
An Analysis of Urgency in Project Management: The Unified Project Urgency and Economic Speed Analysis Model

Uma Análise da Urgência em Gerenciamento de Projetos: O Modelo Unificado de Análise de Urgência e Velocidade Econômica de Projetos

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ABSTRACT

This paper aims to address the gap in the literature concerning the role of urgency in project management. Specifically, it seeks to develop a Unified Theoretical Model that incorporates key variables such as urgency, speed, duration, and cost. To achieve this aim, a detailed analysis of essential articles was conducted from the Scopus database to understand the relationships and trade-offs among the variables. The research method involves both literature synthesis and Theoretical Model Formulation, culminating in the Unified Project Urgency and Economic Speed Analysis Model. This model serves as a mathematical and theoretical framework tailored for managerial decision-making in High-Intensity Time-Sensitive Projects. It highlights the complex interactions between urgency, duration, speed, and costs, thereby providing a structure to guide managerial actions. The study contributes to enriching the theoretical foundations in the field of urgent project management.

Keywords: Urgent Projects; Urgency; Project Management; Time Management; Speed

RESUMO

Este artigo aborda a lacuna na literatura a respeito do papel da urgência na gestão de projetos. Especificamente, busca desenvolver um Modelo Teórico Unificado que integra variáveis-chave como urgência, velocidade, duração e custo. Para atingir esse objetivo, foi realizada uma análise detalhada de artigos fundamentais a partir do banco de dados Scopus, para entender as relações e trade-offs entre as variáveis mencionadas. O método de pesquisa inclui tanto a síntese da literatura quanto a Formulação do Modelo Teórico, culminando no Modelo Unificado de Análise de Urgência e Velocidade Econômica em Projetos. Este modelo serve como uma estrutura matemática e teórica projetada para a tomada de decisões gerenciais em Projetos de Alta Intensidade e Sensibilidade ao Tempo. Ele enfatiza as interações complexas entre urgência, duração, velocidade e custos, fornecendo assim uma estrutura para orientar decisões gerenciais. O estudo enriquece as bases teóricas no campo da gestão de projetos urgentes.

Palavras-chave: Projetos Urgentes; Urgência; Gerenciamento de Projetos; Gerenciamento de Tempo; Velocidade

INTRODUCTION

The academic literature about urgent project management has primarily focused on specific dimensions of urgency, such as timing (Nachbagauer, 2022), the management of a tight time window of an unexpected market opportunity (Zidane et al., 2018), unexpected events or circumstances, communication, costs, stakeholders' interest (Wearne, 2006), influence on risks (van den Ende, 2003), organizational response (De Waard and Kalkman, 2022), project cost and project classification (Wearne and White-Hunt, 2014), unsafe zones that poses a threat to residents' lives (El-Anwar and Aziz, 2014), and its challenges in project environments (Yim et al., 2015). Moreover, studies have explored urgency within specialized contexts such as military projects (Tishler et al., 1996), earthquake reconstruction projects (Sun and Xu, 2011), firefighting, healthcare (Nachbagauer, 2022), construction, engineering, and civil infrastructure (Wearne, 2006). Papers about urgent projects also touch on topics such as the decision-making process regarding time and speed (Nachbagauer, 2022), and effective management strategies for urgent projects (Zidane et al., 2018).

Previous literature suggest that the projects' degree of urgency can be based on (e.g.): (i) the expected cost, thus the economical speed of the project (Wearne and White-Hunt, 2014, p. 10); or (ii) the expected time (duration), thus the development and delivery speed of the project (speed), therefore, ignoring the criteria of optimizing resources. However, this dual understanding is insufficient to analytically analyze an urgent project; it needs a relation between variables that could correlate the degree of urgency with other variables presented in the project management domain to assess urgency and vice versa. Moreover, the literature presents gaps that necessitate additional investigation. Nachbagauer (2022) and Xia and Chan (2012) posit that elements such as flexibility and decision-making processes can modify the impact of urgency on project duration. Regarding the relationship between urgency and cost, though Wearne (2006) discusses immediate acceptance of cost uncertainty in urgent projects. Existing studies do not address these interplays and the ramifications of urgency across diverse dimensions, such as speed, costs, duration, and project outcomes. Therefore, there is a lack of an integrated model that captures the dynamic interactions between the influence of the varying degree of urgency across multiple dimensions. Furthermore, only Tang et al. (2015) gave a mathematical perspective related to the urgency of the project to the manager.

Guided by the above insights, this study's research question is: *How do variations in the degree of urgency influence the project duration, speed, and costs within the domain of project management?* To answer this question, this paper aims to develop a more holistic understanding of urgency that integrates the dynamics of urgency, speed, duration, and cost in project management. The research seeks to develop a theoretical framework by synthesizing existing literature on urgent project management. This literature synthesis serves as the theoretical

underpinning for the study, aggregating knowledge concerning key variables such as urgency, speed, duration, and cost. Finally, the research aims to develop a Unified Model, incorporating theoretical evidence and developing graphical representations to clarify the interactions among the primary variables.

This paper makes substantial contributions to the field of project management. Firstly, it synthesizes the fragmented literature on project urgency, providing a consolidated viewpoint. Through a combination of thematic and analytical approaches, the study develops a novel theoretical-analytical framework, the Unified Project Urgency and Economic Speed Analysis Model, which combines the degree of urgency, project duration, speed, and costs. This research also provides valuable insights into how small changes can have a cascading effect on different aspects of an urgent project. Finally, the findings shed light on the many-sided nature of urgency in project management contexts and contribute to the development of a Unified Project Urgency and Economic Speed Analysis Model, offering insights for enhancing project planning, execution, as well as operational and strategic decision-making processes.

BACKGROUND THEORY

The research is structured to advance in phases. A theoretical-analytical framework was developed, integrating concepts both from the field of urgency and from project management studies. This framework serves as a structured lens for examining how urgency interacts with various dimensions of a project. Four key dimensions are central to the framework: (i) Level of Project Urgency (U), defined as a quantitative measure indicating the urgency of a project; (ii) Speed of Execution (V), denoting the rate at which project milestones are achieved; (iii) Project Cost (C), representing the economic resources allocated for the prompt completion of a project; and (iv) Time Span (D), indicating the overall duration from the inception to the closure of a project. These dimensions not only facilitate focused examination but also guide the development of mathematical models for studying the dynamics of project urgency. It is posited that all projects have an inherent level of urgency, which this framework aims to analyze.

What is an Urgent Project?

An urgent project is characterized by a need for rapid completion, or prompt attention. Wearne and White-Hunt (2014) emphasize the subjective nature of urgency and that it often demands faster work processes, sometimes leading to increased costs. In line with this view, Wearne (2006) states that speed of execution takes precedence over cost considerations. However, Nachbagauer (2022) suggests that the sense of urgency can be influenced by time scarcity and boundaries, a point that Wearne (2006) also hints at when stating that the perception of urgency

may evolve over time. McDonough and Pearson (1993) add that external factors, such as competition or market share, often drive the need for rapid project completion.

Time constraints are a recurring theme. Zidane et al. (2018) focuses on the tight time window and the need for accelerated delivery, which is echoed by Xia and Chan (2012) who describe urgent projects as having an "unrealistic" schedule for completion. El-Anwar and Aziz (2014) bring a domain-specific perspective, linking the concept of urgency to the immediate needs in slum upgrading projects. Meanwhile, Popa et al. (2011) describe an urgent project as one that is response-driven, particularly in emergency situations. Sun and Xu (2011) illustrate the concept of urgency through the large-scale Wenchuan earthquake reconstruction project, while Aram and Javian (1973) generalize the urgency dimension in terms of immediate attention or action.

Several authors discuss the implications of urgency on project timelines. Yim et al. (2015) state that the urgency of a project increases when it exceeds its originally allocated timeframe, especially in the context of rework projects. Hensmans (2015) defines an urgent project as one involving strategic changes requiring immediate action. Ren et al. (2018) echo the concept of time pressure as a defining attribute. De Waard and Kalkman (2022) refer to urgent projects as those requiring a rapid response, often in crisis situations. Van den Ende (2003) also discusses the time-sensitive nature of projects in the context of market competition.

In the existing literature on project urgency, several research gaps become evident. Although Tang et al. (2015) introduce a mathematical perspective, there is limited investigation into the utility and constraints of mathematical models for representing the urgency dimension across diverse project types. The existing scholarly literature largely focuses on qualitative debates and case study methodologies, pointing to a lack of in-depth quantitative studies or hybrid research methods that could offer a more well-rounded view of project urgency. Furthermore, there is a notable absence of quantitative metrics to evaluate the degree of urgency across different projects (Wearne, 2006; Xia and Chan, 2012).

The Temporal Aspect: Project Duration

Duration and the level of urgency. Several studies focus on the necessity of immediate action, thereby suggesting a need for compressed timelines (Wearne, 2006; Xia and Chan, 2012; Nachbagauer, 2022). Nachbagauer (2022) articulates that selecting the appropriate speed is crucial for tackling issues in time-sensitive projects, while Zidane (2018) identifies the use of specific techniques like crashing and fast-tracking to expedite the project schedule. Ren et al. (2018) corroborate the idea that time constraints and pressure are integral attributes of urgent projects.

The relationship between project duration and urgency becomes particularly evident in financially driven projects, where the projects' lifecycles can be dramatically reduced. Zidane et al. (2018) provide an example of a project condensed from two years to just three months,

achieved through tactical decision-making and prioritization over other tasks. Wearne and White-Hunt (2014) further emphasize that urgency correlates with time constraints, and Yim et al. (2015) note that exceeding the original timeframe escalates the project's urgency.

There is a consensus that the urgency of a project can impact its overall duration. A significant number of authors, including Zidane et al. (2018), Wearne (2006), Popa et al. (2011), and De Waard and Kalkman (2022), contend that higher levels of urgency can significantly shorten the duration of a project. This is attributed to accelerated delivery, immediate action, and less control over time in urgent situations. Moreover, a few authors like Sun and Xu (2011), van den Ende (2003), and Mojtahedi and Oo (2017) also mention that the urgency of a project can have an impact on its duration but clarify that this relationship could be mediated or influenced by other factors, such as the complexity of the project, stakeholder attributes, and existing infrastructure.

The predominant view is that the duration of a project does not have a direct effect on its urgency. Authors such as Zidane et al. (2018) and Wearne (2006) explicitly state that urgency is typically driven by external factors like unexpected circumstances, business opportunities, or threats to assets, rather than the duration of the project itself. Wearne and White-Hunt (2014) and Mojtahedi and Oo (2017) further support this view, mentioning that the duration of a project does not directly impact its urgency. It is also worth noting that a substantial number of papers did not directly address the relationship between the duration of a project and its urgency.

The Aspect of Project Speed

The speed of an urgent project varies depending on numerous factors. Project speed encompasses the rate at which a project's scope is delivered within a specified timeframe, closely linked with urgency, and often requiring swift actions and creative solutions (Sun & Xu, 2011; Xia & Chan, 2012). In the case of Wearne (2006), speed takes precedence over cost, emphasizing rapid action and decision-making. Nachbagauer (2022) discusses the importance of selecting the right speed to meet critical objectives, implying that while speed is essential, it must also be controlled and deliberate. Aram and Javian (1973) discuss urgency as a dimension along with priority and profitability, suggesting that speed might be balanced against these other considerations. According to Bingham et al. (2018), urgency can influence the choice of project delivery methods, highlighting the role of speed in logistical decisions. Pan et al. (2010) imply that speed can be a function of service quality measurements, while Sun et al. (2019) note that time constraints directly affect communication frequency among project members, impacting the project's pace.

De Waard and Kalkman (2022) assert that heightened levels of urgency prompt a shift from structured to improvised organizational responses, underscoring the necessity for escalated project speed under conditions of elevated urgency, uncertainty, and task ambiguity. Yim et al.

(2015) acknowledge that urgent projects, such as redesign projects, entail compressed schedules and heightened time pressure. Wearne and White-Hunt (2014) observe that the term 'urgent' inherently implies the demand for accelerated work, which consequently propels project speed, often yielding augmented costs. Their proposed categorization of tasks based on planned duration and cost aligns with distinct tiers of project speed. Mojtahedi and Oo (2017) characterize urgency as a determinant that shapes project priorities and decision-making processes, thereby directly influencing the pace of project execution. Furthermore, Wearne (2006) suggests that urgent projects often require swift decision-making and action to address exigent circumstances.

The Financial Aspects: Project Costs

The cost implications of an urgent project are notably different from those of projects that operate under standard time constraints. Specifically, Wearne and White-Hunt (2014) point out that urgent projects often necessitate the allocation of resources in an uneconomical manner to expedite the project's delivery, thereby incurring increased costs. Similarly, Wearne (2006) mentions that in urgent projects, the speed of execution takes precedence over cost considerations, signaling the potential for elevated expenditure. Zidane (2018) also acknowledges that urgent projects may involve increased costs due to the need for accelerated delivery. Xia and Chan (2012) specify that when a construction project operates under an urgent schedule, it demands sufficient material supply, adequate staffing, and sophisticated coordination, all of which can add complexity and thereby potentially increase costs.

Project costs serve as a critical factor that intersects with urgency, speed, and duration, presenting challenges and trade-offs that shape resource allocation, financial viability, and overall project feasibility (Wearne & White-Hunt, 2014, p. 12; Mojtahedi & Oo, 2017). According to Van den Ende (2003), urgency exerts a profound influence on project costs, with heightened exigency potentially leading to increased communication expenses and influencing decisions regarding governance modes in collaborative endeavors. The classification of tasks based on projected duration and anticipated expenses, as proposed by Wearne and White-Hunt (2014), accentuates the financial ramifications associated with varying degrees of urgency. Further insight into the interplay between urgency and costs is provided by Wearne and White-Hunt's (2014) differentiation between minimum initial cost, economic duration, and minimum time.

It is worth noting, as articulated by Wearne (2006), that exigent projects that materialize unexpectedly may necessitate an immediate assumption of cost-related risks. El-Anwar and Aziz (2014) offer a framework aimed at providing more precise and practical predictions regarding slum upgrading project expenses and timelines. This framework empowers more effective oversight aimed at controlling and reducing total project expenditures and durations. Within the work of Zidane et al. (2018), the project's costs were substantial, estimated at USD100 million for the first phase and USD1.2 billion for the total budget. The project's urgency was linked to

financial motives, seeking to enhance stock value and overall profitability. Budget considerations played a central role in decision-making and project success.

The relationship between the urgency and the cost of executing a project seems to be positively correlated. Nachbagauer (2022), McDonough and Pearson (1993), and Zidane et al. (2018) explicitly state that urgent projects may involve increased costs due to the need for accelerated delivery or financial motives. Similarly, Wearne (2006) and El-Anwar and Aziz (2014) note that urgent projects require immediate acceptance of cost risks and aim to utilize all available resources, thereby contributing to higher costs. Pan et al. (2010) and Tang et al. (2015) suggest that project delivery methods and the project manager's sensitivity to completion time are motivated by both cost and urgency, implying a correlation between these factors. Finally, Wearne and White-Hunt (2014) argue that the extra cost incurred in urgent projects is justified by the greater value of delivering the work quickly.

RESEARCH METHOD

This research occurs in phases. Phase one starts by reviewing existing literature to understand how urgency interacts with speed, cost, and duration in projects. Phase two develops a unified model to study how level of project urgency, speed of execution, total cost, and time span interact in urgent projects, using math and visuals to explain the relationships. It culminates in the formulation of the Unified Project Urgency and Economic Speed Analysis Model.

Phase 1: Literature Synthesis

We initiated a literature synthesis to establish a theoretical underpinning. It aims to explore the literature concerning project urgency, its dynamics, and its interplay with key project dimensions such as speed, cost, and duration. It focuses on understanding the relationships and examining the trade-offs among these dimensions in the context of urgent projects.

Literature Synthesis. We searched for the keywords "urgent" or "urgency" and "project*" in the Scopus database until July 2023. It generated 10,931 articles, which was subsequently refined to 6,719 after applying quality assessment criteria targeting high-impact journals in business, management, and accounting. Additional filtering processes, including the exclusion of duplicate and retracted articles, resulted in a shortlist of 378 studies. Using a two-tiered screening strategy based on title-abstract analysis and contextual analysis of keywords, this list was further reduced to 91 studies. An in-depth evaluation of these articles resulted in a core set of 65 articles. Data extraction methods were employed to examine keyword usage, specifically the terms "urgent" and "urgency." Subsequently, 21 articles and one book were identified for full-text analysis, leading to a structured data matrix.

Phase 2: Theoretical Model Formulation

The aim is to investigate the variables and relationships in urgent project management, focusing on urgency, duration, speed, and costs. It develops the Unified Project Urgency and Economic Speed Analysis Model, which is a theoretical framework that integrates these variables.

Theoretical Model Formulation. Post-synthesis, we defined the variables of interest of the Model (U, D, V, and C), and set constraints ensuring all variables are non-negative. To capture the interrelationships among variables, mathematical functions are formulated. Two theoretical frameworks emerged to serve as the foundation of a structured analytical lens for investigating urgent projects. We present the General Urgent Projects Analysis Model. The model explores the concept of project speed, introducing it as the rate of achieving project objectives within a given time frame. It outlines the significance of speed and duration, particularly in projects characterized by high urgency. Next, we present the Economic Speed Model. This model extends the General Urgent Projects Analysis Model by adding the financial variable as presented by Wearne and White-Hunt (2014, p. 11), focusing on the cost implications of varying speeds. This culminated in the formulation of the Unified Theoretical Project Urgency and Economic Speed Analysis Model. The Unified Model combines the preceding models into a single framework. It offers a quadrant-based visualization, emphasizing the non-negative nature of the variables involved.

RESULTS

In the domain of project management, the interplay among urgency, duration, speed, and cost shapes the model of urgent projects. While shorter durations are expected for more urgent projects, it's the fusion of speed and urgency that characterizes urgency. Incorporating cost into the analysis creates an economic speed model. The combination of these variables emerges in the unified theoretical analytical model called Unified Project Urgency and Economic Speed Analysis Model, offering a framework where urgency, speed, cost, and duration converge.

Variables, Interrelationships, and Constraints

Definition of Variables. The analytical model identifies four primary variables: (i) Urgency (U) signifies the time-sensitivity of the project's completion, i.e., a measure of how quickly the project needs to be completed; (ii) Duration (D) specifies the time needed to finish the project; (iii) Speed (V) indicates the project's rate of progress; and (iv) Costs (C) represent the financial expenditure required for the project's completion.

Relationships Among Variables. The interrelationships between these variables can be categorized as follows: (i) Urgency and Duration: A direct relationship exists between Urgency and Duration, i.e., heightened urgency typically requires a reduced duration (Wearne, 2006; Xia and Chan, 2012; Nachbagauer, 2022; Ren et al., 2018; Zidane et al., 2018); (ii) Urgency and

Speed: An increase in urgency usually results in an increase in speed (Wearne, 2006; Nachbagauer, 2022; De Waard and Kalkman, 2022; Zidane et al., 2018); (iii) Urgency and Costs: The relationship between Urgency and Costs reveals that higher urgency may cause elevated costs (Wearne and White-Hunt, 2014; Wearne, 2006; Zidane et al., 2018); (iv) Duration and Costs: A longer Duration generally correlates with increased Costs (Wearne, 2006; Tang et al., 2015; Van den Ende, 2003; Zidane et al., 2018); and (v) Speed and Costs: Greater speed can either increase costs due to the need for more resources or decrease costs if the project is completed efficiently (Wearne and White-Hunt, 2014; Wearne, 2006; Zidane et al., 2018).

Mathematical Formulation. The relationships among these variables can be mathematically formulated as: (i) Duration as a function of Urgency: $D = f1(U)$; (ii) Speed as a function of Urgency: $V = f2(U)$; (iii) Costs as a function of Urgency: $C = f3(U)$; (iv) Costs as a function of Duration: $C = f4(D)$; and (v) Costs as a function of Speed: $C = f5(V)$. Here, $f1$, $f2$, $f3$, $f4$, and $f5$ are functions to be determined either empirically or theoretically. For mathematical simplicity, we do not use indexes 1, 2, ..., in the following text.

Model Constraints. The constraints of the model are as follows: (i) Urgency cannot be negative: $U \geq 0$; (ii) Duration cannot be negative: $D \geq 0$; (iii) Speed cannot be negative: $S \geq 0$; and (iv) Costs cannot be negative: $C \geq 0$.

General Urgent Projects Analysis Model

Project duration (D) and speed (V) are critical variables in the management of urgent projects, especially in managing projects with extremely high urgency, as illustrated in Quadrant I, point A from 0. Duration is often a function of the project's Urgency (among other management variables). However, duration alone does not capture the complexity of such projects. Therefore, the concept of project speed (V) is introduced, defined as the rate of achieving objectives within a given time frame. In scenarios of extreme urgency, both minimizing duration and maximizing speed seems to be crucial, as depicted in Point A', Quadrant II, 0. The graphical depictions serve only as neutral functional representations and do not necessarily indicate linear or straightforward relationships between variables.

Economic Speed Model

To develop an insightful theoretical-analytical framework, it becomes essential to incorporate the variables of cost, duration, and speed into a unified model termed the Economic Speed Model, as presented by Wearne and White-Hunt (2014, p. 11). This model complements the General Urgent Projects Analysis Model by focusing on the financial aspects of urgent projects. This model serves to clarify several key considerations (Wearne and White-Hunt, 2014, p. 11): (i) the financial implications of operating at maximum speed; (ii) the incremental cost incurred by accelerating operations beyond standard rates; and (iii) the decision-making criteria

for selecting a speed that minimizes costs and thus mitigates urgency. 0 illustrates the integration of cost, duration, and speed.

Unified Project Urgency and Economic Speed Analysis Model

The two theoretical frameworks combined culminates in the development of the Unified Project Urgency and Economic Speed Analysis Model, as displayed in 0. This model amalgamates a unified framework presented across four quadrants. The point of origin is common to all quadrants and is designated by a “+” sign, reflecting that the attributes of time, speed, cost, and urgency have non-negative values. Notably, different points within this model are defined to signify varying levels of project urgency, such as point *A* for Extreme Urgency, point *B* for High Urgency, and point *C* for Minimum Cost of the project (Wearne and White-Hunt, 2014, p. 11).

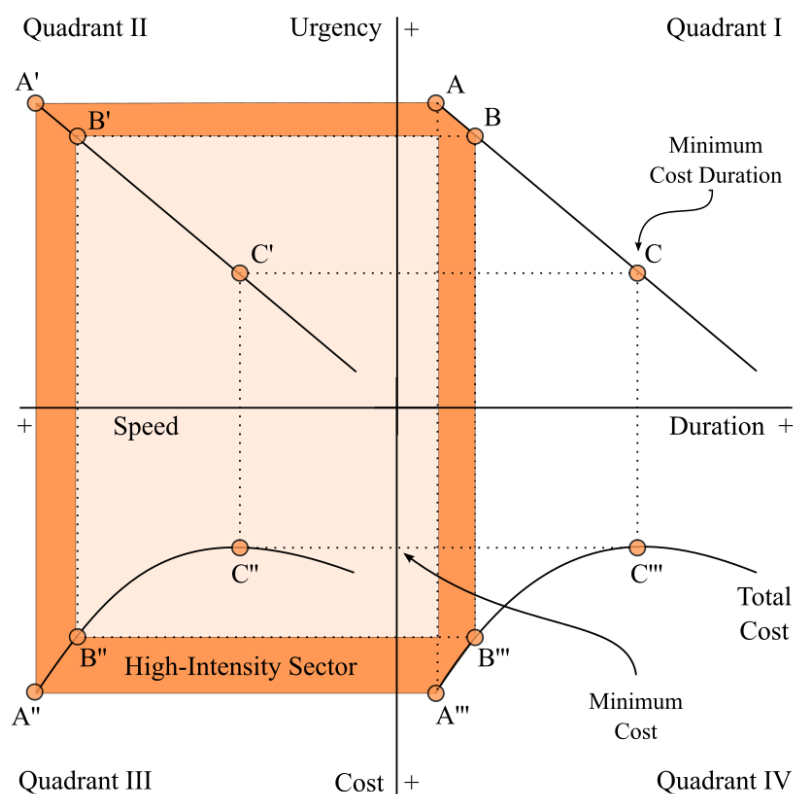


Figure 1 - Unified Project Urgency and Economic Speed Analysis Model: Relationships among the degree of urgency, duration, speed, and total cost.

Conceptual Importance of the High-Intensity Sector. From the analysis of the model, the "High-Intensity Sector" (0) has been selected to denote the area within it. This sub-component of the Unified Model serves as the area of focus for managerial decision-making, capturing the heightened levels of urgency and the complex trade-offs involved in executing urgent projects. The word "Intensity" captures the magnified focus on optimizing speed, often requiring swift and

impactful decision-making. Therefore, the "High- Intensity Sector" describes the zone of maximum complexity and decision-making challenge in urgent project management.

The High-Intensity Time-Sensitive Projects. Notice that we assume that every project possesses some level of urgency influenced by external conditions or internal organizational priorities. Then, the term "urgent project" may not sufficiently differentiate projects with the outlined characteristics from other projects. A more appropriate term could be "High-Intensity Time-Sensitive Projects" or simply "High-Intensity Projects." This terminology captures the essence of projects that are not only urgent but also present additional challenges and criticalities such as complexity, and high stakes.

The High-Intensity Time-Sensitive Projects definition. A High-Intensity Time-Sensitive Project refers to a project that requires immediate attention and action due to its critical nature, complexity, and high stakes. These projects are characterized by tight deadlines and a high level of urgency. They often involve addressing pressing societal problems, such as disasters, conflicts, or emergencies, where time is of the essence. The term "high-intensity" emphasizes the intensity and pressure associated with these projects, while "time-sensitive" highlights the importance of timely execution and delivery. These projects require efficient coordination, effective decision-making, and the ability to adapt quickly to changing circumstances. Managing High-Intensity Time-Sensitive Projects requires a unique set of skills, including strong leadership, effective communication, and the ability to prioritize tasks and resources effectively.

Projects characterized by high intensity and time sensitivity. Zidane et al. (2018) discusses a case study of a telecommunications infrastructure project in Algeria that had a high level of urgency and was successfully delivered within a tight time window. The project presented by Popa et al. (2011) aims to prepare response actions in case of a major earthquake, indicating a high level of urgency. Examples of projects with an extremely high level of urgency could include emergency response projects, time-sensitive research projects, or projects with strict regulatory deadlines (Ren et al., 2018). De Waard and Kalkman (2022) discusses extreme context studies in project management, which involve situations with high levels of urgency.

Wearne and White-Hunt (2014) discuss various projects characterized by high intensity and time sensitivity. These include constructing a temporary deck for a damaged bridge over a crocodile-infested river, pending permanent repairs; setting up a temporary electricity transmission line to restore power in Auckland's central business area through a railway tunnel and open-wire transmission; elevating a portion of the river Aire banks in Yorkshire, United Kingdom, while also conducting emergency repairs and constructing flood control measures; restoring railway tracks, overhead power, and signaling systems on a section of the East Coast Main Line in Great Heck, Yorkshire, United Kingdom; constructing a temporary railway station for a new television business; raising the banks of the Thames for flood control; stabilizing a viaduct with supports; and repairing a remote highway bridge.

Managerial Decision-Making. The factor of urgency holds significant weight in managing urgent projects and may manifest as a calculated managerial choice. Within the High-Intensity Sector, managers can opt for maximum (or near maximum) speed and the minimum (or near minimum) duration. This deliberate approach drives project outcomes, resulting (theoretically) in the maximum (or near maximum) total cost of the project (0). Mathematically, the relationship can be expressed as $C = f(U, D, V)$, encapsulating the interdependency of urgency, time (duration), and speed.

DISCUSSIONS

This discussion explores the implications of the findings, contextualizing them within the existing literature.

Theoretical Models and Practical Manifestations of Project Urgency

Both the General Urgent Projects Analysis Model and the descriptions of projects with varying levels of urgency emphasize the critical role of project duration and speed (McDonough and Pearson, 1993; Wearne and White-Hunt, 2014, p. 11). The Economic Speed Model and the accounts of high-urgency and exceptional-urgency projects both highlight the financial implications of operating at maximum speed and the incremental costs incurred (Wearne and White-Hunt, 2014, p. 11; Zidane et al., 2018). Both perspectives agree that timing is a critical factor, especially in projects with high to extreme levels of urgency (Nachbagauer, 2022; De Waard & Kalkman, 2022). Both the theoretical and practical viewpoints are outcome-oriented, focusing on the successful completion of projects within specified constraints (Wearne and White-Hunt, 2014, p. 11; Penha et al., 2022).

While the Economic Speed Model discusses the financial implications of urgency, projects with exceptional urgency, such as those in healthcare, are often motivated by immediate needs rather than financial considerations (Wearne and White-Hunt, 2014, p. 11; McDonough and Pearson, 1993). The theoretical models, particularly the Economic Speed Model, imply a degree of control over time through financial planning and speed optimization (Wearne and White-Hunt, 2014, p. 11). In contrast, De Waard & Kalkman (2022) suggest that in high levels of urgency, the control over time decreases and requires an improvisational response. The theoretical frameworks do not explicitly address the scale and impact of projects, which are considered significant factors in the practical examples, particularly in projects with exceptional urgency like earthquake reconstruction (C. Sun & Xu, 2011).

High-Intensity Sector and Academic Literature

High-Intensity Sector and Extreme Contexts. The High-Intensity Sector serves as a complementary framework to the typology of project management dynamics for extreme contexts developed by De Waard & Kalkman (2022). While De Waard & Kalkman focus on the manageability of time in extreme contexts—emergency, risky, and disruptive—the High-Intensity Sector model incorporates duration, speed, and degree of urgency. This unified model allows for the analysis of projects in extreme contexts, particularly those that deviate from traditional PMBOK logic and require improvisational responses (De Waard & Kalkman, 2022).

Both the High-Intensity Sector model and the academic literature emphasize the critical role of urgency in project management (McDonough and Pearson, 1993; Wearne, 2006; De Waard & Kalkman, 2022; C. Sun & Xu, 2011; Zidane et al., 2018). Effective coordination among various stakeholders or departments is highlighted as crucial for the success of urgent projects (McDonough and Pearson, 1993; Wearne, 2006). The ability to adapt quickly to changing circumstances is considered vital in the High-Intensity Sector as presented in academic literature (Wearne, 2006; Lechler & Grace, 2007). Both the High-Intensity Sector model and Zidane et al. (2018) discuss the financial aspects of urgent projects, although the former focuses on the theoretical maximum cost while the latter discusses financial motivation. The High-Intensity Sector model underscores the importance of time, whether it's speed, duration, or the manageability of time (De Waard & Kalkman, 2022; Zidane et al., 2018).

The model introduces the term "High-Intensity Time-Sensitive Projects" to differentiate from merely "urgent projects," a term commonly used (without definition) in academic literature (McDonough and Pearson, 1993; Wearne, 2006; De Waard & Kalkman, 2022; C. Sun & Xu, 2011; Zidane et al., 2018). The High-Intensity Sector model posits that urgency can be a calculated managerial choice, focusing on maximum speed and minimum duration. This is not explicitly discussed in the academic literature reviewed (McDonough and Pearson, 1993; Wearne, 2006). The High-Intensity Sector model offers a generalized framework which help to discuss projects with varying scales and impacts, such as the Wenchuan earthquake reconstruction (C. Sun & Xu, 2011) and the 9/11 pile removal (Wearne and White-Hunt, 2014).

CONCLUSIONS

Finally, this paper substantiates the notion that urgency in project management encompasses a multi-dimensional structure, incorporating factors such as speed, cost, and duration. The common use of the term "urgent project" lacks specificity in segregating projects with these attributes from others. A refined nomenclature, such as "High-Intensity Time-Sensitive Projects" or "High-Intensity Projects," appears to be more fitting. This alternative terminology

aptly encapsulates projects characterized not merely by urgency but also by elements including complexity, elevated stakes, and the requirement for specialized team members, for instance.

Moreover, the paper makes substantive contributions to the understanding of the interrelations between urgency and essential project dimensions. By gathering data and theorizing on varying degrees of urgency, this study has further enriched existing literature. Furthermore, this paper introduces a new theoretical framework: the Unified Project Urgency and Economic Speed Analysis Model. This framework provides both project managers and academics with a systematic method to analyze complex, urgent project situations, offering a multidimensional assessment grounded in factors such as urgency, project duration, speed, and costs.

Limitations and Future Implications of the Analytical Model. **Limitations:** A primary limitation centers on the assumption that project managers can accurately quantify variables such as urgency, cost, speed, and duration. In real-life scenarios, these variables often succumb to unpredictable external influences, which the model currently does not account for comprehensively. Such omissions signal areas where the model's utility could be less than optimal. **Future implications:** To mitigate these limitations, future versions of the model could integrate statistical, or machine learning methods designed to handle variable uncertainty. Specifically, Bayesian networks or stochastic models offer promising avenues for quantifying the inherent uncertainties linked to each of the model's variables. **Limitation:** The model is not dynamic and does not account for changes in project variables over time, thereby limiting its applicability in projects that are highly volatile or have changing constraints. **Future Implications:** Introduction of time-dependent variables could render the model dynamic, making it more applicable to projects with shifting urgencies or constraints.

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