THE IMPACT OF STANDARDIZATION ON OPERATIONAL PERFORMANCE IN A NETWORKED GLOBAL SUPPLY CHAIN: A CASE STUDY

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Abstract
Standardization reduces complexity and increases predictability in a global supply chain. This predictability can be exploited for capacity management and resource allocation to meet client demands and achieve cost expectations. On this foundation of predictability a supply chain can expand, take on new workflows, and update technology. Best practices must be developed and be made known across the supply chain. Adoption of best practices must be expedient and effective to satisfy a changing business environment. Where complexity and chaos are reduced profitability can be more accurately predicted. A performance understanding and supply chain predictability can also aid with organizational change success increasing the assurance that transitions will be successful. Conversely, chaos and complexity management challenges also directly relate to liability and the ability of the organization to mitigate risk threats.

Key words: *Best Practices; Leadership; Predictability; Scaling; Standardization*

JEL Classification: *A14, A23, D21, D22, D23, D24, D25, D81, D85, E23, E39, F23, G17, L15, L23, L25, M11, M12, M16, O32, O43, P17*

I. INTRODUCTION

The M-form organizational design drives high employee costs, internal battles over resources, the lack of standardization, the lack of collaboration, and the loss of market opportunities contributing to tension about synergy exploitation (Strikwerda & Stoelhorst, 2009). This tension needs to be resolved, at least partially, through an organization without exacerbating issues around resources and market opportunities. Furthermore, the organization needs to drive clarity and accountability which is an inherent weakness in many structures due to the disparate interests of multiple bosses (Galbraith, 2009). Further organizational design evolution is needed for moving multi-national enterprises (MNE's) from a resource-centric industrial economy, focused on exploiting tangible physical resources, to a customer-centric, service-oriented economy that is focused on exploiting intangible knowledge-based resources (Davis & Thomas, 1993; Grant, 1996; Markides & Williamson, 1994). For this exploitation to occur, opportunities for standardization are critical.

Synergy realization costs include both direct and indirect costs. Direct costs could include the cost of coordination and control, while indirect costs may relate to the need for a compromise or an adaptation (Campbell & Goold, 2000). Coordination costs may be visible in costs associated with collaborative linkages between business units (Porter, 1985). This could include management time, the cost of a designated liaison, the cost of an embedded team, the cost of integrating sales forces, human resource related costs, marketing costs, moving costs, culture assimilation costs, costs of standardization, the cost of outsourcing, or costs associated with the installation and maintenance of enterprise resource planning (ERP) systems (Loomer & Harington, 2003; Zhou, 2011). Each of these costs have a return on investment (ROI). This study focuses on the impact of standardization on operational effectiveness. This is essentially the ROI for standardization costs, however, standardization as a theme is woven through other cost categories. For example, in order for the ERP ROI to be achieved standardization becomes critical.

Standardization

Standardization relates to activities concerned with unity and consensus. The organizational leaders brought up standardization in this case study as it ensured performance through the reduction of complexity. In a chaotic environment leaders understand that the enhancement of predictability is desirable for financial and capacity forecasting accuracy (Ionescu & Vilag, 2015).

> *"[I will] establish [location] as a center of excellence for … workflows through bi-directional visibility, process alignment, and procedural standardization." (RH74)*

The beneficial attributes of capacity availability associated with standardization are (a) function unification, (b) the use of workflows, (c) scalability, (d) data efficacy, and (e) outcome predictability. Additional data (for a) suggests that unification enables the capability to update a system, to audit a system, to take a system to another facility, and to describe the system with common semantics. Additional data (for b) suggests that standardization as illustrated in Figure 1 is made possible in workflows through the deployment of work instructions and procedures that guide the activities in the operation. Standardization is also possible with inputs and outputs that have meaningful specifications that are universally known. Additional data (for c) suggests that scalability is important for, and a constraint for, growth. Additional data (for d) suggests that standardization enables the use of metrics. Without metrics, an operation cannot asses its performance status. Additional data (for e) suggests that predictability is a benefit of standardization that enables accurate and profit bearing pricing, the creation of tools, and consistency.

> *"[I will] partner with local leaders to drive unification, standardization, centralization, and operational efficiencies across key WW locations." (RH264)*

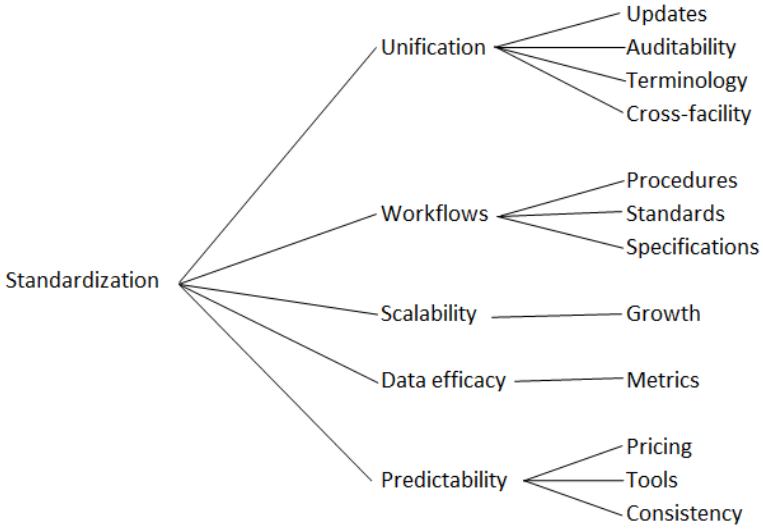

Figure 3. Standardization theme map. This figure maps standardization as a theme category into descriptive sub-groupings.

In summary, the data suggests that creating commonality and compatibility between workflows in all locations is desirable. Standardization, guided by documented knowledge, can achieve scalability. Performance predictability is encouraged by tools, automation, and performance monitoring. Unification of practice and semantic unity enable both monitoring and the discovery of enhancements. The following principles summarize the key findings of this section:

> Principle 1 (chaos reduction): Standardization is a complexity reduction technique that enhances scalability, capability, predictability, updatability, and transportability in a chaotic environment.
>
> Principle 2 (best practice): Standardizing on best practice includes both deploying a common language needed for more accurate profitability measurement and creating a platform for efficient organizational evolution.

Operational Performance

There is a positive impact of standardization on operational performance. In this study, six sections related to operational performance. The data suggested that the functional leader in the global supply chain must first understand measureable operational performance as an achievement in order to be an effective contributor to company growth.

> *"[I] work closely with facility leaders worldwide, to improve business metrics and operational data (lowering costs, increasing throughput, higher quality, etc.) on … [LOB] by transforming the way we perform various … services." (RH1)*
>
> *"[I] provide global operations support to local office leaders for the expansion of … services, with a focus on scalability and reliability." (RH22)*

According to the organizational leaders in the supply chain, the desirable attributes of operational performance are (a) security, (b) transparency, (c) problem solving, (d) financial aspects, (e) standardization on best practices, and (f) asset management. Additional data (for a) suggests that security is directly related to compliance with controls already in place. Even so, a business unit is continually taking advantage of the opportunity to enhance controls proactively in light of the dynamic threat-scape. Additional data (for b) suggests that transparency is bi-directional; the role of listener and speaker may alternate. This information exchange includes requirements or specifications, a performance scorecard that reflects quality and reliability, and the deployment and exposure of effective productivity metrics. Additional data (for c) suggests that problem solving is critical to revenue growth and includes resolving new workflow deployment issues, corrective actions when errors are made, the ability to discover opportunities, the ability to innovate, and the introduction of value-added products that solve customer problems. This is important to client's perception of the supply chain's abilities, as reflected in a client survey response.

"…the gap has now been plugged and was dealt with swiftly and professionally." (CS34)

Additional data (for d) includes financial aspects of business unit performance, including fair and acceptable revenue allocations, billing velocity that does not tie up cash, and standard financial reporting through a worldwide P&L that is timely and meaningful. Additional data (for e) suggests that standardizing on best practices are important to capture, create, model, and propagate growth horizontally across locations. Organizational leaders help unify operations around excellence, produce skills, and lead continuous process improvement. The data specifically suggests an appropriate methodology, lean sigma, as an example. Additional data (for f) suggests that assets are important to clients and must be tracked while they are in the custody of the supply chain. Additionally they have to be purged or immediately returned once they have been used. Otherwise, they are a security risk and a burden to the vault. Best practices apply to a variety of operational functions, all of which are the responsibility of horizontal leaders who push policy across locations to improve operational performance as illustrated in Figure 2 below.

"[I] partner with local leaders to drive unification, standardization, centralization and operational efficiencies across key WW … locations." (RH7)

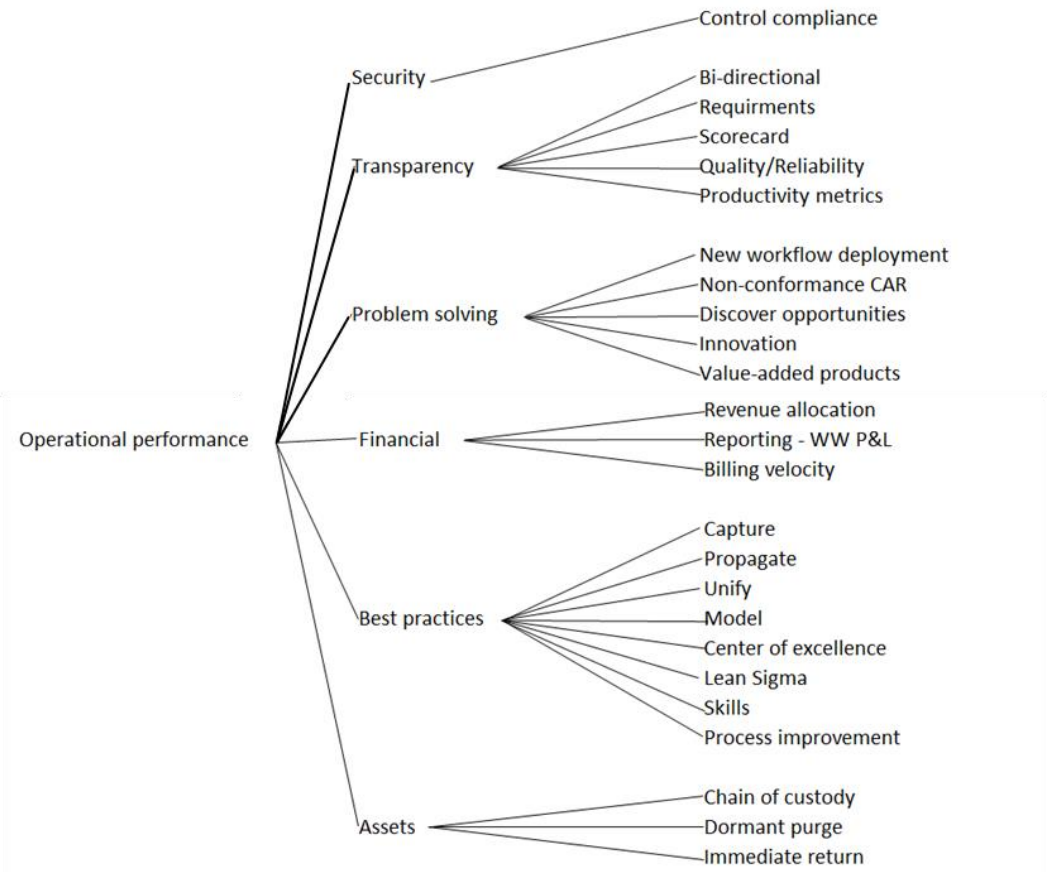

Figure 4. **Operational performance theme map. This figure maps operational performance as a theme category into descriptive sub-groupings.**

In summary, the data from the study suggests that operational performance is associated with practice compliance, transparency, and the ability to solve problems. The ability for a supply chain leader to be aware is enhanced by transparency to information that is relevant. Compliance allows for control and entropy mitigation. Controls and practices need to be optimized, effective, thoroughly deployed, and continuously evolving. Awareness and compliance provides a platform from which the organization can evolve. Ultimately, organizations should be seen as organic or complex adaptive systems (Burns & Stalker, 1992). Eisenhardt and Bhatia (2002) use complex adaptive systems theory to describe a naturalistic approach to organizing through the actions of a change agent. The gap between a competitive advantage and the current state is found through transparency and gap closure by the change agent. The ability of an organization to learn from issues and close these gaps promotes performance that stimulates profits and growth. As Freeman (2000) suggests, organizations propagate intentional action at the rate that the organization can absorb it. The following principles summarize the key findings of this section:

Principle 3 (liability prevention): Compliance with liability prevention controls must be at least as dynamic as the evolving threat-scape.

Principle 4 (resolution transparency): Transparency that leads to client and business problem resolution and innovation is multi-directional and speed sensitive.

Principle 5 (process grading): Financial and asset management processes should be graded on their accuracy and speed.

Principle 6 (propagation capacity): An appropriate methodology is needed to propagate best practices at the rate of absorptive capacity.

Leadership.

The force behind standardization is the location leader. Ultimately the supply chain leader is a stakeholder and must exhibit strong leadership skills to achieve the goals of the organization and the production network that supports it.

[I] partner with local leaders to develop strategic plans for … services with timeframes and measurements of improvement. The strategic plans should support the business goals of local facilities and be developed in coordination of each group and in alignment with the strategies/operations of the broader Global … team. (RH11)

The author has confirmed five related areas covering the remainder of the data points. The desirable attributes of leadership that emerged in the data, to achieve improved performance through standardization for supply chain stakeholders include (a) strategy, (b) learning management, (c) culture, and (d) alignment. Additional data (for a) suggests that horizontal leader strategy must include change momentum, deployment capability, and a global influence. Additional data (for b) suggests that learning management includes the creation of knowledge, curriculum development, and the execution of the training activities across all locations. Additional data (for c) suggests that alignment includes collaboration between leaders, with internal clients, and with external clients. Collaboration is also dependent on decision-making skills. Leaders in global supply chains need to be influential and effective in a network of dependent leaders. This efficacy requires well-honed leadership skills. Additional data (for d) suggests that the horizontal leader is responsible for the culture of the organization. This responsibility includes a culture that is attuned to meeting both client expectations and company goals (Kotter & Heskett, 1992). It is a culture of awareness so that effective decisions can be made. Alignment in the culture assures a ‘one-ness’ as experienced by the organization and the client. This culture is then both aligned and collaborative.

“[I provide] coordination … influence … [and] development [so we] will be more effective and efficient [as] we stay aligned with our priorities.” (RH131)

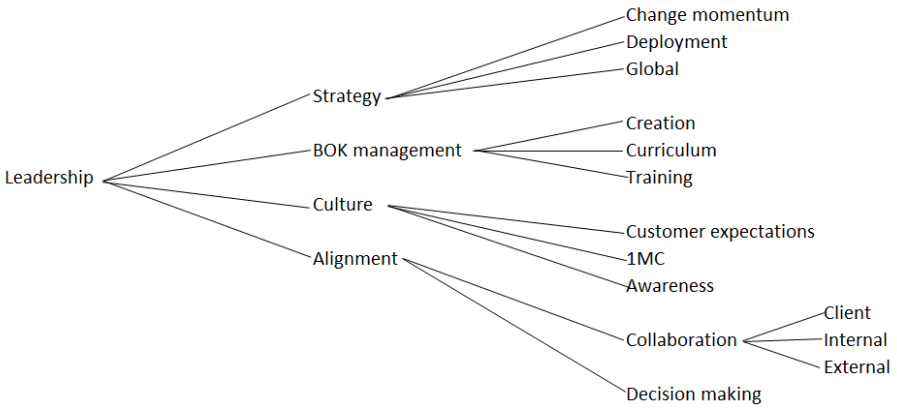

Figure 3. This figure maps leadership as a theme category into descriptive sub-groupings.

In summary, the data suggests that leadership is a strong component for supply chain success. Horizontal leaders, across locations that create similar products, have indicated from the data that they need to manage their business unit culture, exploit a managed body of knowledge, have alignment within their staff, and execute an effective strategy. The strategy that is deployed, along with the managed culture, need to be aligned with the values and norms of the global supply chain as a whole. Alignment facilitates speed with regard to decision making. Decision robustness and timing are enhanced through a culture of collaboration. The following principles summarize the key findings of this section:

Principle 7 (strategy momentum): The strategy for a global deployment must include consideration for change management momentum and the organization's capability to effectively deploy.

Principle 8 (augmented awareness): Leadership efficacy is dependent on environmental awareness augmented by a culture of purpose-driven learning.

II. CONCLUSION

Standardization reduces complexity and increases predictability in a global supply chain. This predictability can be exploited for capacity management and resource allocation to meet client demands and achieve cost expectations. On this foundation of predictability an aligned supply chain can expand, take on new workflows, and update technology. Best practices must be developed and be made known across the supply chain. Adoption of best practices must be expedient and effective. This includes the propagation of consensus based semantics to assure clarity from communication. Many characterizations are location of product specific. This inability to communicate is inertia for change efforts. Where complexity and chaos are reduced profitability can also be determined. The absence of chaos leads to other decisions that may be relevant to the success of the supply chain. A unit that is performing well based on measurements may be tasked with further volume improving the profitability of the enterprise. This performance understanding and predictability can also aid with organizational changes increasing the assurance that transitions will be successful. Chaos and complexity management challenges directly relate to liability and the ability of the organization to mitigate risk threats.

The organization is also in a better position to interact with clients when it is aligned. Confidence may be enhanced when there is success or failure. With success, more opportunities may present themselves as the supply chain meets client needs and can scale. Even in failure, standardization will help as the mitigation for the control weakness is discovered and remedied with confidence. This remedy may then be systematically applied across the supply chain where applicable. The ability to recover from a failure can increase client loyalty. The speed at which a correction can be put in place is enhanced where there is a reduction in complexity and chaos.

The life of assets is also more predictable where there is standardization. Asset performance can be measured leading to satisfaction with technology purchases or the realization that a need exists for enhancement. The argument is made clear when the ROI can be calculated across a more predictable life expectancy. The human-machine interface must also be predictable including the ability to learn how to exploit this interface. Operators are constantly challenged to manage the workflows assigned to them. Their routines are disrupted with technology changes and they must be given the opportunity to absorb the knowledge needed to manage a changed work environment (Clipa & Clipa, 2017; Scurtu, 2015). An advantage of technology may be an increased awareness of operational performance against a standard that is known and specific to each operation. Clearly, standardization, implemented through effective leadership, relates to operational performance.

III. REFERENCES

1. Burns, T. & Stalker, G. M. (1992). Mechanistic and organic systems. In J. M. Shafritz & J. S. Ott (Eds.), Classics of organizational theory (3rd ed., pp. 207-211). Pacific Grove, CA: Brooks/Cole Publishing.
2. Campbell, A. & Goold, M. (2000). The collaborative enterprise: Why links between business units often fail and how to make them work. New York, NY: Basic Books.
3. Clipa, C. I., & Clipa, A. M. (2017). The Convergence of Strategic Human Resource Management Practices: Republic of Moldova and European Union. Ecoforum Journal, 6(3).
4. Davis, R. & Thomas, L. G. (1993). Direct estimation of synergy, a new approach to the diversity-performance debate. Management Science, 39(11), 1334-1346.
5. Eisenhardt, K. M. & Bharia, M. M. (2002). Organization computation and complexity. In J. A. C. Baum (Ed.), Companion to Organizations. Malden, MA: Blackwell.
6. Freeman, W. J. (2000). How brains make up their minds. New York, NY: Columbia University Press.
7. Galbraith, J. R. (2009). Designing matrix organizations that actually work. San Francisco, CA: Jossey-Bass.
8. Grant, R. M. (1996). Toward a knowledge-based theory of the firm. Strategic Management Journal, 17(S2), 109-122.
9. Ionescu, G. H., & Vilag, R. D. (2015). Risk management, corporate governance and sustainable development. Ecoforum Journal, 4.
10. Kotter, J. P. & Heskett, J. L. (1992). Corporate culture and performance. New York, NY: The Free Press.
11. Loomer, S. & Harington, A. (2003). Business valuation-sharing synergies: Ignoring or over-estimating them is a disservice to vendors and acquirers. CA Magazine-Chartered Accountant, 136(4), 41-42.
12. Markides, C. C. & Williamson, P. J. (1994). Related diversification, core competencies and corporate performance. Strategic Management Journal, 15, 149-165.
13. Porter, M. E. (1985). Competitive advantage: Creating and sustaining superior performance. New York, NY: Free Press.
14. Scurtu, L. E. (2015). Knowledge and Their Shelf Life in the Business Cycle. Ecoforum Journal, 4.
15. Strikwerda, J. J. & Stoelhorst, J. W. (2009). The Emergence and Evolution of the Multidimensional Organization. California Management Review, 51(4), 11-31.
16. Zhou, Y. M. (2011). Synergy, coordination costs, and diversification choices. Strategic Management Journal, 32, 624-639.