

# Effects of relationships in the dynamics of information technology projects

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**Keywords:** Service Management; Service Quality; Value Co-creation; Motivation; Simulation; System Dynamics; Dark Side of Relationships

## Problem and Methodology

Information Technology projects face challenges such as rework, scope changes or knowledge deficit, leading to the low success rates reported in the industry (IDC, 2018). Although several improvements were made in project management methodologies over the last years, problems such as client dissatisfaction, cost and time overruns persist. Previous research demonstrated the importance of introducing rework or scope increases, labor control policies and project labor controls on the success of projects. However, the impacts of relationships between the service provider and client on the available management decisions have not been fully investigated, especially for IT Services.

Relationships play a critical role in the service delivery of IT projects because they involve intense participation of the client (Bardhan *et al.*, 2010) resulting in a co-creation process (Vargo and Lusch, 2004). Relationships evolve and often have positive and negative consequences that have different dominances and effects over time. On the one hand, relationships improve communication (Luna-Reyes *et al.*, 2008; Anantatmula, 2010; Meng and Boyd, 2017), allowing the exploitation of synergies (Villena, Revilla and Choi, 2011) and improving knowledge transfer, which increases productivity. On the other hand, relationships often result in biased judgments and evaluations (Rood *et al.*, 2018; Villena, Choi and Revilla, 2020), acceptance of bad performance (Mitrega and Zolkiewski, 2012), lowering expectations (Johnsen and Lacoste, 2016; Villena, Choi and Revilla, 2020), poor definition of goals (Johnsen and Lacoste, 2016), and poor decision making (Rood *et al.*, 2018). These positive and negative effects create feedbacks that can drag a project into a reinforcing process of eroding results, either by increasing costs, failing to achieve deadlines, declining quality, and increasing work pressure leading to higher employee attrition and client loss.

Even though relationships are considered relevant, they have been absent in system dynamics models exploring project management dynamics. We move on to filling this gap, explaining how these positive and negative effects can be added to project management models applied to software projects. We did this by developing new structures to capture the positive and negative

effects of relationships on service capacity, expectations and goals, adding them to a generic formal system dynamics model about project management already developed (Ford, Lyneis and Taylor, 2007; Jalili and Ford, 2016; Li *et al.*, 2018; Oliva and Sterman, 2001; Oliva and Sterman, 2010).

The integration of the feedback loops connected to the decision-making process can be summarized by the causal loop diagram:

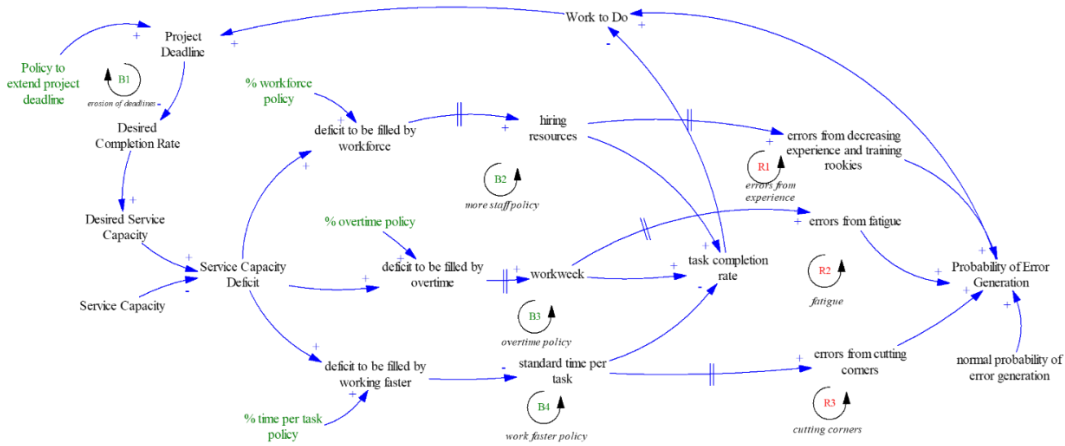


Figure 1 – Aggregate feedback structure

## Results

The results show that relationships are important to project outcomes. If unmanaged, relationships create a significant pressure to underachieve and underinvest over the long term through four negative effects on service capacity and expectations that are only observed at later stages of the project. On the other hand, if well managed, may allow the use of policies such as postponing deadlines, controlling the pressure of the project, and avoiding some powerful unintended consequences. This offers a new perspective on understanding the role of the relationships on projects and the instruments available for decision-makers.

Adopting a policy to postpone deadlines is efficient in reducing pressure but is dependent on the ability to develop relationships that allow some degree of schedule flexibility. However, this policy needs to be complemented with controlling mechanisms such as benchmark goals to prevent the constant overrun of deadlines. Consistent with previous studies, policies using only overtime and working faster are not efficient, especially for working faster which leads to never completing the project. The policy of hiring additional workforce allows to achieve the end of the project but if used alone, still produces overruns. Policies using a combination of hiring workforce and using overtime over short periods continue to produce overruns. The combination of the previous policy with postponing deadlines improves further the results by taking some pressure off the team, which results in a smaller probability of increasing errors. Adding the possibility to work with quality goals improves further results counterbalancing a trend to erode standards. Finally, exploring a combination of these policies with a decision to hire the same amount of experienced and rookie employees produces the best scenario, reducing significantly the time overrun but also the cost overrun, despite hiring more expensive employees.

## References

- Anantatmula, V. S. (2010) 'Project manager leadership role in improving project performance', *Engineering Management Journal*, 22(1), pp. 13-22.
- Anderson, E. and Jap, S. D. (2005) 'The dark side of close relationships', *MIT Sloan Management Review*, 46(3), pp. 75.
- Bardhan, I. R., Demirkan, H., Kannan, P., Kauffman, R. J. and Sougstad, R. (2010) 'An interdisciplinary perspective on IT services management and service science', *Journal of Management Information Systems*, 26(4), pp. 13-64.
- Ford, D. N., Lyneis, J. M. and Taylor, T. 'Project controls to minimize cost and schedule overruns: A model, research agenda, and initial results'. *2007 International System Dynamics Conference: Citeseer*, 23-27.
- IDC (2018) *IDC FutureScope: Worldwide IT Industry 2019 Predictions*.
- Jalili, Y. and Ford, D. N. (2016) 'Quantifying the impacts of rework, schedule pressure, and ripple effect loops on project schedule performance', *System Dynamics Review*, 32(1), pp. 82-96.
- Johnsen, R. E. and Lacoste, S. (2016) 'An exploration of the 'dark side' associations of conflict, power and dependence in customer–supplier relationships', *Industrial Marketing Management*, 59, pp. 76-95.
- Li, Y., Jiang, L., Taylor, T. R. B. and Ford, D. N. (2018) 'Impact of Labour Controls on Tipping Point Dynamics in Large Complex Projects Impact of Project Labor Controls on Tipping Point Dynamics', *Systems Research and Behavioral Science*, 35(6), pp. 605-618.
- Luna-Reyes, L. F., Black, L. J., Cresswell, A. M. and Pardo, T. A. (2008) 'Knowledge sharing and trust in collaborative requirements analysis', *System Dynamics Review: The Journal of the System Dynamics Society*, 24(3), pp. 265-297.
- Meng, X. and Boyd, P. (2017) 'The role of the project manager in relationship management', *International Journal of Project Management*, 35(5), pp. 717-728.
- Mitrega, M. and Zolkiewski, J. (2012) 'Negative consequences of deep relationships with suppliers: An exploratory study in Poland', *Industrial Marketing Management*, 41(5), pp. 886-894.
- Oliva, R. and Sterman, J. D. (2001) 'Cutting Corners and Working Overtime: Quality erosion in the service industry', *Management Science*, 47(7), pp. 894-914.
- Oliva, R. and Sterman, J. D. (2010) 'Death Spirals and Virtuous Cycles Human Resource Dynamics in Knowledge-Based Services', *Handbook of Service Science*. P. P. Maglio, C. A. Kieliszewski and J. C. Spohrer (eds), pp. 321-358.
- Rood, C., Van den Berg, D., Niemann, W. and Meyer, A. (2018) 'The role of personal relationships in supply chain disruptions: Perspectives from buyers and suppliers of logistics services', *Acta Commercii*, 18(1), pp. 1-15.
- Vargo, S. and Lusch, R. (2004) 'Evolving to a new Dominant Logic for Marketing', *Journal of Marketing*, 68, pp. 1-17.
- Villena, V. H., Choi, T. Y. and Revilla, E. (2020) 'Mitigating Mechanisms for the Dark Side of Collaborative Buyer–Supplier Relationships: A Mixed-Method Study', *Journal of Supply Chain Management*.
- Villena, V. H., Revilla, E. and Choi, T. Y. (2011) 'The dark side of buyer–supplier relationships: A social capital perspective', *Journal of Operations management*, 29(6), pp. 561-576.