

Project Management vs Product Management: A View on The Journey from Project to Product in Software Development

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Abstract

Software Product Management (SPM) has higher interest both in our country and globally. Many companies operating in the IT or software sector are renewing their project-based approach to product-based visions, with the influence of success stories of “Big Tech” companies especially.

The situation is not only affected by the strategy change but most IT companies also change their working styles such as remote working, digitalization and development methodologies such as agile or lean approaches. Moreover, the definition of the product management itself is still trying to be structured with many on-going specifications around the project management (PM) versus product management discussions. Product management neither have a special branch in universities nor a specific certification in official industrial organizations. And in the field, in most companies, product management does not have a well-defined framework and is often treated as an ad hoc discipline.

The aim of this study is to provide a comprehensive view on SPM and PM professions. First the roles, definitions, responsibilities, and differences are elaborated based on academic search. Then, with an active software project and product management field experience, the major functionalities are mapped to areas of expertise and the overlap between SPM and PM are shown in this functional map. Thus, it is expected to understand the actual needs of productization in software companies and specify the challenges in combination with academic approach and field experience.

Keywords

Product Management, Project Management, Software Product Management, SPM, PM

1. Introduction

As a profession, Product Management, has its origin from 1930's and evolving rapidly in our global world, by the effects of technology, marketing or business. Haines (2009) calls product management as an “accidental profession” even though there are many active product managers in the field and it is ranked as the 10th best job in America as published by Glassdoor (2022). Whereas in the same list, Project Management (PM) was ranked as 32th in 2021 and 40th in 2022. Of course, project management has more ancient history (applied even in Egyptian Pyramids (2551–

2560 BC) and Hanging Gardens of Babylon (605 BC)) and it is also evolving rapidly but it is more defined with standardization and well-structured with some frameworks in contradiction to product management.

There are some efforts to standardize and define a framework for product management but there is still no degree or certification for the profession and instead many product managers have origin from project management or marketing from another field or business disciplines.

The original product managers, functioning in the FCMG sector, were focusing on the marketing mix – 4P's: Product, Place, Price and Promotion - with their key metrics as sales and profits. They were not focusing much on the product development itself. However, as the role moved into the technology world in recent years, Product Development (PD) is placed more on the center of the product management role. The new technology companies, were not only inventing their industries but also changing the view to be more customer centric to align the development according to them. Especially after 2000's, with Agile and Lean methodologies, the development side gain agility and began to move faster in the engineering activities. Now in most tech companies, "Product" covers the value proposition for the customer and the development of the product itself as well. And the products are mostly developed as a software in a digital environment, functioning either on mobile or internet. So throughout this study, we will refer to software products and will concentrate on the Software Product Management (SPM) instead of product management alone.

1.1 The Evolution of Product Management

In 1931, Neil H. McElroy at Procter & Gamble invented the modern product management, with a new word "Brand Men". He was willing to track sales to managing the product, promotions and advertising, with more client interactions and field reviews. He has restructured P&G into a brand-centric organization and led to the birth of the product management in the FMCG field.

Hewlett-Packard, interpreted the Brand Man to make the PM, the internal voice of the customer and make decisions as close as possible to the customer. They also introduced a new organizational structure, the product group divisions, where each group became responsible for developing, manufacturing and marketing its products as a self-sustaining organization.

Meanwhile, Toyota, after focusing on eliminating the wastes in production process and continuous improvement, they define two important principles "Kaizen" and "Genchi Genbutsu". Kaizen stands for, continuously improve the business while always driving for evolution and innovation evolution and Genchi Genbutsu means to make correct decisions, go to the source to find the facts which any modern product manager will recognize both.

Harvard Business Review published, "The New Product Development Game", the article by Takeuchi and Nonaka (1986) to describe the case studies of these new eras.

In 1987, Ken Schwaber published "SCRUM Development Process" and describe how it is hard to plan&estimate the work from the beginning, especially for software development and introduce the term "iteration". And after the "Dot Com Era" with the unstoppable rise of software, startups and venture capitals, much smaller teams began to make larger impacts. Companies like Microsoft built out their Program Managers who were indeed product managers expected to do some technical program management functions as well.

In 2001, 17 authors – including SCRUM founders Jeff Sutherland and Ken Schwaber, published the Agile Manifesto and had deep impacts on software development world. Agile has been a consistent driver of the increase in product owners and product managers throughout software development teams globally.

These days Product Management is considered as "CEOs of their products" and increasingly a stand-alone function reporting directly to the C levels. This is important to make the product team evangelists of with the business vision and goals (both internal and external), and gives them the independence.

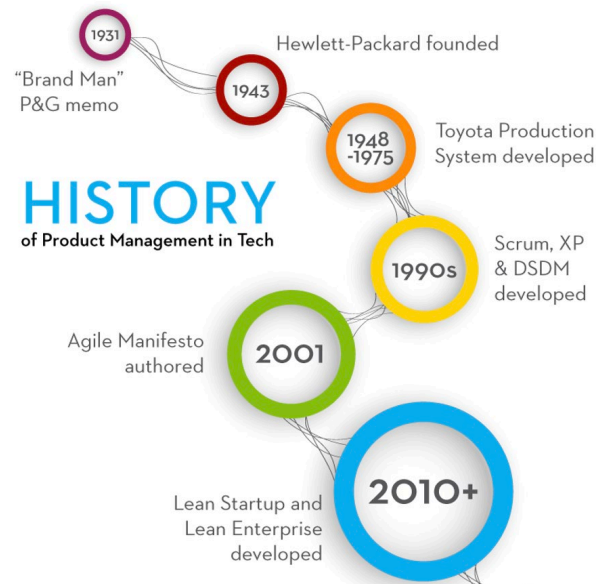


Figure 1. History of Product Management in Tech (Source: Mind the Product)

1.2 Definitions

Project: As defined by the Project Management Institute (PMI, 2004) is a temporary effort undertaken to create a unique product, service, or result.

Product: A product is anything that can be offered to a market that might satisfy a want or a need (Kotler et al. 2006). It's designed, developed, launched, managed in the market and retired when the need for a product diminishes. So product has a life cycle and during this cycle multiple projects can occur.

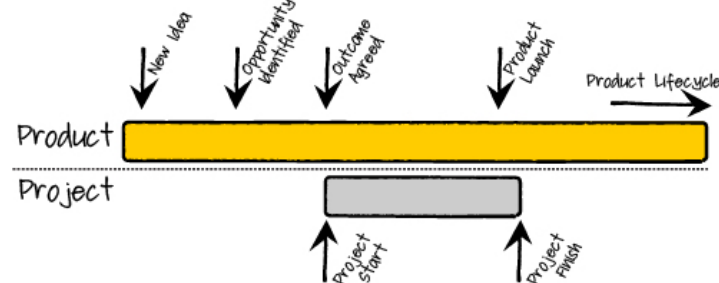


Figure 2. Product and Project Scope (Source: Brainmates)

Product has many other definitions from different points of view such as marketing, organizational or management perspectives.

Handscombe (1989) provides the definition from organizational view with the following: "Product management is defined as the dedicated management of a specific product or service to increase its profit contribution from current and potential markets, in both the long and short term, above that which would otherwise be achieved by means of traditional approaches to the management of territorial sales activity, marketing and product development"

Gorchel (2006) evolves his definition as "Product management deals with managing and marketing the existing products and developing new products for a given product line, brand, or service" and specifies three main activities in product management as planning, forecasting and marketing.

Haines (2009) defines product management from business management perspective as follows at the product, product line or product portfolio levels: "Product Management is the holistic business management of the product from the time it is conceived as an idea to the time it is discontinued and withdrawn from the market".

As an holistic approach, Feşel (2013), combines all these definitions as the following integrative definition:

"Product management is a function which mainly deals with the development of new products/technology and markets, and/or improve existing products/technologies and extending product lines in order to create profitable portfolio (mix) of products satisfying the customers."

1.3 Objectives

It is even challenging to precisely define the terms “Product” and “Project”, to understand the differentiation and prevent the confusion for the overlaps. The research objective of this study is to provide a holistic definition of product management first, as it is a newer profession which does not have precise scope or framework yet. Then to highlight the similarities and differences between project and product management is aimed to be provided to see the full picture. The key unique research contribution is to combine the existing knowledge of software product management that consists of small and unconnected pieces by using the project management knowhow as a baseline and to provide a full functional map for these two.

2. Literature Review

Projects being viewed as temporary organizations and has an end in traditional view (Bakker, 2010; Packendorff, 1995). Thus they were characterized by short term orientation, discontinuous personal attendance with trans-disciplinary expert integration and lack of organizational routines (Muller et al., 2005). It is understood generally a clear goal with a series of tasks, inherent uncertainties with limited time, budget and resources (Nicholas and Steyn, 2012). With a holistic view, it includes organizational constructs, project governance, employee or team interaction and people management (Packendorff, 1995).

In 1986, Takeuchi and Nonaka (1986) are first introduced a holistic “rugby approach” which is an actual change from linear to an integrated approach and includes project management perspective towards product development. They emphasize that product development should not be handled with a sequential approach and suggest a cross-organizational project management approach for larger organizations. They derive six characteristics as built-in instability, multi-learning, self-organizing project teams, subtle control, organizational transfer of learning and overlapping development phases.

Many other integrated product development research studies are adopted this holistic approach since then (Balachandra, 2000; Jayaram and Malhotra, 2010; Knudsen, 2007; Koufteros et al., 2010; Rauniar et al., 2008; Un et al., 2010).

In product development, iterative models can be preferred instead of sequential models with the need of defining and analyzing the requirements more than once especially in solving complex problems (Stabell and Fjeldstad, 1998; Zhang, 2013). In complex projects where the uncertainty level is high and the requirements need to be revisited throughout the project, the iterative models are primarily beneficial. (Browning and Ramasesh, 2007). Such methodologies include SCRUM (Schwaber, 2009), Extreme Programming (Beck and Andres, 2004) and Test Driven Development (Beck, 2002) among others.

The success of a product depends not only on the product development whereas the activities from strategy, marketing, pricing to product launch and customer support as well. SPM, as an owner of the product, plays a critical role in achieving the business goals and providing the success strategy in the market (Kittlauss and Clough, 2009). He not only masters the product life cycle but helps to increase the profitability and predictability in association to the business goals (Cooper, 2001; McGrath, 2004; Van de Weerd et al, 2006)

The project manager role is analyzed in many studies and specialized for software project management like Royce (1999) did. PMBOK of PMI (2013) focuses on best execution of a project and describes the PM role as monitoring and controlling the work of producing the services, products or results that the project was undertaken to create. Gorchels (2006) provides a general description of product manager role and describes the responsibilities towards project, sales and marketing management perspectives. Cooper (2001) highlights the need to drive new product introduction and to manage the product life cycle by stage-gate reviews. Davis (2005) underlines the importance of orchestrating the stakeholders for a product manager, however does not clarify the role for marketing or project-related activities (Davis, 2005).

Krishnan and Ulrich (2001) present a paper, on product design and development and review academic fields of marketing, operations, engineering and organization. Kavadias and Chao (2008) focuses more on new product development (NPD) and discuss the difficulties and complexity. Haines (2009) proposes to use “Product Management Life Cycle Model” (PDLC) in which new product planning, introduction and post-launch PM is defined.

3. Research

This study can be classified as a systematic literature review followed by scoping study that is a research to show an evidence on a topic, in a wide range of research area (Kitchenham and Charters, 2007).

3.1 The Roles and Responsibilities

As can be seen from the lifecycle of a product, a product manager has broader responsibilities than a project manager. SPM responsibilities start with the ideation and opportunity identification first and has more external responsibilities, such as stakeholder and end user management, understanding the market, the risks, the opportunities as well as the technical aspects of the product. The project manager has more internal responsibilities such as planning and executing a project plan with looking towards the development team and functionalities. The stakeholders are also more internal for a PM than a SPM. Main responsibilities are listed for both of the roles in Table 1 below.

Table 1. The Responsibilities

Product Manager	Project Manager
Do some market research	Do the project plan, with doable timelines
Analyze the business, identify risks and opportunities	Allocate project resources
Understand the product, define and evolve the product vision	Understand the development team's capabilities
Gather and prioritise the customer and business requirements	Identify the potential risks and actions to mitigate them
Define the product features that can maximize the value	Manage any issues that arise during development
Define a product roadmap	Breakdown initiatives into tasks, plan the individual tasks
Strategize the product launch to gain the competitive advantage	Take actions to resolve any conflicts or roadblocks to progress
Define a release plan or a product launch plan	Allocate the right resources to the right tasks
Work closely with the operational delivery team (project manager is also one of them) to improve the product to meet certain market needs or changing market needs.	Management of plans, schedules, task lists budget and so on, on daily basis.
Work with the stakeholders, both internal and external (such as marketing, sales, upper management etc)	Manage the project scope by balancing the constraints such as quality, timeline and budget
Work on collaborations and partnership programs to strengthen the product in the market	Manage the stakeholders both internal and external (such as development team, test team, devops team, outsource resources if any, upper management etc)
Manage the relationship with end users or customers, contact and receive the feedbacks	Mindset: Tactical Thinking, Time and resource management, Ask How, Who and When?
Provide content for marketing	Focus on result, delivery and team
Decide the retirement of the product when it is no longer viable	
Mindset: Strategic Thinking, Ask What and Why?	
Focus on growth, business and continuous improvement	

As can be seen from the above table, there are certainly a quite bit of overlaps between two roles. Both work to maximize the product value, deliver it on time, with quality, within budget and gain the customer satisfaction. They both required to have organizational skills with some leadership capabilities and be excellent communicators and stakeholder managers. These overlap is shown in Figure 3, below.



Figure 3. The overlap skillset

Beside of this overlap, Product manager skills include Business Knowledge, Data analysis, Market assessment, Budgeting, Price modeling, Basic user experience (UX) knowledge and Project management skills maybe with some technical background.

And Project manager skills include knowledge of methodologic approaches like Scrum, Agile, and Waterfall, Risk management, basic budgeting and some knowledge on the tools Asana or Gantt charts.

In general, product managers responsible of the product development, while project managers drive the project execution. The product manager has higher level objectives and focuses more on the strategy side whereas the project manager has objectives for the execution and focuses more on the detailed tasks. Although, their focus is external for a SPM and internal for a PM with different mindsets, they need to collaborate and work together for the success. They also use different artifacts for the success.

Table 2. The Artifacts

Product Manager (Strategy)	Project Manager (Execution)
Product Vision	Project Plan
Product Strategy	Specific Requirements with Prioritization
Product Roadmap	Task List
High Level Requirements	Specific Delivery Dates and Milestones
Rough Timeline	Resource Management
Rough Effort	Specific Effort Estimates

3.2 The Functional Map

A functional map has been prepared in order to show the relationship between the major functions of product and project management. This map is referenced from relationships between the SPM Framework (Kittlaus and Clough, 2009) and enhanced with the project management major functions. It is thought as a good way to show that major functions of both roles are interacting deeply with each other.



Figure 4. The Functional Map

3.2 The Career Paths

In general, all product managers deal with projects; and most project managers take care of products. These two fields are indeed very flexible and there is no one way to become a project or product manager.

Project management is more older history and well defined framework than product management. Project managers often get their start in industry, like working as a software developer first and then becoming a project manager for software development. Although the certifications is not a must have for becoming a PM, as they are more mature than the product management, they are being asked more commonly. Common project manager certifications are:

- Project Management Professional (PMP), from PMI (Project Management Institute)
- Certified Associate in Project Management (CAPM), from PMI
- Certified ScrumMaster (CSM), from ScrumAlliance
- Professional Scrum Master (PSM I), from PMI

On the other hand, product management is much newer and has origin from the requirements of the digital revolution. Its set of methodological approaches are evolving constantly and rapidly (Agile, Scrum, Lean, TDD, Jobs to be Done etc) in relation to product features. The product management definition itself is being altered for many companies and adopted from different points of views such as marketing, organizational or management. So, SPM's have no specific background and should be ready for multiple challenges.

There is no specific education that you can take in the collage to become a product manager and certifications are still in early phases. So they are not being asked most of the time but a nice to have items for now. But they are available and some of them are listed as below:

- Product Manager Certificate, from Product School,
- Certified Product Manager, from Pragmatic Institute
- Certified Product Manager, from AIPPM The Association of International Product Marketing & Management
- New Product Development Certification, PDMA Product Development and Management Association

The career path for SPM or PM can be even same, which in fact in the field, most of the product managers are the earlier project managers or at least have some years of project management experience as well. It can be stated that product managers may be everything that project managers are; with an extra view of business, strategic thinking and marketing functions.

4. Results & Discussion

Although, the journey from Project to Product in Software Development, has so much functionalities in common, they are also totally different skillset and expertises. First of all, it is a mindset set from executional thinking to more strategic thinking. Also requires changing the position of your view, from internal to external to a level of thinking on behalf of your customers directly. As a software product can be a service, application, platform, framework or a system that offers a value to its customers, they tend to be created and maintained by a group of individuals who share the same vision and goal for the product and willing to think on behalf of their customers and their actual needs.

While moving towards project based mindsets to product based mindsets, there are some major shifts required in a Lean and Agile way of thinking. Although the majority functions remain same, the mindset shift requires some solid approach changes:

- Lifecycle: While SPM is continuous, iterative and incremental loops, PM deals with clear start and stop dates
- Workstructure: In SPM, small steps lead to MVP (minimal viable product) to achieve a business value for customers towards a visionable roadmap. Whereas in PM, you are breaking down the whole effort into smaller, workable pieces.
- Efficiency: in PM, efficiency relies on each team or individual by maximizing the output. In SPM, efficiency is achieved by focusing the throughput and delivery of the value and on minimizing the wastes.
- Customer Focus: in SPM, the key questions are What & Why? That questions are crucial to identify what will be delivered to the customer and why it will mean a value for them. The customer experience is the key. Whereas in PM, How? Is the key question.

- Needs: SPM, tries to solve a problem. Users may not even be aware of a problem but SPM describes some user stories to discover the experience and issues with that experience (if any exists). In PM, requirements are gathered from the stakeholders most of the time, thinking instead of end users may be rare.
- Change: is more often in SPM. The initial idea of a product (in the ideation phase) and when it is launched to the market may be much different.
- Resources: PM manages resources as more exchangeable from one project to another or see as an individual contributors across projects. In SPM, resources are more a group of people that shares same desire in a dedicated team.
- Motto: 'Follow the plan' versus 'Deliver the Value'

In addition to the mindset shift, there are also recommendations available in the literature for effective and high performance product management (Tyagi and Sawhney, 2010).

1. Initial formal training to new product managers can help them to understand the organization better instead of expecting them learn with on the job training.
2. Clearly defined authority and responsibilities, will help effective product management. Having no clear authority challenges to deliver the results in many organisations. Job scope clarification is still seen as one of the problematic areas.
3. Reducing the organisational barriers, improving interdepartmental cooperation or functional interfaces can result in high performance PM.
4. Let them time for strategic thinking and actions. Johnson (1999) surveyed that %42 of product managers still spending their time for tactical coordination instead of strategic activities.
5. Define well structured PM Process and framework, to prevent lack of process and reduce effectiveness.

5. Conclusion

Over the last few years, there is a shift from project-based development to product-based development in whole over the world. The essential effect of BigTech companies and their world wide products are giving some good reasons for businesses to re-think about structuring their mindset and work in terms of products rather than projects.

A product manager, is viewed as the "CEO" of the specified product(s) and its responsibility begins with the early lifecycle of the ideation through the retirement of the product. So they are basically in charge of evolving the idea from the early stages, setting the vision of the product, develop and launch it and make sure that it brings some value to the customers. In order to do that, SPM should listen carefully the potential customers, direct and update the product to fulfill the customer needs until the product retirement. Their position is more of becoming the voice of the customers throughout the product lifecycle. Unlike project managers, SPM do not have a clear view on the beginning and the end, as it evolves constantly.

Project managers, apply set of different methodologies which allow them to organize the project work in an efficient, timely and qualified manner. They have to solve different challenges throughout the project lifecycle but they have more explicitly defined targets along with some tools, teams, timeframes, budgets and some other elements. Their project metrics and KPIs are also well defined most of the time and measured with exact results to decide whether project success or failures. PMs, experienced PMs especially, have meticulous scheduling and tight control actions to avoid potential pitfalls through the project cycles.

Software product managers world is evolving rapidly with the requirements of digital revolution. Its set of working methodologies is constantly changing (Agile, Scrum, Jobs To Be Done) in relation to product development or features. Also the other domains that they need to function is evolving accordingly as well, such as digital marketing. SPMs don't have a well defined framework and even an educational background yet and they have to adapt multiple challenges in multiple domains. Product Success or product failure definitions are completely relative depending on the product goal or the company goals. Thus, targets, tools, timelines, teams or requirements can change on the way and it may not be possible to keep the 'set targets', especially when it is thought that the product managers responsibility is from the early beginning to the literal end of a product.

So, it may be possible to state that product managers should be everything that project managers are, with an extra flexibility, business view, cross domain knowhow and executive communication skills. In general, product managers tend to make some higher level decisions than project managers and they usually report to executive level. Which makes the role more challenging, attractive and senior to become more popular in recent days with some really good examples especially in technology companies all over the world.

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Biography / Biographies

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