The Project-space Model: Visualising the enablers and constraints for a given project

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Received 20 June 2015; received in revised form 18 October 2015; accepted 22 October 2015

Available online 8 December 2015

Abstract

This paper proposes a tool that can be used by practitioners to identify and represent the enablers to, and constraints on, the progress of a specific project: the Project-space Model. The diagrammatic tool is a response to the limitations of universal “critical success factors” for projects, and the calls for a more tailored and contextualised approach to managing projects. The Project-space Model prototype presented in the article embeds concepts from Heideggerian thinking, complexity science, Gestalt theory, and Lewin’s Force Field analysis and life-space model. The tool has a ‘current-space’ and a ‘forecast-space’ and information regarding the enabling and constraining factors is shown through colour, scale and placement of icons within the ‘spaces’. The model is currently being tested through an action research case study. It is anticipated that the model will enable stakeholders to identify where their attention and action is most required in a given project.

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Keywords: Managing projects; Critical success factors; Tailoring of project management

1. Introduction

This conceptual paper proposes a tool for identifying and representing the enablers to, and constraints on, a specific project’s progress: the Project-space Model. This paper describes the theoretical grounding of the model and its conceptual value, rather than empirical validation of its suitability (which will be provided in a future paper). The development of this diagrammatic tool is motivated by the limitations of universal “critical success factors” for projects, and the calls for a tailored and contextualised approach to managing projects (Payne and Turner, 1999; Shenhar and Dvir, 2007; Shenhar et al., 2002; Söderlund, 2004). The tool provides a framework for thinking about, and then illustrating diagrammatically the factors that support or hinder the progress of a specific project at a given time (now) and potentially in the future. The diagram is designed to reflect the relative impact and time dimensions associated with the factors. Subsequently, the project manager and stakeholders are able to prioritise where their attention and efforts are directed to move the project forward (the “critical success factors” for the given project).

The tool is currently in a prototype phase and this article focuses primarily on the theoretical grounding that has been embedded in the prototype version of the tool and its anticipated value to practitioners. The theoretical foundations chosen reflect contextualised and holistic thinking, and include concepts from Heidegger’s (1962) Being and Time, complexity science, Gestalt theories and Lewin’s Force Field analysis and life-space concepts. Following this conceptual phase of the study the tool will be tested as part of an action research case study. Further iterations of the tool are expected as a result of the trial and the results are expected to be the subject of a future article.

This article begins by outlining the motivation for the study (our research problem) that “critical success factors” are not universal and that there is a need for a tailored approach to managing projects. An overview of the literature regarding the research problem is then provided, followed by the research question for the phase of the study discussed in this paper. A series of theories that inform the features of the prototype model (the theoretical grounding for the model) are then presented. Detailed discussion of Lewin’s Force Field analysis is provided as this has significantly influenced the proposed
model. The Project-space Model is then introduced and its features outlined and the value of the model in conceptual terms is provided. Finally, the next steps in the study (empirical testing) are briefly introduced.

2. Research problem

“Critical success factors” are a dominant topic in the project management literature (Dvir et al., 1998; Müller and Jugdev, 2012; Shenhar et al., 2002). A definition of “critical success factors” can be implied from Pinto and Prescott’s (1988) discussion to be factors that are necessary for a project to be successful. To date, there has been little agreement on what are the universal “critical success factors”. I would posit (given my subjectivist philosophical stance) that this is because project work is unique and that a pursuit of universal “critical success factors” is problematic. However, this does not negate that those involved in project work need to understand the factors that enable or constrain the progress of their initiative. It is posited that there is no tool in dominant use in project management to support practitioners and stakeholders in specifically representing and communicating these factors (refer Section 3.2 for further discussion), yet there is a need for the capability that such a tool would provide. This study is motivated by the need to provide project practitioners with a tool to enable them to identify and communicate the “critical success factors” for their specific project.

3. Literature review

3.1. “Critical success factors” in project work

There has been significant discussion in the project literature regarding what is project success and what factors enable project success (Dvir et al., 1998; Müller and Jugdev, 2012; Shenhar et al., 2002). Müller and Jugdev (2012) highlight that there are two concepts within this literature: “project success factors” (which I posit equate to “critical success factors” introduced above) and “project success criteria”. In this discussion I am focused on the prior: “project success factors” or “critical success factors”: elements that can be leveraged to increase the likelihood of project success. Despite the significant amount of literature, a consensus has not been reached on what are the universal “project success factors” (Shenhar et al., 2002; Söderlund, 2004). I do not find this lack of consensus surprising, nor do a variety of authors on this topic (refer Dvir et al. (1998)). Rather, there is recognition that trying to identify universal factors is flawed given the unique nature of projects (Dvir et al., 1998; Shenhar et al., 2002).

In response there has been a stream of literature that has investigated the “critical success factors” relevant for specific industries, locations or other project criteria. For example, the varying importance of “critical success factors” at different stages of the lifecycle is explored by Pinto and Prescott (1988). They question whether “project implementation critical success factors [are] of equal and stable importance over the life of a project, or does their relative importance (weighting) change as the project moves through different stages of completion (Pinto and Prescott, 1988, p. 6)?”. Their finding is that “critical success factors” do vary in their importance across various project lifecycle stages.

Holland and Light (1999) propose strategic and tactical success factors for enterprise resource planning solution projects. Chua et al. (1999) use an Analytical Hierarchy Process to identify success factors for construction projects. They find that success factors vary depending on project objectives. They also comment that “practitioners would have composed a set of CSFs [Critical Success Factors] after testing against their experience (Chua et al., 1999, p. 142)”. Shenhar et al. (2002) investigate success factors on various technical projects. They also conclude that success factors are not universal and that they are contingent upon the specific type of project. More recently, Thi and Świerczek (2010) consider success factors for infrastructure projects in Vietnam. In introducing their study they recognise the criticality of understanding the socio-cultural, political and economic context of a project, but note that this is largely ignored. Their study found that team and project manager competency and external stability have a positive relationship to success.

Of a different track, but pertinent is the Cooke-Davies (2002) discussion on “real” success factors. Whilst, the outcomes presented are 12 “critical success factors” (and the implication is that these are generally applicable), the article highlights that there are multiple questions to be asked regarding success factors that are relevant to my thinking. He asks: “What factors are critical to project management success? What factors are critical to success on an individual project? What factors lead to consistently successful projects? (Cooke-Davies et al., 2007, Section 2)”. I would argue that the latter question assumes a universality that is unlikely. However, the second question suggests towards a recognition that there may be unique “success factors” for each project.

3.2. Current methods for identifying “critical success factors”, and enablers and constraints to project progress

It is necessary to understand what current tools may be used by project managers to identify “critical success factors”, or enablers and constraints to their project progress.

3.2.1. “Critical success factor” research methods

Firstly, with respect to “critical success factors” I argue that “critical success factor” studies are undertaken by researchers with the objective of finding varying degrees of universality in such factors (i.e., from generalisations applicable to all projects, to generalisations applicable to a particular type of project). Subsequently it is not surprising that they use a variety of traditional research methods to identify these factors including questionnaires, interviews and analysis of the literature that enable them to respond to a particular research question. Table 1 provides examples of the methods used in recent studies identifying “critical success factors” pertaining to the scope of their studies.

3.2.2. Gateway reviews, stage gates to identify early warning signs

I also highlight a study by Williams et al. (2012) on early warning signs in complex projects. This study is of relevance as
it is exploring the framework of early warning signs that I would argue is attempting to identify constraints or threats to a project’s progress. The article discusses various literature that highlights the limitations of tools such as gateway reviews and “stage gates” (including over optimistic assessment and underestimation of risk) that should identify potential problems. The study also interviewed 14 participants regarding insights gleaned from such assessments and the benefits of the assessments were inconclusive; their value was not established. However, Williams et al.’s (2012) analysis of eight case studies, showed the reviews to be generally useful, but that they are limited in their ability to pick-up early warning signs. An outcome of the study was that in addition to formal assessments, dialogue was key — everyday communication is better at identifying potential problems than assessments. It is also found that the process of the assessment (in opening dialogue and posing critical questions) can be more important than the assessment outcomes. Williams et al. (2012) also give focus to the importance of “gut-feeling” approaches and that more methods leveraging this “gut-feeling” are needed.

3.2.3. Status reporting

The ‘best practice’ guides such as the Project Management Body of Knowledge (2013) and PRINCE2 Guide (Office of Government Commerce, 2009) recommend the use of reports as part of the monitoring and control of projects. This is the only tool identified for day-to-day (or more likely week-to-week or month-to-month) monitoring of the project experience. These reports can vary significantly in their presentation however a key focus is generally comparison of progress and forecasted progress to the baseline or project plan (Office of Government Commerce, 2009; Project Management Institute, 2013). I would argue that the nature of the comparisons to baselines such as cost, schedule, scope, et cetera in these reports, whilst beneficial can cause attention to a deviation (in quantitative terms) but without identifying or communicating the actual causes for these problems. Similarly, where risk and issue identification occur this is often narrative and may not allow stakeholders to easily identify where remediation action is most critical. These reports can also become reductionist in their approach to the project environment — focusing on project management knowledge areas such as scope, budget, and schedule in a quantitative assessment rather than on the holistic progression and experience. It is also proposed that with the exception of traffic light dashboards utilised in some projects, these reports are generally textual in format. Similar to Williams et al.’s (2012) discussion, Snow and Keil (2002) and Thompson et al. (2007) highlight perception/bias/credibility issues between actual and reported status in reporting on information systems projects.

In summary, whilst there may be value in the “critical success factor” studies such as those in Table 1, they do not provide a pragmatic, ‘in-the-now’ method for a practitioner to use to identify and communicate concrete “critical success factors” for their project at a given time. Indeed this is not their focus — they are seeking to derive generalisations that can be used in proactive manner in future projects (in general terms). Additionally, Williams et al.’s (2012) discussion of early warning signs and their effectiveness highlights the need for pragmatism and the importance of an ‘everyday’ method for discussing potential or actual project problems. The only existing project reporting for ‘everyday’ appears to be status or highlight reports. I posit these are often reductionist in nature, largely textual and can fail to highlight the enablers and

Table 1

<table>
<thead>
<tr>
<th>Study</th>
<th>Description</th>
<th>Research methods</th>
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<tr>
<td>Chow and Cao (2008)</td>
<td>Agile projects: Empirical testing of whether anecdotal success factors claimed in literature (drawn from case studies and research theories) align with survey findings by these researchers</td>
<td>Literature analysis Web-based questionnaire N = 109</td>
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<tr>
<td>Olszak and Ziembia (2012)</td>
<td>Business Intelligence Systems: Identify what are the critical success factors for Business Intelligence Systems Implementations in small–medium enterprises in Poland</td>
<td>Literature analysis In depth interviews N = 20</td>
</tr>
<tr>
<td>Ahmad and Pinedo Cuenca (2013)</td>
<td>ERP implementation: Identification of critical success factors for ERP implementation in small–medium enterprises</td>
<td>Literature analysis Questionnaire N = 20 Interviews N = 8</td>
</tr>
<tr>
<td>Verburg et al. (2013)</td>
<td>Dispersed working conditions: Identify conditions necessary for fully dispersed work conditions in projects</td>
<td>Literature review In depth interviews N = 30</td>
</tr>
<tr>
<td>Zou et al. (2014)</td>
<td>Public Private Partnership Projects: Identification of critical success factors for relationship management in Public Private Partnership Projects</td>
<td>Literature review In depth interviews N = 11 Questionnaire N = 16 (full completion of survey)</td>
</tr>
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constraints to actually achieving the project’s objectives as their focus is generally on assessment of progress against baselines.

3.3. Calls for a tailored approach to project work

Building on my discussion in Section 3.1, the recognition of the lack of universality of project theory can also be seen in the calls for (and discussion of) a tailored approach to project management. For example, a study by Payne and Turner (1999) found that on average their study participants reported that they experienced greater success if they tailored their management approach to the project type. Contingency theory is applied to projects in Shenhar’s (2001) exploratory research regarding the different ways that projects are managed. Söderlund (2004) in his discussion of the problems with universal theory in project management calls for debate on the contingency and contextual dimensions of the discipline.

The fact that one size [project management] does not fit all [projects], is a key driver underpinning Shenhar and Dvir’s (2007) Diamond Framework. They argue that not understanding differences between projects can lead to project failure. In their discussion of collaborative research projects, Vom Brocke and Lippe (2011) discuss the changing facets of a project over time, and the need for different management approaches for various situations. Based on organisational contingency theory, they argue for a context-specific approach to management. Turner et al. (2012) argue that small to medium enterprises require a simpler, people-focused approach to project management.

In summary, it is posited that the literature examined demonstrates that there cannot be universality in “critical success factors”. This is reinforced in the calls for, and discussion of the necessity of a tailored approach to management of projects. Where there is existing research on tailoring it still largely assumes a universality of projects within the category (industry, size, uncertainty, et cetera) being discussed. It is suggested, that this tailoring and lack of universality can be taken a step further in recognising that projects will have their own unique set of “critical success factors”. Of course, there will be overlap in “critical success factors”, and probably similarities between similar initiatives. However, these situations-of-sameness cannot be assumed. Furthermore, it has been established that there is a lack of methods that are suited to prompting the identification and communication of the enablers and constraints to a given project. As such, I propose that there is a need to develop a tool that assists in the identification, and communication of the enablers and constraints to a specific project’s progress the research question is:

How can theories and models that embody context and holism be designed into a tool that allows the enablers and constraints for a given project to be graphically represented?

4. Research question

Given this discussion of the problematic nature of universal “critical success factors” for projects, the calls for a tailored approach to the management of projects, and the lack of currently available tools to support the identification and communication of enablers and constraints to a specific project’s progress the research question is:

How can theories and models that embody context and holism be designed into a tool that allows the enablers and constraints for a given project to be graphically represented?

5. Project-space Model: theoretical grounding

In designing a tool that recognises the contextual nature of project work, I have drawn on philosophies, theories or thinking that gives primacy to context, and does not seek to derive an ‘objective’ positivist perspective. I believe that Heidegger’s (1962) Being and Time ontology, the principal Gestalt concept, complex systems theory and Force Field analysis are examples of such thinking. I now introduce these concepts in terms of how they can contribute to a tool that allows the enablers and constraints for specific project work to be identified and communication. The contribution of each of these elements to the prototype model is provided in Table 2.

5.1. Heidegger’s Being and Time ontology

Heidegger’s (1962) Being and Time provides an alternative paradigm to current project management theory for considering
the phenomena of projects (van der Hoorn and Whitty, 2015). Currently, the methods and teachings of the project management associations are based on positivist research and theories at best, and at worst have no evidence-base (Lineham & Kavanagh, 2011; Brager and Holloway, 1993). Additional, risk matrices showing impact are commonly promoted for assessing risk (Office of Government Commerce, 2006; Health facility for the elderly (Baulcomb 2003)).

5.1.1. Being-in-the-World

Being-in-the-World is a cornerstone concept in Being and Time (1962); it highlights the distinction between Heidegger’s ontology and Cartesian subject–object dualism. The Being-in-the-World concept is that Dasein (the mode of being that is associated with human beings), is not separate from its environment, rather humans are infused within their world (Blattner, 2006; Schatzki, 2005). Dasein does not project meaning onto objects, rather, through Dasein’s interaction with objects, meaning is generated. Dasein’s being is understood through the objects with which it interacts (Dreyfus, 1991).

This thinking is in contrast to a Cartesian, dualism perspective, in which human beings are separate from discrete objects in the universe, and project meaning onto objects (van der Hoorn and Whitty, 2015) provide a diagrammatic comparison of this concept.). Such Cartesian perspectives are evident in current theory that proposes a rationality and prescriptiveness in project management practice. For example, a reliable and predictable transition through a project management lifecycle. For this tool, the objective is to embed Being-in-the-World thinking through features that enable the experience of those in the world-of-the-project to be captured. This is not a rational, distanced perspective; it captures the perceived experience of those involved in the project.

5.1.2. Temporality

Heidegger’s concept of temporality has some relationship to the traditional term ‘time’, however it is a unifying concept that suggests that past, present and future are unified in Dasein (Blattner, 2005). That is, the present, past and future inform one another. Dasein’s scope of possibilities, is influenced not only by what one wants to do, but what has been done/experienced and the current situation (Cerbé, 2008; Wheeler, 2014).

Current project management theory is ‘clock-time-centric’; it is perceived as a series of isolated ‘now points’. Generally, the definition of a project is an activity with a defined start and end (Project Management Institute, 2013). Whilst this may be useful, it can be misleading. Projects, through the people that are immersed in them, are rather inextricably coupled together — they are not isolatable in terms of what they are affected by nor what they will affect (van der Hoorn and Whitty, 2015). Decisions on one project can affect decisions on another project even if there is a gap of many years between projects. In adopting Heidegger’s concept of temporality it becomes possible to have insights into what is affecting the project’s progress outside of this ‘artificial’ project lifecycle. I aim to incorporate this insight into the tool through encouraging practitioners to think outside the artificial parameters of start and finish and recognise how their present situation is affected by the past. Similarly, how what is occurring now will affect future progress.

5.1.3. Spatiality

Heidegger’s spatiality is a contrast to the Cartesian idea of physical space. Spatiality is the degree of closeness or distance of the objects to Dasein in its world (Blattner, 2006; Dreyfus, 1991; Kaelin, 1988). In other words distance between objects and Dasein is more related to the degree of mattering to Dasein than that of physical distance. Traditional project management does leverage this possibility of some influences or stakeholders being more influential (or of greater importance) than others. Additional, risk matrices showing impact are commonly promoted for assessing risk (Office of Government Commerce, 2009; Project Management Institute, 2013). That is, a risk that has been categorised as extreme (via the risk matrix) in spatiality terms is closer to the project, than a risk that has been classified as low, even if in terms of their physical (or time) distance from the project, the inverse is the case. Similarly, in terms of stakeholder management, just because a particular stakeholder is physically distant from the project (i.e., they may be located in another city or country), in terms of their spatial relationship they may in fact be highly influential to the project, and therefore ‘near’.

Whilst practitioners may use this thinking to understand certain aspects of their project, it is suggested that this theoretical basis on which they are drawing is not recognised, and there is potential to link these phenomenological practices into the macro and theoretical understanding of projects. Spatiality provides an ontological basis on which influence and impact in the project management environment can be
grounded. This concept of Heideggerian spatiality and degree of maturing is embedded in the tool.

5.2. Gestalt theories

The Gestalt concept of the whole being different to the sum of the parts (Sabar, 2013) is also of relevance to the development of the Project-space Model. The literature highlights that traditionally, science isolated the components of the whole, analysed these components, and then considered the aggregation of this analysis as reflective of the whole (Cooke-Davies et al., 2007; Ellis, 1967). As such, it is no surprise that traditional project management theory, underpinned with positivist approaches also has this atomistic perspective. For example, the Project Management Institute’s (PMI’s) Body of Knowledge (PMBOK) has ten knowledge areas (Project Management Institute, 2013). These ten knowledge areas (including scope management, time management, et cetera) are the major component of the PMBOK and yet nine of the knowledge areas could equally be utilised as part of operational management (Thomas, 2006). As such, it prompts the question, if it is not actually these individual components (knowledge areas) that make projects unique, why is the body of knowledge divided into these topic areas which encourages atomistic and reductionist thinking and that does not actually disclose the differences in managing projects (versus operational work)? It is acknowledged that one of the knowledge areas is integration management. However, the division of project work management into the nine discrete areas is argued to be reflective of the dominant atomistic thinking.

The Gestalt ‘whole being different to the sum of the parts’ concept, is proposed in this research study as critical to enabling an understanding of project reality. Simplistically, I will aim to present the status of the project in holistic terms. Individual project management knowledge areas of a project (scope, procurement, communications, et cetera) should not be considered in isolation because it is the configuration of these components and their relationships (often dynamic) and in a concrete situation that create the reality of the whole. I posit that in actuality, we do not experience enablers or constraints to projects in terms of these knowledge areas or similar generic categories. Rather, actual enablers or constraints are an aggregation of such elements realised in some concrete factor that is pushing a project towards the desired outcome or inhibiting its progress towards this outcome. The lens of the PMBOK guide knowledge areas can limit our ability to access and describe the concrete situation.

5.3. Complex systems theory

A holistic and emergent perspective underpins complex systems theory and has already been noted as relevant to project management (Aritua et al., 2009; Curlee, 2011; Jaafari, 2003; Morris, 2013; Shenhar and Dvir, 2007; Skyttner, 2001). A central tenant of complex systems theory is that the whole cannot be understood by analysing its components in isolation (Whitty and Maylor, 2009; Willy et al., 2003). As posited in Section 5.2 and as per Aritua et al. (2009), to date, the reductionist paradigm has dominated project management theory. This is evident in tools such as the work breakdown structure and the critical path method, which segregate components of a project from one another (generally in categories reflective of the PMBOK areas). However, there is growing agreement in the literature that projects are examples of complex systems (Aritua et al., 2009; Curlee, 2011; Jaafari, 2003; Morris, 2013; Shenhar and Dvir, 2007; Skyttner, 2001).

Emergence is a key concept within complex systems theory: that is, complex systems have behaviours or characteristics that are not readily apparent from the individual components. There is the property of non-linearity — that is repeating an action and deriving different results (Bar-Yam, 1997; Whitty and Maylor, 2009). It has been proposed that project activities are subject to the influence of both its parent firm and also the broader external environment, and that practitioners need to be able to adjust to the dynamic characteristics/influences of this broader network (Aritua et al., 2009). It has also been suggested that viewing projects as complex systems would suggest that rather than rigid systems, a flexible approach to management is required. The Project-space Model tool is to be crafted to feature this concept of emergence.

5.4. Lewin's Force Field analysis and life-space model

Lewin’s concept of Force Field analysis is particularly pertinent in the development of the Project-space Model as it is an existing diagrammatic method to illustrate enablers and constraints and has established usage in the organisational management literature. Given its contribution in the development of this tool, it will be discussed in some depth, including case studies that discuss its value.

5.4.1. Force Field theory

Force Field theory played a central role in Kurt Lewin’s work; it allowed him to understand the behaviours that sustained undesirable consequences and enabled changes to these behaviours (Burnes and Cooke, 2013). Lewin (1943) argued that there are two approaches to understanding a given situation: firstly, to draw conclusions from history; or to use diagnostic tests of the present. He argued that the former method is risk-prone, as the systems (such as human beings) being analysed are not closed systems, and therefore relying on the past as being indicative of the current or future is unreliable. Rather, he argued for assessing the present, and recognising that the influence of the past and projections of the future will be evident in the present condition. This aligns with Heidegger’s notion of temporality (Heidegger, 1962).

The method adopted by Lewin for assessing a given ‘subject’ (person or situation) was through considering the totality of all forces (factors) affecting the life-space of the ‘subject’ at the given time (Burnes and Cooke, 2013) (refer Fig. 1 for an example of the life-space diagram). This life-space was built on the data provided by the participant (Burnes and Cooke, 2013). Lewin posited that (Burnes and Cooke, 2013, Defining the field theory):

“[i]f one could identify, plot and establish the potency of the forces in a person’s life space, it would be possible not only
to understand why individuals, groups and even entire organizations [sic] act as they do, but also what forces would need to be diminished or strengthened in order to bring about behavioural change.”

Consequently, the focus of the theory is on the forces (factors) that can have an influence on the subject achieving its goal and/or determining its current state (Schwering, 2003).

5.4.2. Case studies

A series of case studies using Force Field theory from the literature will now be discussed. It is highlighted that within the literature, when case studies utilising Lewin’s Force Field theory are being discussed, the focus is generally on Force Field analysis that uses the tool that diagrammatically represents Lewin’s theory in a given situation. A generic force field analysis diagram is provided in Fig. 2.

5.4.2.1. Nicholas (project management). The only reference to the use of Force Field theory or analysis in academic project management literature is from Nicholas (1989). His paper, however, does not assess the actual effectiveness of the tool in a case situation; it only proposes that it is a useful participative tool for distinguishing factors that inhibit or support project performance. In his paper, Nicholas (1989) provides a generic example of drivers and constraints in the project environment in the format of a standard Force Field analysis.

5.4.2.2. Brager and Holloway (health facility for the elderly). Brager and Holloway (1993) observed the application of Force Field analysis to a change of the intake process for residents at an aged care facility. The Force Field analysis was primarily used during the planning stage of the change as a means to understand the required support to enable the change. Brager and Holloway (1993) use the term ‘amenable’ to classify forces that are likely to be able to be modified for the purpose of achieving the change. The tool enabled the determination of the possibility of the change (including the identification of politically-orientated issues). However, it is highlighted that the tool’s value is directly linked to the quality of the information gathered and incorporated into the analysis/tool.

5.4.2.3. Baulcomb (rostering change in the health sector). Baulcomb (2003) discussed the change of a shift system within a hospital ward. In this change initiative, Lewin’s Force Field analysis was used to assess the required change. This included identification of driving and constraining forces and assignment of weights to these forces; it is noted that the change also adopted Lewin’s unfreeze, move and refreeze approach. Baulcomb (2003) states that the Force Field analysis enabled the drivers and constraints to be identified and explained. The Baulcomb (2003, p. 278) Force Field analysis is provided in Fig. 3.

5.4.2.4. Wilson and Thomson (management history). Wilson and Thomson (2006) utilise Force Field analysis to analyse how British managers have transitioned from a ‘salaried’ to a ‘professional’ status. They argue that management is a derivative of other drivers, and these drivers have determined how management has evolved. Wilson and Thomson (2006) present two Force Field analysis diagrams contrasting the forces driving towards and restraining against managerial capitalism; the first is of the forces in 1900 (refer to Fig. 4), the second shows the forces in 2000. It is noted in the article, that these Force Field analyses, also provide phenomenological information regarding the life of a manager (i.e., what they are dealing with). In contrasting the diagrams, it is evident that there were significantly more restraining (than driving) forces against managerial capitalism in the 1900s, and vice versa in 2000. Hence an understanding of the emergence of managerial capitalism (from the forces in the environment) in the latter period can be understood.

These brief explorations of case studies utilising Force Field analysis (the prominent diagrammatic realisation of Force Field theory), highlight its potential use and value. Table 3 outlines the relevance of each of these cases to the development of the model, the text in green emphasises gaps that this research study proposes to address (including the empirical phase), text in orange emphasises support for use of the tool in the context of this research study. It is noted that this is not proposed as the total justification for the study or the gaps to be addressed, rather it is those arising from these cases.

5.4.3. Discussion of benefits and criticisms of force field analysis

5.4.3.1. Benefits. In addition to the assessments of the tool in the cases above, an array of benefits associated with the use of Force Field analysis has been discussed in the literature. For example, it has been recognised that Force Field analysis is a useful tool in identifying, understanding and enabling a response to forces at play in a given situation; the reason for a given status; or factors influencing the ability for change (Burnes and Cooke, 2013; Hurt, 1998; Schwering, 2003). The process of Force Field analysis has also been recognised as suitable for use with groups; it includes by-products such as increasing engagement and dialogue (Hurt, 1998). Schwering (2003, p. 362) states that: “As a ‘social architecture of planning’, this method can create a productive dialogue among potentially contentious stakeholders”. The technique is also able to be used both prior to instigating a change and during the execution of change (Schwering, 2003). By way of conclusion, it is proposed that if the Force Field analysis tool can derive such benefits as increasing engagement, enabling the identification, and supporting the management of forces at play in the environment, and can be used prior to, and during an implementation period, then its features may be suited to incorporation in a project management tool for identifying and communicating the enablers and constraints to a given project.

5.4.3.2. Criticism. However, the theory/technique is not without its critics. Burnes and Cooke (2013) report that Lewin has been widely criticised for becoming focused on the mathematical rigour of his theory rather than its practical relevance. However, the use of the tool in practice would indicate that such precise mathematical grounding is not what is valued by
practitioners (Burnes and Cooke, 2013). Other cautions identified when using the theory/analysis is associated with the validity of data. Firstly, and as per any such tool, the Force Field analysis is only as useful as the data which is identified and collected by the theory/analysis users (Schwering, 2003). It has been proposed that formal prompting techniques or conceptual models can be useful in guiding the identification of forces (Schwering, 2003). It has also been noted that if the analysis is being undertaken prior to change (i.e., to assess readiness), there is an assumption that causality can be implied in identifying the driving and restraining forces. In very complex environments, such prediction of causality may not be possible (Schwering, 2003), and therefore the analysis would be better suited as an in situ (current status) tool. In summary, Force Field analysis has been criticised for its (original) positivist leaning, but this element has subsequently been omitted from practitioner use, and there are caveats regarding its use in practice.

5.5. Integration of theoretical grounding

Having introduced these theoretical ideas and types of thinking it is necessary to highlight their interrelationships.

Heidegger’s (1962) Being and Time concepts provide a philosophical viewpoint into which the other concepts can be grounded. Specifically, it sets our thinking in the concrete experience of everyday life and draws our attention to our infusion in the world (rather than an objective Cartesian perspective). It also provides a particular conception of time (temporal unity) and spatiality (mattering) on which to design the model. To this Heideggerian philosophical grounding, complex systems theory and the Gestalt theories are added. These lenses highlight more pragmatic viewpoints of phenomena such as emergence and the whole as being different to the sum of the parts, an argument for a more holistic and pragmatic view of experience. Finally, Force Field theory and analysis is an already established tool that can be seen to embody elements of the Heideggerian philosophy, complex systems theory and Gestalt theory lenses. In summary, the discussed theories provide an integrated perspective, moving from a philosophical grounding to an existing pragmatic tool that can inform the development of a model for identifying “critical success factors” in a holistic manner in a concrete situation.

6. Introducing the Project-space Model

The initial prototype of the Project-space Model is now introduced. Table 2 summarises the elements of the theories identified in Section 5 that are designed into the Project-space Model with the corresponding feature that reflects this aspect. Fig. 5 is a prototype of the tool with annotations. Following is a description of the tool’s features, and the anticipated value of the model compared to extant concepts and tools.

6.1. Model design

The Project-space Model has two sections: the current-space and the forecast-space. The current-space is focused on the experience of those involved, now. The forecast-space is the environment into which those involved are projecting towards as they perceive it now. I highlight that the forecast-space is not necessarily the future that will be experienced by the participants. It is only what they foresee now that may be the future for the project work. In both spaces, the triangles indicate factors that are enabling the progress of the project work (in dominant language the “critical success factors” that are currently in place within the project). The circles indicate the factors that are constraining project’s progress (the “critical success factors” that need to be enacted). The larger the circle or triangle the greater the relative impact of the factor (degree of mattering — spatiality). The smaller the circle or triangle, the lesser the relative impact of the factor. It is anticipated that this strongly visual representation will allow stakeholders to quickly and easily identify where their attention is best directed (i.e., the larger circles), compared to text-based reports. Refer also to Nelson et al. (1976), Childers et al. (1986), Larkin and Simon (1987), Tufte (1983), Marcus et al. (1996), and Cheng (2004) regarding the cognitive processing and recall benefits of visualising data.

In both grids the x-axis is representative of linear time. This has been chosen purely for contextual purposes. In the forecast-space, factors can be shown where they are anticipated
to be realised in ‘clock-time’. However, in the current-space (the now — which is all that actually exists), enabling and constraining factors will only ever be placed around the status bar (the vertical line). This is emphasising Heidegger’s *temporality* concept and that time is unified in the now. In the forecast-space the placement of enablers and constraints in the y-axis indicates the current perception of how likely it is that the factors will become realised in the current-space. The lower on the y-axis the more likely it is forecasted to be realised (to come into the current-space). The y-axis in the current-space indicates the anticipated duration in which the factor will be sustained without any further intervention. The status bar in the current-space is placed in linear time according to the forecasted length of the project. The status bar can be divided into elements of the project’s status such as scope and budget (if required) and traffic light colours (red, amber, green) can be used to indicate overall status of the project or sub-element.

The term ‘space’ has been used in the tool’s name to reflect that participants are in a particular experience (or space) with various factors (enablers and constraints) populating (mattering) within that space. It is also aligned with Lewin’s terminology: ‘life-space’.

I anticipate that the model is ‘self-checking’ in that the project team’s perception of the project’s status should align with the enablers/constraints balance indicated by the model. This is grounded in complexity science’s concept of emergence. That is, the model enables the influences to be considered holistically, not just as isolated ‘knowledge area’ components.

Those using the model in a given context will be prompted to consider the enablers through questioning such as: what are the concrete factors in this situation (people, processes, infrastructure, et cetera) that are enabling the project team to achieve the project’s outcomes? These are factors that are pushing the project in the right direction. Similarly, to consider opportunities as things or events that *may* (if able to be realised) would assist in achieving project success. Conversely, constraints are any factors that are making progress difficult, hindering progress towards the desired outcomes. Threats are factors that *may* have an adverse affect on progress if realised. Visually, the enablers are pushing the project’s status towards completion (right hand side of the current-space), and the constraints are inhibiting this progress.

The project team will be encouraged to think pragmatically and specifically and to avoid general terms such as “communication”. An example of a constraint may be that a particular approval has been delayed and therefore progress is being slowed and there is a likely impact on the overall delivery timeframe. It is anticipated with this degree of specificity, action can then be effectively targeted to further bolstering those factors that are already enabling success (the project’s “critical success factors”) and eliminating or reducing those factors (constraints) that are increasing the chance of failure or disappointment in delivery. It is noted that constraining factors are indicators to the “critical success factors” (obviously to varying degrees as shown by size) that are not currently in place but are necessary at a specific time in the project or more generally.

It is anticipated that some practitioners may find it difficult to identify enablers, as ‘what is enabling success’ in a given context may not normally be reflected on ‘in practice’ during a project. However, the thinking prompted by identification of these enablers is proposed as a benefit of the tool. Collectively, a series of Project-space Models for a project can be reflected upon by practitioners and stakeholders to identify “what were the ‘critical success factors’ for a given project?”.

![Fig. 3. Example of Force Field analysis diagram from Baulcomb (2003, p. 287).](image-url)
trends may be identified that could assist with project planning (a type of ‘positive’ lessons learned). Similarly, if constraints continually arise in organisations this may be indicative of a consistent issue in the project capability (or infrastructure) that requires attention.

6.2. Conceptual assessment of the value of the model

In alignment with the conceptual phase of this study and the focus of this paper, I propose now the anticipated benefits of the tool in contrast to existing project concepts and tools (refer Table 4). These benefits require empirical validation as outlined in Section 7. I link these benefits to the discussion provided in the literature review relating to: the challenges associated with universal “critical success factors”; the current methods by which “critical success factors” are established; the current methods associated with early warning signs; and the ‘best practice’ reporting methods.

In summary, it is anticipated that the Project-space Model will enable the identification and communication of a holistic,
<table>
<thead>
<tr>
<th>Extant tool or concept</th>
<th>Description</th>
<th>Project-space Model Concept</th>
<th>Anticipated value/benefit/difference of Project-space Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universal success factors concept</td>
<td>Identification of <em>generic</em> factors to ensure in place for a project (or specific type of project to be successful). Developed based on <em>historical</em> data (cases, interviews, questionnaires)</td>
<td>Project-space Model is developed on <em>current</em> data in a <em>specific</em> context.</td>
<td>Results (i.e., the developed model) is <em>absolutely relevant</em> to the current project in the now. They are the “critical success factors” for “this” project now.</td>
</tr>
<tr>
<td>Methods for identifying “critical success factors”</td>
<td>Generally include <em>literature analysis, interviews and questionnaires</em> with the aim of deriving <em>universals</em> for use in future projects (through quantitative methods) and undertaken by researchers.</td>
<td>Developed by practitioners in a <em>concrete situation for the same situation</em>. Can be derived from observation, other reports, meetings, focus group discussions, et cetera in the <em>current</em> project.</td>
<td>Results (i.e., the developed model) is <em>absolutely relevant</em> to the current project in the now. Can be developed with input from stakeholders and project team therefore opening dialogue regarding the project’s progress, including challenges being encountered.</td>
</tr>
<tr>
<td>Gateway reviews/stage gates</td>
<td>Often undertaken by an <em>external party</em> to the project, generally at key/milestones or gates. Often associated with a decision to continue or end a project, or an assessment of project management performance with a focus on problems. Can become largely textual, politically sensitive documents.</td>
<td>Can be developed by <em>practitioners in the case project at any time interval</em> deemed beneficial. Has an equal focus on <em>enablers</em> (positive factors) and <em>constraints</em>. It is a <em>succinct, visual tool</em> to open dialogue and enable the project manager to discuss positive and negative factors affecting the project.</td>
<td>The “critical success factors” for the projects can be addressed at any time without external assistance. Visualised information can be easier for busy stakeholders to quickly synthesise. Provides a holistic ‘snapshot’ of the enablers and constraints on a single page.</td>
</tr>
<tr>
<td>Status/highlight reports</td>
<td>Generally, textual and quantitative documents with a focus on comparing progress (and forecasted progress) to baselines. Can be reductionist due to these scope, schedule, time, et cetera baseline comparisons. Risks and issues often presented in a tabular format.</td>
<td>Does not focus on comparing progress to baseline. Focus is on factors currently or potentially enabling or constraining progress towards completion. Diagrammatic representation of data. Information is presented on concrete enablers or constraints not in terms of project management knowledge areas. Ongoing capturing and presentation of data to inform lessons learned related to both constraints and enablers.</td>
<td>Can bring focus to resolving constraints or sustaining enablers rather than judging performance. The specific causes of deviations are made visible for treatment. Visualised information can be easier for busy stakeholders to quickly synthesise. Actual problems are described in pragmatic language (rather than project management jargon or a reductionist manner); decreased need for stakeholders to have project management knowledge. A record of the key factors enabling and constraining factors as the project progressed to inform future projects.</td>
</tr>
</tbody>
</table>
in-the-now, context relevant, capturing of the “critical success factors” (both those currently in place and those requiring attention) in a visual format. It is also anticipated that it can be used as a tool to open dialogue as it does not have a focus on baseline deviation but rather on discussing the ‘why’ for status (whether it be good or bad), and where necessary trigger discussion on the remediation of constraints.

7. Future research

As highlighted earlier, the purpose of this conceptual paper is to describe the theoretical grounding of the model. The next stage of research is the empirical validation of the tool’s value. A case study action research method will be adopted. The objective will be to assess whether the tool is useful in enabling the case study project’s stakeholders (particularly its project board) to understand the project’s ‘big picture’ and where their attention is most needed: i.e., removing significant constraints and continuing to support major enablers. As part of each action research cycle the researcher will be seeking reflections from stakeholders on the tool, and will adjust this initially presented prototype in alignment with such feedback. The findings from this empirical study will be provided in a future article, which will also capture the detailed research methodology associated with the testing.

8. Conclusions

In this conceptual article I have proposed a prototype of a project managing tool, the Project-space Model, that can be used to identify and visually represent the enablers of, and constraints on, the progress of a specific project — its “critical success factors” (at a given now and over time). The prototype of the tool has been crafted from a variety of philosophies, theories and thinking that have a holistic, contextualisation focus. The differences and therefore value and benefits of the tool to existing models have been provided and are summarised as: highly context-relevant, pragmatic, holistic and an ‘in-the-now’ capturing of the ‘why’ for a project’s status.

In developing this tool, I have made a conceptual contribution to the challenges associated with universal “critical success factors”. Specifically, a tool has been developed that gives primacy to the uniqueness of each project and reflects the calls for tailored approaches to project managing. Through use of the tool, it is anticipated that practitioners and stakeholders will be able to more clearly identify where their attention and managerial efforts are most effectively and efficiently directed.
This initial conceptual stage of the study has also demonstrated how theoretical constructs such as the Heideggerian paradigm of project management, complexity theory, Lewin’s Force Field analysis and Gestalt thinking can be embedded into a tool for practice application. The value of the tool ‘in practice’ is currently the subject of an action research case study and will be discussed in a future paper.

Conflict of interest

There is no conflict of interest.

Acknowledgement

Many thanks to the peer reviewers for their support and feedback on an earlier draft of this article.

Appendix A. Supplementary data

Supplementary data to this article can be found online at http://dx.doi.org/10.1016/j.ijproman.2015.10.006.

References
