

## **Towards a new theory of Project Management:**

Could client-side, construction, project management be a form of strategic management ?

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### **Keywords**

Production management, Project management, Strategic management.

### **Abstract**

Project management researchers and practitioners are becoming aware of a growing divide between the foundational theory of project management and the methodologies, tools and systems required to deliver modern-day construction projects. This paper challenges the traditionally accepted, underlying theory of client-side, construction project management (transformational, production management) and proposes the strategic management body of theory as a more valid foundation.

This paper examines the assumptions which underpin both the transformational, production management body of theory and the strategic management body of theory and uses comparative analysis to identify correlations and deficiencies between these assumptions and observed practices within the field of client-side, construction, project management.

This paper finds that transformational, production management fails to provide sufficient theoretical explanation of the environment in which client-side, construction, project managers operate, or the practices they require to deliver projects. Based on these findings this paper concludes that the strategic management body of theory provides a more valid theoretical basis for client-side, construction project management and as such challenges researchers and practitioners to widen their understanding of the profession in search of new methods, systems and tools.

## **Introduction**

This paper explores whether the traditionally-accepted, underlying body of theory for project management (transformational production management) provides the most valid foundational body of theory for client-side, construction, project management.

Using thematic and comparative analysis, this paper assesses the transformational production management body of theory and an alternative body of theory (strategic management) against phenomena observed in the field. As a result of these investigations, this paper finds that the strategic management body of theory provides a more valid foundation for client-side, construction, project management than the traditionally-accepted body of theory.

## **Background**

### **What is theory and why do we need it?**

Within the social sciences, theories are defined as systems of interconnected ideas that explain observed behaviour and casual relationships (Neuman, 2011). Theories are critical to the development of knowledge because they provide a common language for transferring complex ideas, create frameworks for predicting future behaviour, and provide insights for new learning within a given field of study (Koskela, 1999) . In addition, theories provide the basis for understanding novel ideas, they can be abstracted to develop new concepts, developed to provide new tools, or condensed to facilitate learning (Zikmund et al., 2010).

The development a body of theory is one of the key characteristics which sets a profession apart from a trade or a craft. As Fugate and Knapp (1998) point out “...*Mastery of theory, and mastery of the practical or applied skills associated with a particular field, is a hallmark of professionals...*”. The development of a body of theory requires input from both academics and practitioners. These two, countervailing, forces test and hone concepts to validate ideas and in doing so gradually shape both theory and practice into an established profession.

### **Is there a flaw in Project Management theory?**

Project management researchers and practitioners are becoming increasingly aware of a divide developing between the traditionally-accepted, foundational theory of project management, the environment in which client-side, construction, project managers are required to operate, and the practices adopted to deliver construction projects (Williams, 1999, Morris, 2005, McKenna and Whitty, 2012, Koskela, 1999, Cooke-Davies et al., 2007).

Traditionally, project management has been classified as subset of production management and operations management (Project Management Institute (U.S.), 2013). More specifically, project management theory has been adapted from the transformational production management body of theory (Koskela and Ballard, 2006, Koskela, 1999). As a result of these origins, project management

has developed methodologies, tools and practices based on 'hard paradigms' and reductionist techniques, such as the Gantt chart, Work Breakdown Structures and the "iron triangle" (Koskela and Howell, 2002, Vidal, 2008, Starr, 1964). These techniques have been shown to work well in stable environments where workflow is linear and repetitive (Koskela, 1999, Vidal, 2008).

However, Client-side construction project management is a profession that operates in complex and fluid environments (Aritua et al., 2009, Smith, 2003, Usher, 2014a, Frame, 2002). As a result of this dynamism, construction project managers regularly employ 'soft paradigms' and general management skills which are not supported by the transformational view of production management (Morris and Jamieson, 2005, Ingason and Jónasson, 2009).

This paper examines the underlying assumptions that support the transformational production management body of theory. Using the five broad elements of this body of theory as the basis for thematic analysis, these assumptions are categorized for testing against both a comparator body of theory and phenomena observed in the field.

After the review of the transformational production management body of theory is completed, a case for an alternate body of theory is presented. This alternate body of theory, strategic management, is also examined to identify its underlying assumptions. These assumptions are categorized into the same five themes to allow direct comparison.

Finally, this paper assesses both the transformational production management and the strategic management bodies of theory to ascertain which provides the most valid theoretical basis for understanding the environment in which client-side, construction, project managers operate and the practices they use to deliver projects.

## Literature Review

### Transformational Production Management<sup>1</sup>

The transformational production management body of theory is founded upon three key theories. These are Taylorism, Shewhart's quality control theories and Fordism (McKenna and Whitty, 2012, McKenna and Whitty, 2013, Koskela and Howell, 2002, Wright, 1993, Williams, 1999).

#### ***Taylorism - Scientific Management***

The Scientific Management theory of production management was first proposed by Frederick Taylor in 1911 to explain the inefficiencies he observed in the manufacturing processes at the Midvale Steel Company and the Bethlehem Steel Company (Vidal, 2008, Littler, 1978). The theory of Scientific Management (also known as Taylorism) is recognized as one of the foundations for modern production management and its influence is still recognizable in modern production theories such as lean manufacturing and agile project management (Drucker, 1954, McKenna and Whitty, 2013, McKenna and Whitty, 2012, Wright, 1993).

Taylorism is based on four fundamental principles:

- (a) The reduction of tasks into their smallest definable elements (Decomposition);
- (b) The selection of individual workers, by management, to be specifically trained complete only the decomposed, definable work elements ;
- (c) The elimination of deviations from the scientifically-planned processes through strict management control and oversight; and
- (d) Clear distinction between the roles of management and workers.

(Taylor, 1911).

From these principals the underlying assumptions of Taylorism can be determined. First, there is the assumption that the sum of the whole task can be decomposed into a number of smaller tasks without losing the value of the overall task (i.e. the sum of the parts is not less than the sum of the whole) (Starr, 1964). Second, is the assumption that the process, once scientifically-planned, will not need to be changed by the workers (i.e. the production environment is stable) (Koskela et al., 2007). Third, all deviations from the scientifically-planned process will, by definition, produce less optimal outcomes than the planned process (Pruijt, 2003). Finally, Taylorism assumes that the workers lack the ability, intellect or creativity to improve the planned process, or autonomously innovate to

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<sup>1</sup> McKenna and Whitty's 'Phylomemetic Tree" provided valuable insight into the foundations and development of project management theory (MCKENNA, T. & WHITTY, S. J. Reconceptualising project management methodologies for a post-postmodern era. 9th Annual Project Management Australia Conference, 2012 Melbourne. Eventcorp Pty Ltd.

overcome challenges they might face should the planning assumptions or work environment differ from those assumed by the managers and planners (Naruse, 1991, Littler, 1978).

### ***Fordism - Mass production and mass consumption***

Henry Ford developed a complex philosophy which combined a revolutionary production system, accumulation system and a socio/political system (Cairola, N.D.). This philosophy is commonly known as Fordism. Although based on Taylorism, the goal of Fordism is mass production and cost reduction through the standardization of processes (Malsch and Dohse, 1993). It is unashamedly a single-product, large-volume production model that made it possible to create a standardized production outputs using unskilled labor.

While it could be argued that the aspirational goals of Taylorism were to increase production efficiency by reducing time and materials wastage (Vidal, 2008), the goals of Fordism are decidedly financially-focused. Fordism expanded on Tayloristic concepts by adding the elements of cost reduction and profit maximization through standardization of the customer's needs (Williams et al., 1992), standardization of the production process (Naruse, 1991), and economies of scale (Vidal, 2008).

Due to its Tayloristic roots, Fordism carries all four of Taylor's foundational assumptions. However, Fordism refines these with almost laser-like precision, decomposing tasks into single elements and fusing the workers and machinery into single economic units (Williams et al., 1992). To these Fordism adds the assumption that the transformation process is a "push-system", where the rigidly defined, preceding process relentlessly drives subsequent processes without any consideration as to whether these downstream processes have the capacity to accept the new work (Naruse, 1991).

### ***Shewhart - Statistical Quality Control***

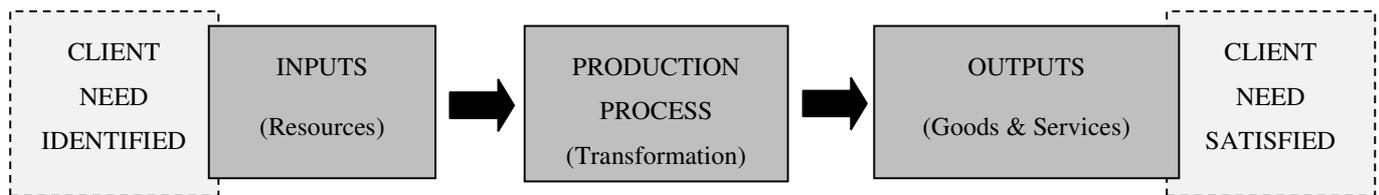
Walter Shewhart has been referred to as the "...father of statistical quality control..."(Quality, N.D.). Along with Edwards Deming and Joseph Juran, Shewhart is considered one of the founding fathers of the quality improvement movement (Best and Neuhauer, 2006).

During his employment at the Western Electric Company, Shewhart observed the manufacturing processes used in the factory, and concluded that these resulted in unnecessary waste and quality decline (Shewhart, 1931). Based on these observations, Shewhart became convinced that if production processes were developed using the Scientific Management theory outlined by Taylor, then any deviation from that scientifically-developed production process must, by definition, be inefficient, wasteful and result in economic loss (Shewhart, 1931, Flott, 2001). Shewhart's theories clearly state that "...[all] deviations [from the scientifically developed routine] indicate the routine has broken down and will no longer be economical until the cause [of that deviation] is removed..." (Shewhart, 1931).

Based on this premise, Shewhart identified two categories of production failure, *assignable-cause* and *chance-cause*, which he believed were statistically quantified (Best and Neuhasuer, 2006, Manuele, 1940). Furthermore, Shewhart believed that once quantified both of these production failures could be eliminated through increased and vigilant management oversight, and continuous improvement of the production process (Shewhart, 1931).

### ***Transformational view of Production Management***

From these three theories (Taylorism, Fordism and Shewhart) the transformational model of production management has evolved. As Starr (1964) explains, regardless of the level of complexity required within the manufacturing process itself, the core of all manufacturing processes can be viewed as a basic input-output system. Figure 1 provides a visual representation of the transformational production management model. The process starts with a client's needs. The fulfillment of these needs requires *inputs* (resources) to be fed into the *production process*. This process modifies (transforms) these resources into the form desired and then discharges them as *outputs* which ultimately *satisfies* the client's original need. (Starr, 1964).



**Figure 1 - Transformational production management model**

### **Strategic Management**

#### ***Strategic Management as an alternative body of theory.***

In order to determine if production management theory is the best foundation for client-side construction project management, a comparator body of theory must be selected. In this paper, the strategic management body of theory has been selected due to the common characteristics this body of theory shares with client-side, construction, project management.

Firstly, both strategic management and client-side project management have a similar purpose. Both are attempting to deliver a unique outcome. In the case of strategic management, this takes the form of a competitive advantage. (Tse and Olsen, 1999, Hitt et al., 2011, Porter, 1980, Project Management Institute (U.S.), 2013).

Secondly, both strategic management and client-side project management operate in variable delivery time scales, ranging from weeks to decades. (Altshuler and Luberoff, 2003, Orueta and Fainstein, 2008, Acur and Englyst, 2006, Ensign, 2008).

Thirdly, both strategic management and client-side project management commence their life-cycle by attempting to codify intangible concepts into formal plans for the purpose of implementation. (Schaap, 2012, Mintzberg, 1994, Hart, 1992, Ingason and Jónasson, 2009).

Fourthly, both strategic management and client-side construction project management must operate in complex delivery environments that are subject to variability and uncertainty (Bracker, 1980, Project Management Institute (U.S.), 2013, Steiner and Miner, 1972, Ives, 2005).

Finally, the skills required from both strategic managers and client-side construction project managers are strikingly similar. Both require a generalist rather than specialist view, and both typically combine a blend of technical ('hard') and non-technical ('soft') skills (Steiner and Miner, 1972, Williams and Samset, 2010).

### ***Strategic Management schools of thought.***

Within the strategic management body of theory, there ten identifiable schools of thought. These fall along a continuum ranging from purely deliberate to purely incremental theories on strategy development and execution (Mintzberg, 1994, Mintzberg, 1990, Mintzberg and Waters, 1985, Wiesner and Millett, 2012, Mintzberg, 1989) This paper will investigate the two schools of thought considered to be polar opposites on that continuum (Slevin and Covin, 1997, Mintzberg and Waters, 1985). These are:

- (a) The Design (Deliberate) School; and
- (b) The Emergent (Incremental) School.

### ***Design (Deliberate) School***

The Design school (also known as the Deliberate school) advocates a methodical and analytical approach to strategy development (Acur and Englyst, 2006, Pettigrew, 1992). Using predefined processes strategist (planners) assess the Organisation's external environment for opportunities and threats and critically evaluate their Organisation's internal capabilities for strengths and weaknesses (Andrew, 1987, Fletcher and Harris, 2002, Hitt et al., 2011, Johnson et al., 2005). This assessment allows planners to formulate specific corporate strategies which are codified into formalized statements and presented to the Organisation's strategy implementers (line managers and workers) (Schaap, 2012, Hart, 1992, Mintzberg, 1994). The defining characteristic of deliberate strategies is that the intentions of the strategy are fully formed and expressed as a complete, priori statement of intent before the commencement of the delivery process (Mintzberg, 1987, Wiesner and Millett, 2012).

## ***Emergent School***

The Emergent school (also known as the Incremental school) believes that within an unstable, complex and dynamic environment the concept of adhering to a complete, priori statement of intent is illogical and futile (Quinn, 1978). Instead of rigidly defined plans, the Emergent school advocates that strategies must remain flexible and adaptive if they are to be robust enough to meet the challenges that can arise from both internal and external influences in dynamic environments (Loasby, 1967, Fletcher and Harris, 2002). Hence, advocates of the Emergent school argue that the only logical means for coping with the unpredictability and complexity of a dynamic environment, is to let the final outcome be shaped and formed by them (Quinn, 1978). The Emergent school advocates that optimal outcomes can only be delivered by allowing the countervailing forces of risk, opportunities, threats and new information create an unintended order from broad guiding principles. (Quinn, 1978, Mintzberg and Waters, 1985, Wiesner and Millett, 2012, Johnson et al., 2005).

## **Research gaps**

There is already an established gap between the currently accepted, production-management based body of theory and the practices and challenges being faced by today's client-side, construction, project manager. A range of theories have already been investigated as potential alternatives to transformational production management. Chief among these are:

- (a) VFT theory (Koskela, 1999, Koskela and Ballard, 2006, Koskela and Howell, 2008);
- (b) Complexity Theories (Cooke-Davies et al., 2007, Melgrati and Damiani, 2002, Richardson et al., 2005, Pollack 2007); and
- (c) Actuality Theories (Cicmil et al., 2006, Bourdieu, 1977, Wood, 2002).

Critics of these bodies of theory cite a number of reasons why these alternatives fail to provide the basis for a meta-theory that successfully explains the challenges, delivery environment and practices of client-side, construction, project management.

Opponents of the VFT model cite its failure to effectively challenge the fundamental assumptions that project management is a sub-set of production management (Embrechts et al., 1999, Usher, 2014b, Wortmann, 1991). Critics of complexity theory highlight that these theories are relatively new and predominately used for computer modelling, as such they are yet to provide practical tools for addressing the real-life applications of project management (Gonzalez, 2010, Whitty and Maylor, 2009). Finally, even proponents of Actuality theories recognize the subjective nature of their research will most likely not result in a universal basis for project management theory (Cicmil et al., 2006).

Hence, there is still a need to find an alternative body of theory that can adequately explain the environment and challenges faced by client-side, construction, project managers.

## Research question

*“Does the strategic management body of theory explain the environment and challenges experienced by client-side, construction, project management better than the transformational production management body of theory?”*

## Methodology

### Approach to research

This research challenges the validity of the foundational theories of project management, as such it could be categorized as part of Burrell and Morgan’s (1982) Radical Structuralist paradigm. The research was conducted using objectivist ontology and a positivist epistemology.

### Comparative analyses

This paper assesses the validity of both transformational production management and strategic management bodies of theory by conducting a comparative analysis against observed phenomena. The comparison is presented through a thematic analysis using the five elements of transformational production management (i.e. *Needs, Inputs, Delivery Process, Outputs and Satisfaction*) as the framework.

### Analysis

This analysis assesses the validity of each of the three theories outlined by determining whether their underlying assumptions have the ability to explain and/or help understand phenomena observed over 15 years of field experience. This analysis is outlined in Table 1.

Observed phenomena	Underlying assumptions help explain or understand phenomena		
	Production Management	Strategic Management	
Needs	Transformation	Design	Emergent
Client needs are identified at the commencement of the process but require further development before they can be codified.	No	Yes	Yes
Client needs change throughout the life of the project as a result of internal and external factors.	No	No	Yes

Formal reporting based on pre-defined parameters is required to allow decision making and control.	Yes	Yes	No
<b>Inputs</b>			
A clear understanding of input is required at the commencement of the delivery process to facilitate decision making.	Yes	Yes	No
Required inputs may change throughout the life of the project.	No	Yes	Yes
<b>Delivery Process</b>			
The process takes place in a complex and dynamic environment.	No	Yes	Yes
The process can be flexible. Not all tasks need to be completed as originally sequenced.	No	No	Yes
The process is subject to unpredictability which can alter the intended process.	No	No	Yes
Deviations in the planned process may result in time and cost savings.	No	No	Yes
Management control over process and quality of outputs is limited.	No	Yes	Yes
<b>Outputs</b>			
Final output is unique.	No	Yes	Yes
Final output may not be as expected.	No	No	Yes
Final output may include significant deviation from the originally codified customer need.	No	No	Yes
<b>Satisfaction</b>			
Delivery of final output delivered does not guarantee customer satisfaction.	No	No	Yes
Customer satisfaction is generally not absolute. Satisfaction can vary significantly on different aspects of the final product.	No	Yes	Yes

**Table 1 - Comparison of observed phenomena against production and strategic management theories**

## **Findings**

The comparison of transformational production management, the Deliberate and Emergent theories against observed practices highlights a number of critical deficiencies in ability of all three to adequately explain client-side construction project management. These deficiencies can be categorized into three broad themes.

### **The delivery process [construction]**

From its foundations in factory-based manufacturing, transformational production management has adopted certain assumptions regarding the delivery process. Transformational production management assumes the delivery process is bounded by linearity within a stable environment. This body of theory assumes the delivery process is directed and sequential, and that all deviations from the pre-defined process results in economic inefficiency.

The Design school does not require the delivery process to be sequential or linear, nor does it assume a strictly regimented and/or stable environment. However, the Design school anticipates any possible deviations to the process will have been planned for and codified in the planning stages. Although not as regimented as transformational production management, the Design school inherently assumes that deviations which result from this dynamic environment can be foreseen and prepared in advance for using codified strategies to mitigate or address this variability.

In contrast to both these theories, the Emergent school anticipates that the delivery process will be impacted by unpredictability and unforeseen variables that cannot be fully planned for. The Emergent school postulates that deviations should be considered on their merits to determine if the deviation presents an opportunity or a threat to the final outcome.

### **The perceived value of the project**

In transformational production management the final output provided to the client, should contain no deviations from the original value proposition. Hence, by definition, the final outputs should be completely aligned with the customer's perceived value of the produced item.

Similarly, Design school theory envisages that the perceived value of the output should contain minimal deviation from the original value proposition (i.e. the competitive advantage should be as expected by the codified plans). Strategist using the Design school employ various strategic control systems (schedules, cost plans, stated deliverables, quality measures, resourcing plans, etc) to detect and correct any deviations from the codified strategy to ensure the originally perceived value is achieved.

In contrast to both transformational production management and Design school theory, the Emergent school assumes that the client's original value proposition may change considerably throughout the delivery process and this variability has the potential to increase or decrease the value of the final

deliverable. Based on this assumption, the Emergent school anticipates the strategist will use their best judgment to create the optimal value outcome from within the dynamic environment defined by client's needs, internal and external pressures and the developing constraints and opportunities.

### **Client satisfaction with the delivered project.**

Client dissatisfaction can occur when the perceived value of an output differs from the client's anticipated value of the output. Closing the gap between perceived and actual output value should be relatively easy to achieve under transformational production management. The exact requirements of the output were known to all parties (client and manufacturer) at the commencement of the delivery process and, under optimal conditions, there should have been nothing in the delivery process that caused a deviation from the original requirement.

To a lesser extent the same is true of the Design school. Although this theory anticipates the possibility of client dissatisfaction ( i.e. failure to achieve the forecast organisational and financial benefits). Proponents of this theory actively attempt to realign the final value proposition to the original one throughout the production process, through the use of rigid adherence to the plan, and the use of strategic control systems such as Key Performance Indicators (KPIs), cost plans and detailed scheduling (Hitt et al., 2011, Muralidharan, 1997, Schreyogg and Steinmann, 1987).

The Emergent school approaches client dissatisfaction in a different way to both the transformational production management and the Design school. As a result of its focus on the unpredictability of the delivery environment, and the ever-present potential for deviations that may create value, the Emergent school postulates that the final value can only be known at the end of the process - once the client's *actual*, final needs are known. This of, course presents significant difficulties in forecasting whether the final outcome will result in client dissatisfaction.

### **Discussion**

This analysis has highlighted that neither the transformational production management theory, the Design school of strategic management, nor the Emergent school of strategic management provides a single theory that client-side, construction, project management can adopt to adequately explain the environment and challenges faced by practitioners.

Firstly, we see that the development of the customer's needs from intangible concepts aligns more closely with strategic management's Design and Emergent theory than it does with transformational production management theory.

Secondly, the inputs into the process are more closely aligned with the Design school than either the Emergent school or transformational production management. These inputs are developed interactively with the Client and result in a set codified documents which provide the basis for decision-making and reporting throughout the life of the project.

Finally, we see that the Emergent school provides the best explanation of the complexity and variability of the delivery process in construction. Neither the Design school nor the transformational production management theory have the scope to adequately prepare and cope with the extent of environmental unpredictability faced by practitioners.

Hence, none of the theories alone provide an adequate explanation of the environment or challenges faced by client-side construction project managers. However, when viewed as a body of theory, rather than specific schools of thought, strategic management does provide an explanation that the production management body of theory cannot. Viewed through the lens of strategic management, we see that client-side construction project managers' plan, monitor and report on projects using the underlying assumptions of the Design school, thereby anticipating a specific value outcome for the customer. However, they are required to deliver outcomes in an environment more closely aligned with the Emergent school, which in turn produces a different value outcome. This duality is conceptualized in Figure 2.

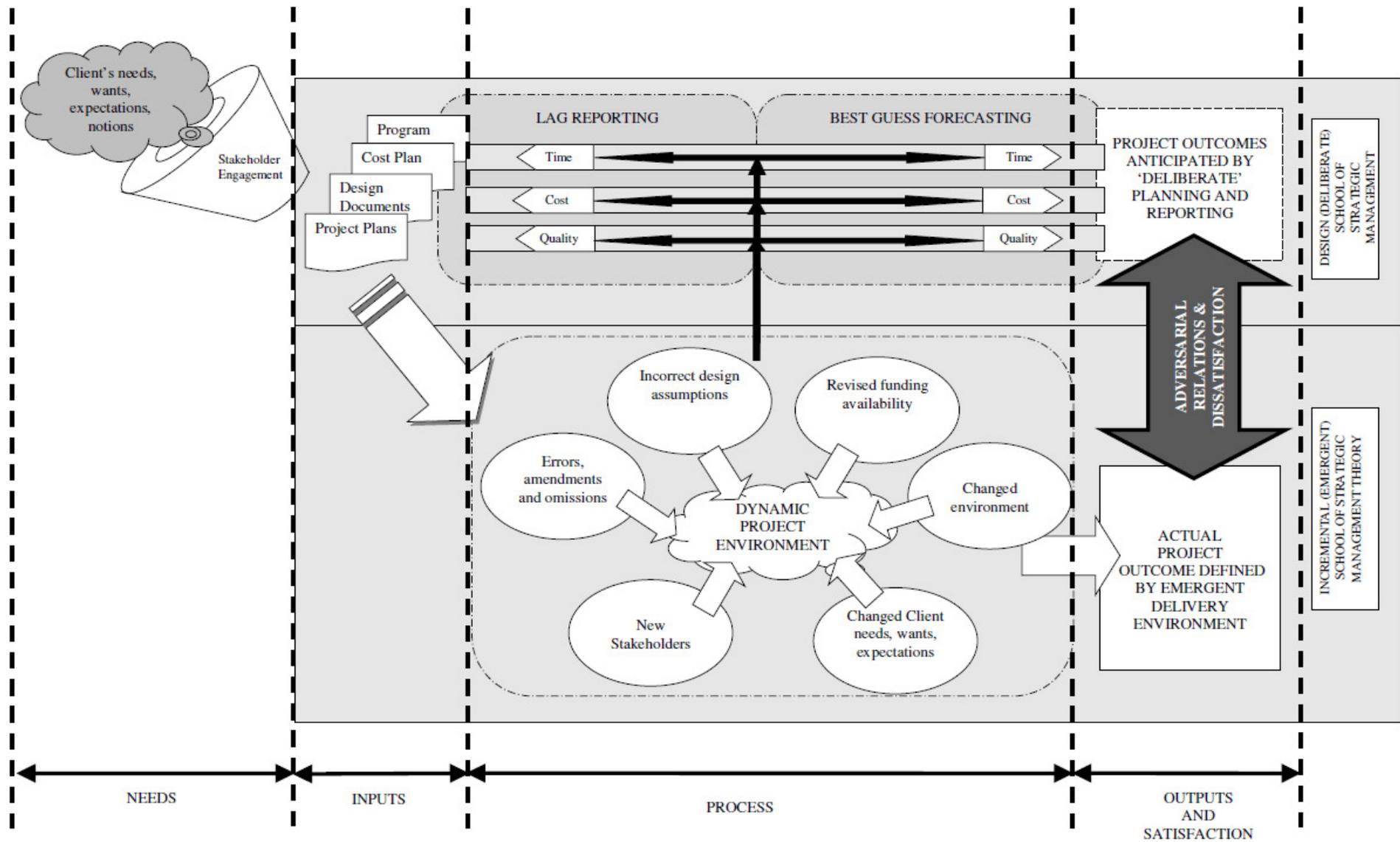


Figure 2 –Client-side construction project management explained by the strategic management body of theory

This conceptual model identifies a fundamental disparity between the planning, monitoring and reporting functions required by a client-side, construction, project manager and the delivery process required to achieve the final outputs. This model highlights that a project manager develops, reports and monitors the project using the assumptions of the Design school of strategic management while concurrently delivering the project in an environment that includes the variability and unpredictability envisaged by the Emergent school of strategic management. This model demonstrates that the strategic management body of theory can provide a framework for understanding and explaining this reality, however the transformational, production management body of theory cannot.

## **Conclusion**

This paper explored the validity of transformational production management as the foundational body of theory for client-side, construction, project management. Using a thematic and comparative analysis this paper has identified significant disparities between the assumptions of the traditionally-accepted, theoretical foundation of client-side, construction, project management and the praxis-based observations within the profession.

In addition, this paper tested the strategic management body of theory as an alternative to transformational production management as the theoretical foundation for client-side, construction, project management and found this alternate body of theory provided a more valid theoretical framework for understanding the unpredictability of the construction process, differences in perceived value, and the phenomena of client dissatisfaction.

This paper does not conclude that the strategic management body of theory is the most valid theoretical foundation for client-side construction project management. However, it demonstrates that production management, and more specifically transformational production management may not be the most appropriate theoretical foundation for the profession. The findings of this paper suggest that researchers and practitioners should look beyond the traditionally-accepted taxonomy of client-side, construction, project management into other bodies of theory which may hold new insights for the development of the profession.

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