

INNOVATING CREATIVITY IN DIGITAL PROJECT MANAGEMENT

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ABSTRACT

Digital project managers combine digital and business resources to coordinate the development and delivery of digital projects. However, despite increasing prevalence in industry, there is currently a dearth of literature and empirical insights in understanding how these professionals manage innovative creativity in modern web-based and mobile digital projects. The role of the digital project manager is pivotal in managing digital resources and guiding teams with different priorities and areas of expertise such as software and application developers, user interface, and user experience professionals. The management of digital resources and guiding development teams adds to the complexity of the digital project manager's role and responsibilities in fostering environments where creativity and innovation can flourish. Furthermore, digital project managers operate in multifarious digital settings where embedding creativity is relevant for the development of digital service innovations. However, established project management research suggests that project managers focus on dimensions of scope, time, and cost towards implementing control processes, with limited insights on innovating creativity practices in highly complex digital settings. As such, this paper seeks to understand the role of the digital project manager in guiding development of digital service innovation in projects which require high levels of innovative creativity. The analysis of our empirical data with digital project managers and development teams across four web-based and mobile digital projects in the creative industries, suggests three dimensions of flex, agility, and space to innovate creativity. This paper offers salient insights for practice and research by understanding flex as the adaptation of working environments for development teams, agility in embracing change during and post project development, and space to innovate and generate new ideas.

Key words: Creativity; Digital; Innovation; Project Management; Agile; Development

PROJECT MANAGEMENT

Organisations are applying project management approaches to realise their proposed innovations which leads to change and achieves their business strategy. Project management is an evolving discipline that develops new knowledge, processes, tools, methodologies and techniques in order to enable project success. Furthermore, it uses theories and methodologies from different disciplines in order to address an identified issue which impedes project performance. Therefore, project management is becoming more interdisciplinary in its approach to achieving project success. This suggests that successful project management professionals are requiring a broad set interdisciplinary competencies.

A brief overview of some key developments of the project management discipline is undertaken, and important new directions are highlighted. This informs and guides the establishment of digital project management. In 1953, the project management term first appeared within the US defence - aerospace sector (Morris, 2012). The Martins (Marietta) company is credited with developing the first project management organisation. An emerging aim of project management in this era was to shorten development times through parallel planning of all systems components. Traditional project management was established through large systems engineering projects such as Polaris and Apollo (Morris, 2013). Furthermore, it was influenced by methods developed within Traditional Operational Research.

Traditional project management has been described as a plan-driven, sequential development approach that utilises orthodox methods such as Work Breakdown Structure and Critical Path Method (Burke, 2013; Meredith & Mantel Jr, 2012). Furthermore, this traditional approach is often underwritten by the waterfall model (Boehm, 1981), which is a sequential process of plans and requirements, design, coding and testing. Additionally, the critical success factors associated with this project management approach are cost, schedule and quality (collectively known as the iron triangle) (Atkinson, 1999). The project manager aims to plan up-front the stakeholder requirements in the end-innovation (or product). Moreover, the underpinning concept of this traditional approach is *'better planning, the better understanding, and therefore the better execution'* (Rubin, 2013).

There are numerous studies of unsuccessful projects that highlight symptoms of failure, and their causes which informs further evolvement of the project management discipline. The UK government lost £1.5bn investment on ill-planned, mismanaged and delayed IT projects, and recently the UK NHS National Programme for Information Technology (NPfIT) was cancelled at a cost of £10bn. Importantly, a study undertaken by Miller and Lessard (2000) used efficiency measures (on time, in budget and to scope) and effective measures (defined as achieving the sponsor's objectives) to evaluate 60 large engineering projects, and found 40% of them performed badly and many failed completely. Morris and co-researchers (Morris, 2013; Morris & Hough, 1987) highlighted many causes of unsuccessful projects, such as: unclear success criteria, changing sponsor strategy, poor project definition, technology (fascination with, uncertainty of), concurrency, poor quality assurance, poor linkage with sales and marketing, lack of top management support, funding difficulties, poor control and inadequate manpower. This led to the manifestation of the Management of Project concept (Morris, 1997; Morris & Geraldi, 2011).

Management of Projects has three distinctive levels (Morris & Geraldi, 2011) which are labelled: Technical Core (level 1), Strategic Envelope (level 2) and Institutional Context (level 3), and all contribute to realising project success. The Technical Core is predominately operational and delivery orientated. It is concerned with managing scope, schedule, and cost - with an emphasis on efficiency ('doing the project right') ('the how', 'the when' and 'the who'). The

technical core is strongly linked with traditional project management and efficiency measures. The Strategic Envelope focuses on managing projects as an organisational and holistic entity, which includes front-end development and definition, and protecting the Technical Core from environmental turbulence. It acknowledges the important relationships between project and stakeholder strategies - with an emphasis on value and effectiveness ('choosing the right project') ('the why', 'the what' and 'the who'). The Institutional Context (level 3) endeavours to create and facilitate an environment (outer and inner) for achieving project success. Moreover, the Management of Projects concept has influenced the Association for Project Management Body of Knowledge (APMBOK) (Morris, 2012). This standard (APMBOK, 2012) also addresses the need to manage some of the project externalities. Interestingly, Cooke-Davies (2007) has linked different critical success factors with respective Management of Project hierarchical levels.

Traditional Operational Research influenced the Technical Core, but Morris (2013) believes its impact has waned. However, the Operational Research (OR) discipline (which is inextricably linked with the Systems Movement) has evolved into Hard OR (incorporating traditional OR) and Soft OR. The emergence of Problem Structuring Approaches (such as Soft Systems Methodology (SSM) (Checkland & Poulter, 2006) is associated with Soft OR, which can tackle a problematic situation (which is connected with front-ending) that require improvement. Moreover, techniques associated with Hard OR are considered to have limited use to such complex situations - which involves capturing key stakeholder perspectives in order to inform feasible and desirable change. However, Multi-methodology OR combines different methodologies, methods and techniques and can be successfully applied to such problematic situations. Moreover, several OR and Systems Thinkers have applied Problem Structuring Approaches, e.g. SSM (Checkland & Poulter, 2006) to different project management issues. There are nascent efforts to develop examples that connect SSM with traditional project management methods, which can be viewed as emerging multi-methodological project management approach. A UK government funded research network explored - Rethinking Project Management (Winter et al., 2006). One offered direction was moving from product creation as the prime focus to value creation as the prime focus. This suggests both creativity and value have important contributions to front-ending and the project management discipline.

Interestingly, the US Project Management Body of Knowledge (PMBOK) is continuously evolving in order to address causes of unsuccessful projects. For example, in the 5th edition of the PMBOK standard, stakeholder management and communication management are two new distinctive knowledge areas which have been established. These new knowledge areas have an important contribution to Starting the Project which is an integral part of its sequential life-cycle model. This suggests stakeholder participation contribute to the creativity, effectiveness and success of the project.

As stated, traditional project management can be viewed as an up-front plan-driven approach which is guided by the knowledge and understanding of the project manager and stakeholders at the time of the planning activity, and assumes a well-defined, forecastable and stable project, which is unlikely to require any significant changes. However, with the development of new IT technologies and software has led to criticisms of traditional project management from software academics and practitioners, which has led to the development of various agile approaches (Beck et al., 2000), such as Scrum (Rubin, 2013), which have alternative concepts, methodologies, processes. Scrum is underpinned by an iterative and incremental approach to rapidly developing innovative products, which evolves as stakeholder learn together in order to achieve project success. Traditional and Agile project management can be considered as alternative ideal types, which can be applied to appropriate project circumstances.

We believe creativity is becoming more important to both the effective ('choosing the right project') and efficiency ('doing the project right') aspects of project management. Moreover, innovation and creativity are inextricably linked. Innovation and project management are naturally connected with each other. Interestingly, developments in innovation management (Burns & Stalker, 1961) have influenced project management and vice-versa. For example, Cooper (2011) stage gate approach to innovation development assures scrutiny of the investment and management of the development process. The stage-gate approach is used and found in project management literature (Morris, 2013; PMBOK, 2004). Digital technologies are emerging as new project phenomena which contribute to the effectiveness and efficiency of organisational performance. We believe digital project management is an emerging interdisciplinary approach which is influenced by creativity, innovation and management of projects. Additionally, we argue that digital project management is informed by the emerging dimensions of change, space and flexibility. Therefore, the Digital Project Management professional requires a broad range of interdisciplinary competencies in order to realise innovative projects with high levels of creativity.

CREATIVITY

The notion of creativity can be applied to many disciplines ranging from arts, science, engineering, project management, literature and further (Stumpf, 1995; Tang & Leonard, 1985; Williams & Yang, 1999). Even within any of the aforementioned practice, numerous researches agree that creativity can be used as a connotation for an individual, product, or an environmental response (Rhodes, 1961). According to Taylor (1988), there are over 50 definitions attributed to creativity. In particular, creativity is seen more especially in teams as an effective problem-solving method in resolving a challenge within any particular project (Kurtzberg & Amabile, 2001).

Businesses that makes more effort to provide an enabling work environment to encourage employee creativity are believed to have better innovative outcomes in new project delivery. Project teams working in a creativity enabled environment are also more likely to produce more innovative ideas (Dul &

Ceylan, 2014). Creativity is also seen as a predecessor to innovation because “all innovation begins with creative ideas” (Amabile et al., 1996, p. 1154). It is claimed that “creative ideas turn ordinary companies into market leaders” (Pitta, Wood, & Franzak, 2008, p. 137) and lack of creativity within a firm or among project teams has a negative impact in the new product development or projects (Cooper & Kleinschmidt, 1995). Businesses such as Google, Apple, IDEO, and 3M makes substantial investment to encourage creativity in their respective firms and also to booster creative culture among their staff (Brand, 1998; Kelley, 2001; Kuntze & Matulich, 2010; Thomke & Feinberg, 2009; Zien & Buckler, 1998).

“Creativity is not an attribute of individuals but of social systems making judgments about individuals” (Csikszentmihalyi, 1990, p. 144), and, also used by persons to characterise the innovative outcomes of their abilities. Creativity is also used as a constructive mechanism within a firm to increase their potentials and competitiveness in a dynamic market economy (Woodman, Sawyer, & Griffin, 1993). In modern psychology, creativity is defined as one of the most used attributes to an individual, process or service that is often associated with innovative solutions to a challenge (Mayer, 1999). Creativity is essential in all phases of the improvement procedure, from the ideations stages to commercialisation of new product and services (Pitta et al., 2008). Because people at any level in the organization have creative capabilities (Shalley & Gilson, 2004), regardless of previous assertions that “at the lower level of the organization the people can introduce fewer and less radical types of innovations” (Knight, 1967, p. 490).

Creativity and innovation are not very common in the project management discipline, for example, innovative and most organised personnel's in an organisation are often found in their Information Technology departments. Literature within the treatise of creativity and innovation place great significance on the interactions between team members as a key factor that fosters creativity (Kurtzberg & Amabile, 2001; Paulus, Larey, & Dzindolet, 2001; Perry-Smith & Shalley, 2003). To identify creativity, it is important to measure it, and measurement criteria's often relies principally on quantitative means of quantifying individuals' innovative task (Gallupe, Bastianutti, & Cooper, 1991; Mullen, Johnson, & Salas, 1991). The metrics for these quantitative measurements are classified according to the smoothness, flexibility and unique counts of the number of suggested ideas by the project members. Other measures also include the amount of patent submitted by the organisation; or if associated with academic institutions, the number of citations counted in research journals for those entities (Griliches, 1990). Although, these standards' of measurements for innovative outcomes within project management activities may be limited in scope depending on the type of organisation, the scale of the project and the technology in question.

To link creativity and project management, it is crucial at this stage to review definitions from the Project Management Book of Knowledge (PMBOK). The PMBOK Guide defines the project management framework and gives a clear distinction as to what extent can the application of creativity and flexibility

interferes with project management principles. Flexible project management approaches foster higher levels of innovative creativity during the development of creative digital projects. However, this flexibility can also lead to project delays and subsequent project failure. Performing project management task creatively might drive the project out of project management principles, for example, project documents might become unfamiliar if they are too creative.

Given these constraints, it has become a challenge for some organisations to aggregate the extent and limitations projects can be driven by creativity for innovative outcomes or how to achieve innovative outcomes in projects through creative solutions. Scientific and organisational definitions of cognitive creativity are classically defined as the construct that involves “the generation of novel behaviour that meets a standard of quality or utility” (Eisenberger, Haskins, & Gambleton, 1999, p. 308). However, these constraints are not generally applicable to standard processes within an organisation in projects management practice. Due to the uniqueness of projects within different organisations and technologies, managing projects in diverse entities are categorised by uneven peculiar patterns and project tasks. This can be credited to a lack of routine procedures, proper indoctrination, and the required transdisciplinary incorporation of in-house employees and external consultants (Lundin & Söderholm, 1995).

As a result, project management practice has inculcated a set of tools, principles, and processes for managing individual entity of projects, portfolios, and programs to mitigate the effects of these consequences. Challenges in project management remain ambiguous due to the various disciplines and technology it can cut across. Mir and Pinnington (2014) claim that even though there has been a significant number of development in the process and tools applied in project management practice, these have not had any substantial impact on the number of successful projects. According to the Standish Group International (2009) there 2008 survey concludes that only 32% of projects surveyed were successful. This include; projects delivered on time, on the budget, by the correct requirement and functional specifications. The result from this 2008 survey, also suggests that 44% of projects investigated suffered challenges such as; late delivery, over budget and did not meet the functional and non-functional requirement specifications. Furthermore, 24% of all the projects researched failed due to cancellation before closure, or was delivered but was never operational. The outcome of this investigation further high point the significance of refining the project management framework. Gerald et al. (2008) in their research highlighted an important question: How do we better develop and apply the knowledge of project management in projects?

There are several competing theories in the adaptation of innovation within the project management domain, for example, Kirton's Adaptation-Innovation (KAI) theory (Kirton, 1989) states that innovators approach towards problem-solving can be more unstructured, although extensive in the broad range of ideas generated during the ideation process of New Product delivery process, or adaptive during transformational project developments. Kirton's theory gives an

insight into the positive potentials and impact that diversity of knowledge and resources can bring to a project. Kirton also mentions that general creativity theories cannot be applied to all projects due to their heterogeneity.

The unique difficulty in creative projects, as it were, is agreeing up-front what exactly the deliverables will be. It is difficult to anticipate, or at least quantify, "revelation, surprise, or astonishment." Goals thus tend to be both qualitative and transient. As part of the empirical design of this research, the focal point lies in the creative process of a digital business. Often, modern businesses use project stakeholders to design the most striking, state-of-the-art Web site portals. Among the factors driving team creativity in digital projects, team diversity and team interaction processes are certainly the most important ones (Brophy, 2006; Hoegl & Gemuenden, 2001; Kurtzberg, 2005; Kurtzberg & Amabile, 2001; Taggar, 2002; West, 2002; West & Anderson, 1996).

Therefore, to comprehend the dynamic elements that influence the diffusion and extraction of creativity among project team members in a digital project, it is important to investigate the creative competencies of individual project participants, their communication processes and developing process. It is also important to capture certain characteristics of team members such as; professional experience in the related task, ability to work as a team player, knowledge of organisational processes and procedures (Mathieu et al., 2000).

Even though creativity is not a common practice among project managers, it can help project positive impression of project managers, makes them stand out and leads to a greater career path, adaptability and more successful. Although, as earlier mentioned the excessive application of creativity in a project might lead to a deviation from the project management framework, however, creativity can be applied in meetings and communication process which are highly placed project management endeavours. Project meetings present a great opportunities to unleash creativity for effective dissemination of information among project stakeholders. For example the use of colours, charts, and pictures to communicate concepts visually, as well as used in communicating risks to project stakeholders and resolving issues, crisis and stakeholders management.

Empirical research on the relationship between the digital project manager and innovative processes of creativity in digital projects requires further investigation. This study therefore explores creativity within the project management workspace in digital ventures, where understanding this relationship is salient particularly when considering the development of an innovative service across project management activities. Furthermore, as the concept of the digital project manager emerges in an increasing complex and challenging digital business landscape, the body of knowledge on project management practice is surprisingly limited within this context. This then leads us to address this gap in knowledge and contemplate our main research question which is: How does project management practice constrain or empower digital project managers in guiding innovative creativity in digital projects? This question underpins the intellectual foundation of our research and how project management practice can instil creative thinking and drive the application of

creativity in the digital project space. Therefore, this study is relevant for practice and research, in that embedding creativity in these contexts suggests a salient competitive advantage through the infusion of highly stimulating elements across appealing aesthetics and engaging user experiences.

EMPIRICAL CONTEXT

This study adopts an exploratory approach underpinned by our main research question and impetus in understanding the relationship between creativity and project management across the role of the digital project manager. As such we implement historically proven data collections methods in exploratory style research, where we aim to understand phenomena in practice, and build theory from data rather than test pre-determined hypothesis.

To gain a better understanding of how creativity is managed within digital projects and also the role of the digital project manager we conducted a series of semi structured interviews across the breadth of employees at different hierarchal and expertise levels engaged in four digital projects in the creative industries. With this primary data we then explored our understanding of these practices from literature and whether there are new practices emerging from this fast moving technologically driven environment.

The chosen context of the research relied on established and respected design teams creating often first concept web based sites or mobile based applications (apps). The teams benefited from years of experience with members having held previous roles within the computer games industry. Today they produce a wide variety of products for a growing diverse portfolio of customers ranging from small start-up companies to multinationals.

Individuals chosen for the interviews were those with either business, project management, creative or technical roles or a combination of several of them. These covered the major disciplines with direct involvement in digital projects and were: Business and operational leaders; Project managers; UI (user interface) designers; UX (user experience) designers; Developers (software and technical).

The people interviewed ranged from those with overall operational responsibility for the business with more than 10 years' experience to those who had joined within the last 12 months and so captured the full breadth of the teams. With this breadth a perspective of the culture of the business environment could also be obtained. Typical projects durations ranged from three months to twelve months and customers ranged from small start-up companies to large multinational established businesses. This research took four projects that covered this breadth of project type and projects worked on by several of the interviewees.

The four projects included two from large established. One responsible for producing products and one is producing a service. One project had a relatively short duration and related to a small start-up company. One project related to a national chain and had an element of gamification. The industries covered manufacturing, healthcare and food industry.

Semi structured interviews were conducted ranging from forty-five minutes to two hours in duration. The sequence of interviews followed a typical project life cycle. Interviews started with the senior project manager and the business operational leader to enable founded understanding of the business context and historical factors relating to the business and the evolution of project types. User Interface and User Experience then followed and lastly Developers. This project life sequence enabled the narrative or story of the project to be understood and therefore facilitated the development of useful thought streams and threads.

Interviews were recorded for later use and notes taken during the interview to develop the main threads of argument and support and develop the discussion. Recordings were then transcribed. The interviewees were both male and female with a range of experience from 15 + years to 6 months but more typically 3 - 6 years.

Data analysis was undertaken by focusing on descriptive coding and ensuing themes. We first diligently undertook the wholesale review of our complete data transcripts, observation field notes, and archival documents. We sifted through relevant and less relevant data in order to manage our data to a manageable size with high degrees of relevance. For example we sought specific references to questions raised during our interviews which were pertinent to uncovering findings relevant to our main research question. This allowed us to assign descriptive codes to relevant portions of texts in uncovering rich data. Based on these codes we then reviewed our data and compared our initial findings with possible emergent themes. This enabled us to further engage and follow up any with any additional questions with the teams. Based on these attributions we then combined categories of codes to reveal emergent themes of practice with regards to the role of digital project managers and their relationship in influencing creativity across their resources. This led us to uncover three main themes which we termed as flex, agility, and space as discussed in the following section.

DISCUSSION AND CONCLUSION

Research suggests that traditional project management approaches can be understood as a plan-driven, sequential development processes that utilises orthodox methods such as Work Breakdown Structure and Critical Path Method (Burke, 2013; Meredith & Mantel Jr, 2011; Suikki, Tromstedt, & Haapasalo, 2006). It is associated with doing the project right, efficiency, and emphasises *the how*, *the when* and *the who* type questions (Williams & Samset, 2010). Furthermore, this traditional approach is often underwritten by the waterfall model (Boehm, 1981), as a sequential process of plans and requirements, design, coding and testing (Oehmen et al., 2014). Critical success factors associated with project management approaches typically focus on scope, time, and cost, collectively known as the iron triangle (Atkinson, 1999; Cooke-Davies, 2007; Kapsali, 2011). Project management aims to develop product specification and plan up-front stakeholder requirements in the product development or service innovation (De Toni, Nassimbeni, & Tonchia, 1998). Moreover, the underpinning concept of this traditional approach is *better planning, the better understanding, and therefore*

the better execution (Rubin, 2012). This up-front plan-driven approach is guided by the project management process including the planning activity, and assumes a well-defined, forecastable and stable project (Kerzner, 2013). However, our empirical data suggests that the application of creativity within project management in digital-driven service invocations can be linked with the awareness of vital theoretical models most closely associated with the development and implementation of creativity in real-world project management situations. For example, generating, realising, and implementing creative ideas was found to be essential for innovation. The project teams relied on novel elements of creativity in new product development and service innovation in order to remain competitive. We found this to be similar to previous approaches in global product development (Elliot & Nakata, 2013). Consumers engaged with companies through virtual products and services (Jang & Chung, 2015), thus the project teams had to focus the development of their services based on mobile and online platforms. Developing and deploying these digital service innovations required access to digital resources and the management of collaborative activities by digital project managers. However, despite the pervasiveness of digital project managers in managing the development of highly creative and innovative digital projects, we found project management methods were limited in guiding practice to foster creative elements within digital contexts. For example, historical aspects of the role of the project manager are entrenched in leadership, change, and product development (Jeffrey Thieme, Michael Song, & Shin, 2003). For example, the project manager influences project planning, project control, and project execution. The project manager has historically relied on established and time-proven systems of planning, control and implementation. Whether in the construction, information technology, or manufacturing industry, project managers have traditionally leveraged and managed internal and external resources towards positive project outcomes. However, digital projects embed project managers and project management practice in virtual contexts with digital outcomes, where there is greater emphasis on creativity and innovation.

Our analysis revealed three emergent themes across the role of the digital project manager. First we identified practices of flex, which empowered teams with levels of trust and self-determination in determining and adopting the most suitable working practices and environments for individuals to engage with their work. For example, teams were able to engage with different working patterns which were suited to individual creativity and productivity factors at different times of the day, or week. However these were goal driven, in that teams had to ensure the aims of the projects milestones were completed. Second, we found that the theme of space was vital in ensuring a buffer was enacted between clients and development teams. The digital project managers would develop these buffer zones, or space between clients and teams, by managing communication and releasing pertinent information when deemed appropriate. As the teams used a combination of waterfall and agile approaches, these were found to be suitable and less suitable depending on the projects. With the waterfall approach digital project manager would focus on the forward planning

of the projects, but would lead to less precise and customised projects. Conversely the agile approach encouraged greater customer participation but equally provided less space between the development teams and the customers. This was found to be detrimental to creativity, in that regular changes frustrated the development aspects of the projects. As such digital project managers would manage communications in ensuring teams were assigned enough space to be creative. Finally the theme of agility suggested that projects were no longer deemed complete at the delivery stage. For example, previously development teams would focus on a per-project basis, and upon completion would focus on ensuing projects. However, agility led to greater innovations and creativity, in that it enabled project managers to actualise changes post-delivery phase. This was only made possible because these projects were digital in nature. As one of the project managers recounted, this approach would have been much more challenging in the automotive industry for example.

The role of the digital project manager was vital to the positive execution and management of cross-discipline teams, internal and external resources, financial and budgetary considerations, and contingency execution. Thus, the digital project manager was an integral part of the innovation team in product development and service innovation with project controls. Digital project managers were not only pivotal in the development of digital projects, but they were also relevant to future business ventures. The role of the digital project manager was highly complex, operating across a multitude of technologies and diverse teams, and as such was salient for the management and successful outcome of digital projects. However, controlling, influencing, and managing resources to foster creativity in digital projects required access to technology supported processes. As such, digital project managers relied on information systems to develop novel products and services. Although, technology supported projects are subject to high failure rates (Innotas, 2016). Therefore, with ever increasing pressures on cost and speed of delivery to market, managing the project lifecycle of digital services from ideation to implementation can be challenging for digital project managers.

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