation (low-tech, medium-tech, high-tech and super-high-tech).

- **Complexity** – Where the project's product is located on the scale from a simple component to an array (assembly, system and array).
- **Pace** – How urgent the project is at the time of initiation; the criticality of the project's completion time (regular, fast/competitive, time-critical and blitz).

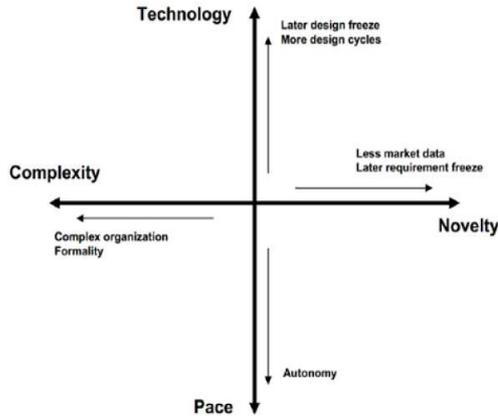


Figure 4. The NTCP dimensions influence on project management (Shenhar & Dvir, 2007)

Shenhar and Dvir proposed specific types of project management depending on the project classification as presented by the diamond. The model identify the key elements of the project approach and provides a framework for thinking about the expected risks and benefits, in order to apply useful management style in accordance with the type and the nature of project we have to deliver, and for innovation projects it is essential.

As can be seen above individual approach to project management is essential when managing different types of innovation. For adequate project management application in implementing innovation it is important to differentiate innovation projects, depending on the degree of innovativeness or on their nature or object. Iakovleva, Brook and Pagnanelli (Yakovleva ,2012; Brook & Pagnanelli, 2014) in their research work show that this division is extremely important, because it strongly influences on such project management areas as cost management, procurement management, stakeholders management and portfolio management. Successful innovation process requires effective controlling and alignment with project management (Amaro, Ohlhausen & Bucher, 2008).

Report published by PMI (Global Dynamics of Innovation and Project Management, 2011) confirmed that the convergent and distributed nature of much of today's innovation has significant implications for project, program and portfolio management. A commonly found implication for project management is that flexibility is a necessity, suggesting a high value for organizational agility, including the use of iterative methodologies.

6. CONCLUSION

Summarizing all given above It is necessary to bring more flexibility to traditional project management in accordance with different types of innovation. It depends on the level of innovativeness, character, perceived extent of change, etc. The higher the complexity and the level of innovation the higher is the risk, requiring more management attention. If the project aims to bring something that should be disruptive, game changing or breakthrough, standard rigid processes for project management involving the enforcement of strict standards and controls could result in lower probability of success.

The difference between conventional and innovation projects and traditional and flexible project management is shown in order to understand that specific characteristics of innovation requires different, more flexible and agile approach. Not to be misunderstood, flexibility is not the solution to all problems. It is a set of tools and techniques that can be applied to projects selectively to deal with uncertainty and to shift from corrective to adaptive actions when actual vary from plan.

Even though project management and innovation management, as disciplines, developed completely independently of each other over the time the interplay and overlap between them is obvious. Innovation projects benefit significantly from project management methods in that the uncertainty, complexity, uniqueness and risks are managed in a way that minimizes negative and optimizes the positive. Different criteria for innovation project classification are taken in to account in order to separately plan them and select an appropriate project technique in accordance with its nature and specific demand. Critical analysis of dimensions and characteristics proposed by Henderson-Clark model and Shenhar and Dvir's NTCP model for project categorization could lead to selection of right project management technique that will contribute to the achievement of project.

A large number of changes, unpredictable, complex and dramatic, in the local and international environment cause new trends in business, new way of thinking, and new lifestyle. Businesses are increasingly complex and diverse and managers must embrace change as a challenge and not as a risk. Deliberately or not, project management practioners are trying to adapt tools and techniques for innovation projects.

In future more research is needed to establish appropriate project management approach to innovation, and to embed flexibility in project management methods considering that at this stage the current project management practice doesn't have an explicit way to identify specific characteristics of innovation and select the right way to manage them. Use of agile and flexible project management approach is usually related with IT sector, but it would be useful to have more empirical studies on the usage in other types of industries and different innovation projects.

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Upravljanje inovacijama: Da li su metode projektnog menadžmenta neprijatelji ili saveznici

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Apstrakt

U cilju postizanja dugoročne konkurentnosti, kompanije se pozvaju na kontinuirani inovacioni proces. Kada govorimo o inovacijama susrećemo se sa mogućnostima koje obezbeđuju uslove rasta novih platformi. Uticaj ovako visokog nivoa dolazi sa izazovima kako izgraditi inovacione sposobnosti i kako ove procese učiniti lakše upravljivim. Inovacije se danas uglavnom realizuju kroz projekte koji zahtevaju divergentna razmišljanja i spremnost alociranja resursa za projekte sa malom verovatnoćom uspeha što je kontradiktorno sa logikom upravljanja projektima koji uključuju primenu strogih standard prihvaćenih od većine korporativnih kultura. U cilju rešavanja pomenutog problema, ovaj rad ispituje da li metode za upravljanje projektima predstavljaju prepreke i ograničenja ili osiguravaju da taj process bude pouzdan, bez visokog rizika i grešaka. Pokazalo se da je od izuzetne važnosti pronalaženje najboljeg odgovora između inovacionih karakteristika projekta i pristupa upravljanju projektom. Pregled trenutnog stanja u oblasti detaljnije je prikazan u samom radu.

Ključn ereči: *upravljanje inovacijama, upravljanje projektima, inovacija, inovacioni projekat*