

When Goals Persist but Alignment Fails: A Simulation-Based Illustration of Regulatory Fatigue

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Abstract

Research on goal pursuit has extensively examined how individuals initiate and maintain goals. However, comparatively less attention has been given to the regulatory conditions under which persistent goals gradually produce fatigue rather than sustained functioning. The present study offers a simulation-based illustration of a simple dynamic mechanism through which regulatory fatigue may emerge even when goal commitment remains intact. Drawing on the Dynamic Intentional Alignment framework, the model conceptualises goal pursuit as a regulatory system involving intentional direction and affective regulation operating under persistent constraint. Misalignment between these components is formalised as the absolute gap between intentional direction and affective regulation. Using a discrete-time simulation, the model demonstrates how affective regulation gradually adjusts toward intentional direction while environmental constraint continuously perturbs the system. The resulting misalignment stabilises at a non-zero equilibrium, producing cumulative regulatory fatigue over time. This dynamic pattern suggests that burnout may arise not solely from increasing pressure but from the long-term accumulation of small yet persistent regulatory gaps. By providing a transparent computational illustration of this mechanism, the study contributes to the psychology of goal setting by highlighting the role of regulatory alignment in sustaining goal pursuit under constraint. The model offers a conceptual starting point for future empirical investigation of alignment dynamics in motivational systems.

Introduction (dengan sitasi)

Goal pursuit represents a central topic in motivational psychology. A large body of research has examined how individuals initiate goals, maintain commitment, and regulate effort across time (Carver & Scheier, 1998; Locke & Latham, 2002). Classical theories of self-regulation propose that goal-directed behaviour emerges from an ongoing comparison between desired states and current conditions, prompting individuals to adjust their actions in order to reduce discrepancies. Within this framework, persistence in goal pursuit is typically interpreted as an indicator of motivational strength and regulatory effectiveness.

However, everyday experience and empirical observations suggest that persistent goal commitment does not always translate into sustained psychological functioning. Individuals frequently continue to pursue valued goals while simultaneously experiencing increasing fatigue, frustration, or burnout. In such situations, the difficulty does not necessarily lie in the absence of goals or a lack of motivation. Rather, individuals may remain strongly committed to their goals while gradually experiencing growing psychological strain during the pursuit process. This phenomenon raises an important theoretical question: under what regulatory conditions can persistent goals gradually produce fatigue instead of stable functioning?

Existing theoretical approaches have proposed several explanations for burnout and regulatory exhaustion. For example, the Job Demands Resources model emphasises the imbalance between environmental demands and available psychological resources (Demerouti et al., 2001). Other

perspectives highlight the depletion of self-regulatory resources following prolonged effortful control (Baumeister et al., 1998). While these approaches provide valuable insights into the environmental and resource-based factors associated with fatigue, they offer limited explanation of how internal regulatory dynamics may produce fatigue even when goal commitment itself remains intact.

One potential mechanism lies in the relationship between intentional direction and affective regulation during goal pursuit. Pursuing a goal involves not only maintaining cognitive commitment to a desired outcome but also continuously regulating emotional and motivational responses to changing circumstances. When these components remain aligned, individuals are able to sustain effort with relatively stable psychological functioning. However, when intentional direction remains strong while affective regulation fails to adapt to ongoing pressures, a gap may gradually emerge within the regulatory system. Such misalignment may not immediately disrupt goal pursuit, yet it may generate a persistent internal cost as the system repeatedly attempts to reconcile competing regulatory demands.

From a dynamic perspective, even small regulatory discrepancies may accumulate over time. A minor gap between intentional direction and affective regulation may appear negligible at a given moment. However, when such discrepancies persist across repeated cycles of goal pursuit under constraint, they may produce cumulative regulatory costs that gradually undermine psychological functioning. Understanding how such dynamics unfold requires a framework capable of describing regulatory processes across time rather than relying solely on static relationships between variables.

The present study provides a simple computational illustration of this process. Drawing on the Dynamic Intentional Alignment framework, the paper introduces a minimal dynamic model in which goal pursuit is conceptualised as a regulatory system consisting of intentional direction and affective regulation operating under persistent constraint. Within this system, misalignment between intentional direction and affective regulation is represented as the absolute gap between the two components. The model further assumes that affective regulation gradually adjusts toward intentional direction, while environmental constraint continuously perturbs the system.

Over time, the interaction between these processes produces a dynamic pattern in which misalignment stabilises at a non-zero equilibrium. Although the equilibrium gap remains relatively small, its cumulative effect generates increasing regulatory fatigue across time. The simulation therefore illustrates how burnout-like fatigue may emerge not from escalating pressure but from the long-term accumulation of small but persistent regulatory discrepancies.

Rather than proposing a comprehensive theory of motivation, the present work aims to provide a conceptual demonstration of a possible regulatory mechanism underlying fatigue in goal-directed behaviour. By highlighting the role of alignment between intentional direction and affective regulation, the model contributes to ongoing discussions in the psychology of goal setting concerning the conditions under which sustained goal pursuit supports or undermines psychological functioning.

The present study therefore introduces a minimal simulation model illustrating how persistent constraint may produce cumulative regulatory fatigue through dynamic misalignment.

Model Specification

To illustrate the dynamic mechanism underlying regulatory fatigue, the present study introduces a minimal computational model describing the interaction between intentional direction, affective regulation, and environmental constraint during goal pursuit. The model conceptualises goal pursuit as a regulatory system operating across discrete time steps. At each time step t , the system is characterised by five variables: persistent constraint C_t , intentional direction ID_t , affective regulation AR_t , misalignment G_t , and regulatory fatigue RF_t .

Persistent constraint represents the ongoing environmental pressure that perturbs the regulatory system during goal pursuit. For illustrative purposes, constraint is treated as a constant parameter in the simulation $C = 0.5$. This simplification allows the interaction between intentional direction and affective regulation to be observed without introducing additional environmental variability.

Intentional direction represents the strength or orientation of goal commitment at time t . Under persistent constraint, intentional direction gradually declines across time. This process is represented by the following equation:

$$ID_{t+1} = ID_t - \gamma C_t$$

where γ represents the sensitivity of intentional direction to constraint. In the present simulation, $\gamma = 0.1$

Affective regulation represents the system's capacity to adjust emotional and motivational states in response to goal pursuit conditions. Rather than instantaneously matching intentional direction, affective regulation gradually adjusts toward it through a first-order adjustment process:

$$AR_{t+1} = AR_t + \alpha(ID_t - AR_t)$$

where α represents the rate of regulatory adjustment. In the present model, $\alpha = 0.3$. This equation describes a dynamic re-alignment process in which affective regulation progressively moves toward intentional direction over time.

Misalignment represents the discrepancy between intentional direction and affective regulation at each time step. It is defined as the absolute difference between the two variables:

$$G_t = |ID_t - AR_t|$$

Misalignment reflects the internal regulatory gap that emerges when affective regulation fails to perfectly track changes in intentional direction.

Finally, regulatory fatigue represents the cumulative cost of sustained misalignment across time. Fatigue increases whenever a gap exists between intentional direction and affective regulation. This accumulation process is represented as:

$$RF_t = RF_{t-1} + G_t$$

Together, these equations define a simple dynamic system in which intentional direction is gradually perturbed by constraint, affective regulation continuously attempts to realign with intentional direction, and any remaining discrepancy produces cumulative regulatory fatigue. The interaction between these processes allows the model to illustrate how persistent goal commitment may coexist with gradually increasing fatigue during sustained goal pursuit.

Simulation Procedure

To illustrate the dynamics of the proposed regulatory system, a discrete-time simulation was conducted using a spreadsheet implementation. The simulation was designed to demonstrate how the interaction between intentional direction and affective regulation evolves under persistent constraint.

The model was implemented using the equations specified in the previous section. Initial values were set as follows: intentional direction ($ID_1 = 1.0$), affective regulation ($AR_1 = 0.5$), and regulatory fatigue $RF_1 = 0$. Persistent constraint was treated as a constant parameter $C = 0.5$ throughout the simulation in order to isolate the internal dynamics of the regulatory system.

Two parameters govern the behaviour of the system. The first parameter, $\gamma = 0.1$, represents the sensitivity of intentional direction to persistent constraint. The second parameter, $\alpha = 0.3$, represents the rate at which affective regulation adjusts toward intentional direction.

The simulation was run for 50 iterations, representing sequential cycles of goal pursuit under constraint. At each iteration, intentional direction was updated according to the constraint equation, affective regulation adjusted toward intentional direction, misalignment was computed as the absolute difference between the two variables, and regulatory fatigue accumulated as the sum of misalignment across time.

This procedure allows the dynamic interaction between intentional direction and affective regulation to be observed across multiple cycles of goal pursuit.

Results

The simulation reveals a consistent dynamic pattern emerging from the interaction between intentional direction, affective regulation, and persistent constraint.

First, intentional direction gradually declines over time as a result of continuous constraint. Because the model assumes a constant environmental pressure, each iteration slightly reduces the strength of

intentional direction. At the same time, affective regulation dynamically adjusts toward intentional direction through a gradual re-alignment process.

Figure 1 illustrates the dynamic interaction between intentional direction and affective regulation across iterations.

The figure shows that affective regulation progressively approaches intentional direction but does not perfectly match it, producing a persistent regulatory lag between the two variables.

As a consequence of this lag, a small but persistent gap emerges between intentional direction and affective regulation. This gap represents the misalignment within the regulatory system.

Figure 2. Misalignment between intentional direction and affective regulation across time.

The simulation indicates that misalignment initially decreases as affective regulation adjusts toward intentional direction. However, after several iterations, the gap stabilises at a non-zero equilibrium level, indicating that the regulatory system reaches a dynamically stable state rather than perfect alignment.

Although this equilibrium misalignment remains relatively small, its cumulative effect becomes increasingly visible in the fatigue variable. Because regulatory fatigue accumulates as the sum of misalignment across iterations, fatigue grows steadily over time.

Figure 3 presents the accumulation of regulatory fatigue throughout the simulation.

As shown in the figure, regulatory fatigue increases progressively across time, illustrating how persistent but small regulatory discrepancies may generate growing fatigue even when the system remains dynamically stable.

Discussion

The present simulation illustrates a simple dynamic mechanism through which regulatory fatigue may emerge during persistent goal pursuit. Although the model is intentionally minimal, the results reveal several insights regarding the dynamics of goal-directed regulation under constraint.

First, the simulation demonstrates that misalignment between intentional direction and affective regulation may stabilise at a non zero equilibrium. Even though affective regulation continuously adjusts toward intentional direction, the presence of persistent constraint prevents the system from reaching perfect alignment. As a result, a small but stable regulatory gap emerges within the system. This finding suggests that perfect psychological alignment during sustained goal pursuit may be structurally difficult to maintain when individuals operate under ongoing external pressure.

Second, the model highlights the cumulative nature of regulatory fatigue. Because fatigue in the model is defined as the accumulation of misalignment across time, even a small but persistent regulatory discrepancy may gradually produce substantial fatigue. This dynamic pattern provides a conceptual

explanation for why individuals may experience burnout despite maintaining commitment to their goals. Rather than resulting from sudden increases in pressure, fatigue may emerge from the long-term accumulation of small regulatory costs within the self-regulatory system.

Third, the simulation suggests that burnout does not necessarily indicate the collapse of goal commitment. In the model, intentional direction continues to exist even as fatigue increases. This pattern aligns with observations in motivational psychology indicating that individuals often persist in pursuing valued goals while simultaneously experiencing increasing psychological strain during the process of regulation (Carver & Scheier, 1998).

From a broader perspective, the Dynamic Intentional Alignment framework emphasises the importance of regulatory alignment in sustaining goal pursuit. Classical theories of goal setting emphasise the motivational power of clear and challenging goals (Locke & Latham, 2002). However, the present model suggests that the sustainability of goal pursuit may depend not only on the strength of goal commitment but also on the dynamic alignment between cognitive intention and affective regulation during the pursuit process. When these components remain aligned, individuals may sustain effort with relatively stable psychological functioning. Conversely, persistent misalignment between intention and affective regulation may gradually generate regulatory fatigue even when goal commitment remains intact.

Several limitations should be acknowledged. The model presented in this study is intentionally simplified and does not attempt to capture the full complexity of human motivation. Environmental constraint is treated as constant, and regulatory parameters are assumed to remain stable across time. In real-world contexts, both environmental pressure and regulatory capacity may fluctuate across situations and individuals. Future research may extend the model by incorporating variable environmental conditions, adaptive regulatory parameters, or empirical data from longitudinal studies of goal pursuit.

Despite these limitations, the simulation provides a transparent conceptual illustration of how fatigue may emerge from internal regulatory dynamics rather than solely from external pressure. By formalising the interaction between intentional direction, affective regulation, and cumulative regulatory cost, the model offers a preliminary framework for investigating alignment dynamics within motivational systems.

Conclusion

This study provides a simulation-based illustration of a dynamic mechanism through which regulatory fatigue may emerge during persistent goal pursuit. The proposed model demonstrates that even when individuals maintain strong intentional direction, a small but persistent misalignment between intentional direction and affective regulation may gradually accumulate into fatigue over time.

By conceptualising goal pursuit as a dynamic regulatory system operating under persistent constraint, the model highlights the importance of alignment between cognitive intention and affective regulation in sustaining psychological functioning. Rather than resulting solely from increasing external pressure,

fatigue may emerge from the long-term accumulation of small regulatory discrepancies within the self-regulatory process.

Although the present work represents a simplified computational illustration, it provides a conceptual starting point for future empirical investigations of regulatory alignment in motivational systems. Further research may explore how variations in environmental constraint, regulatory capacity, and goal dynamics influence the emergence of fatigue in real-world goal pursuit contexts.

Declarations

Ethical Approval

This study is purely theoretical and does not involve human participants, animals, or the collection of sensitive empirical data. Therefore, formal ethical approval from an institutional review board was not required.

Competing Interests

The author declares that there are no financial or non-financial competing interests that could have influenced the content of this manuscript.

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Author Contribution

J.A. conceived the study, developed the theoretical framework, designed the simulation model, conducted the computational analysis, and wrote the manuscript.

Data Availability Statement

The simulation model used in this study was implemented using a spreadsheet-based computational procedure. All equations and simulation procedures are fully described within the manuscript.

References

1. Baumeister RF, Bratslavsky E, Muraven M, Tice DM (1998) Ego depletion: Is the active self a limited resource? *J Personal Soc Psychol* 74(5):1252–1265. <https://doi.org/10.1037//0022-3514.74.5.1252>
2. Carver CS, Scheier M (1998) *On the self-regulation of behavior*. Cambridge University Press. <https://doi.org/10.1017/CBO9781139174794>

3. Demerouti E, Bakker AB, Nachreiner F, Schaufeli WB (2001) The job demands-resources model of burnout. *J Appl Psychol* 86(3):499–512
4. Locke EA, Latham GP (2002) Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *Am Psychol* 57(9):705–717. <https://doi.org/10.1037/0003-066X.57.9.705>

Figures

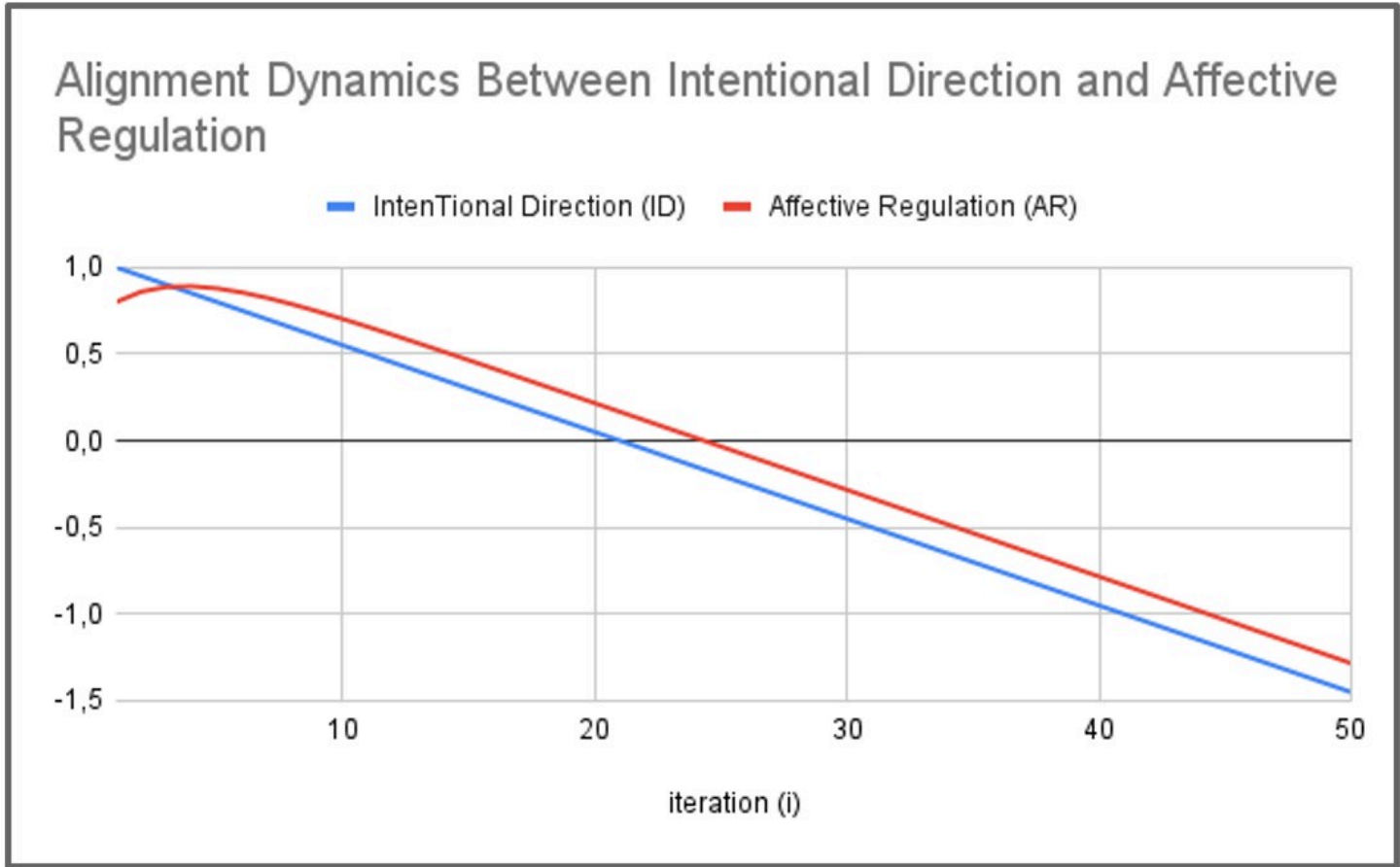


Figure 1

Dynamic interaction between intentional direction and affective regulation across simulation iterations.

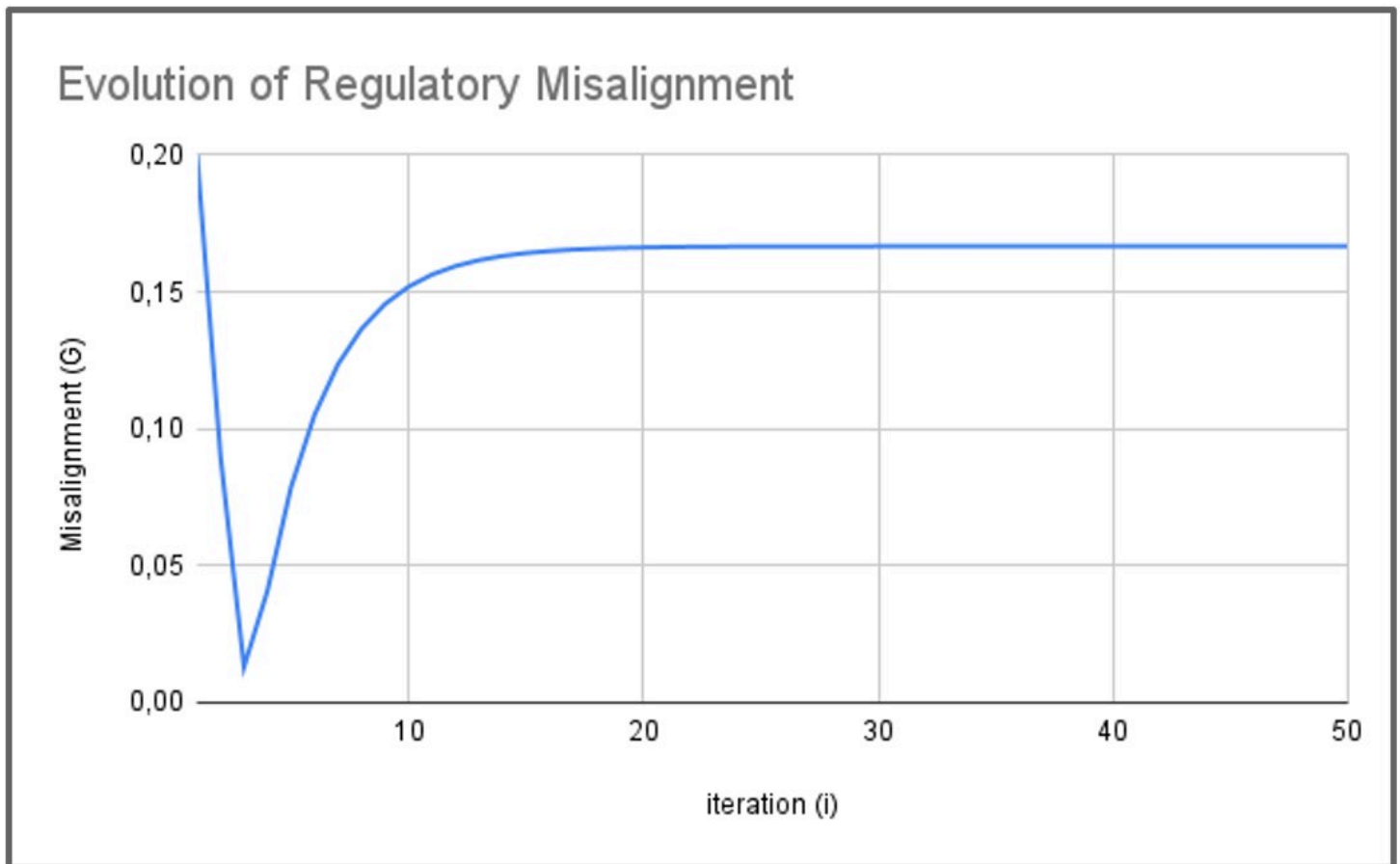


Figure 2

Misalignment between intentional direction and affective regulation across time.

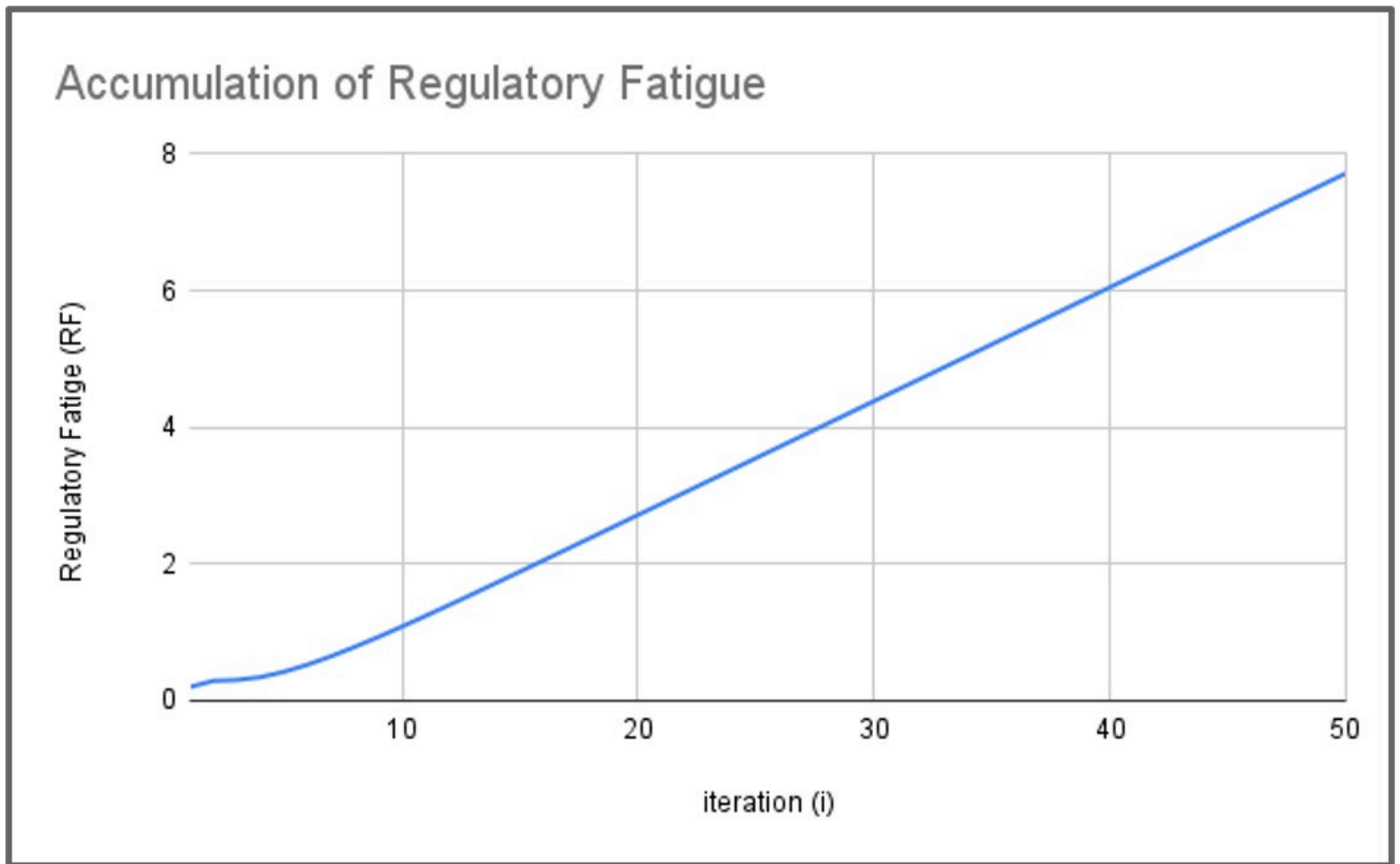


Figure 3

Accumulation of regulatory fatigue across simulation iterations.

Supplementary Files

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- [1stDRAMSIMULASI.xlsx](#)