



Organizational Context and Business Process Analysis

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ABSTRACT

Organizational context, comprising of deeply imbedded business models and mindsets, is widely neglected by process methodologies of transformational change. Case study research of two manufacturing firms confirmed that critical problems in business operations arising from sub-cultures could not be understood by existing business process analysis methodologies. Therefore these methodologies completely missed the phenomenon of 'causal patterns'.

The research is important in the era of ERP and ecommerce, where process change usually precedes its implementation and remains a major determinant of its success.

INTRODUCTION

The present research was motivated by the problems faced by the researcher while assisting the firm BoilerCo in its business process reengineering efforts. Existing methodologies and tools were found to be inadequate to capture the business process together with its rich context. This made it difficult, if not impossible, to capture important organizational behavioral phenomenon like causal patterns. Literature reveals that though business context is a major element [17], it is neglected by process change methodologies [23] Art 25. "Content is the focus of re-engineering... (where) content includes (elements) that dictate how processes function. Context on the other hand, comprises the deeply imbedded business models and mindsets that drive organizations... changes in context must precede any change in content" for any transformational change [25], pg 27. This issue has immediate significance as process reengineering continues to be popularly used with ERP implementations [1], [12] and with e-commerce implementations [13].

The research validates this concern. It attempts to establish the phenomenon of causal patterns originating in organizational sub-cultures, as contextual to business processes and effecting process performance.

LITERATURE REVIEW

The present research is about capturing organizational context to better understand business processes, and the literature on process analysis and reengineering is found to be most relevant. According to Venkatraman [24], the concept of business process arose as an adaptation of Porter's [21] 'value chain' driving the competitive advantage. Using Pettigrew's [19] definition, if the 'What' of change (content, the area of transformation) is business process, the 'Why' of change is derived from inner and outer context, then, the 'How' of change (process, actions, reactions and interactions of stakeholders) maybe be guided by process change methodologies.

However, the process-change literature "fails to fully recognize the human element as part of the change efforts" [23], Art 25. "Hammer [11], Davenport [6], Davenport and Short [7] and others talk of engineering processes, not people... the link with Taylorism is explicit", according to Hendry [15]. Hess and Oesterle [16], compare 12 different methodologies showing how they fail to address the issue of 'culture' or human context.

As "Organizational change is intensely personal and ... managing change means ... managing the emotional connections essential for any trans-

formation" [8], it was observed that 4 out of the top 5 reengineering implementation problems are related to insufficient understanding of human context and its neglect leading to BPR failure [9] pegged at 70% [10], [18]. Hence there is an urgent need to realize that "lasting organizational change always requires significant change in people" [5] and deal with human issues [26].

Most recently complex contextual patterns were found by Rueylin [22] explaining the failure of IT in a firm where the dynamics of IT failure were linked to chains of interlinking causes that were routed deep inside the subculture, attitudes and mindsets of the interacting functions. The most common subcultures are those that are based on the function [2], as [3] managers in organizations with different technologies or in different functional areas, like sales, production, research and development, personnel management and training, tend to exhibit systematically different personal orientations. The subculture is seen in terms of orientation — Sales department tends to be externally oriented, with emphasis on rapid customer responses and Production is internally focused, emphasizing technical efficiency and cost. These are their subcultures [4]. Handy [14] suggests organizations not only have subcultures, but are best served if different functions have different cultures to build deep functional strengths that can be defined and established through managerial action. Capturing information on specialization helps "predict where a group might pull apart on a particular issue and why" [20] pg 76.

RESEARCH METHOD

Case study research methodology was most found to be suitable as it addresses questions related to 'why' and 'how', while focusing on contemporary events [27]. It allows an investigation to "retain the holistic and meaningful characteristics of real-life events, such as organizational and managerial processes" [27]. Specific case requirements were constructed on the basis of certain derived criteria. Function-based organization was preferred compared to team-based. ConveyorCo satisfied the case requirements. It was selected among other organizations because an earlier study of ConveyorCo by others indicated that it might have operational problems that cannot be captured by processes mapping. To gather data, field questions were formulated that people in AA can relate to and answer. These were derived from 'Operational events to be studied' constructed from the 'research focus'. Taped in-depth field interviews were conducted with 25 decision-makers, mainly engineers, managers and top management.

Qualitative Data Analysis: Categorization, Index Development and Data Coding

NUD*IST (Non-numeric, Unstructured, Data – Indexing, Searching and Theorizing) software was used. Quality was ensured through Construct validity, Internal validity, External validity and Reliability tests.

Data preparation included transcription and preparing it for NUD*IST. The interview data was segregated using a coding schema created to provide/remove support to the phenomenon of causal patterns, their origin in sub-cultures and their effect on process performance. Two sets of nodes were created. First set addressed the objective of sub-cultures and business processes. The second set representing causes and effects, modeled the informal interactions giving rise to causal patterns. It

generated the causal patterns while providing support to each causal link.

RESEARCH RESULTS

ConveyorCo manufactures material conveyor systems and Special Purpose Process Machines (SPPMs), employing 150 people, mostly shop floor workers. Material conveyor systems move refrigerators, cement, sugar, fish, etc., in a plant. It is customized and customer involvement is high. Special Purpose Process Machines—SPPMs are for special processing of material, like acid baths, made for specific customer requirements. ConveyorCo faced problems of profitability and customer retention. It also faced problems of chronic delays in delivery, account receivables, supplier non-cooperation and many others. These problems affected the bottom-line.

The central part of the research results was the causal patterns, capturing the context. Prior to 1996 ConveyorCo had at least three sustained causal patterns bringing good market reputation, customer and supplier loyalty, and employee loyalty. By the year 2000 each virtuous causal patterns had turned into vicious ones, merely with change in external market context. As business processes remained unchanged, process analysis failed to understand the situation. This phenomenon is described below.

Prior to 1996, ConveyorCo enjoyed a 'virtuous' cycle, where Finance department made immediate payments to suppliers. This led to suppliers being more than willing to do business with ConveyorCo. Hence Purchase department had full control over its suppliers, helping them meet any urgent material requirement. With assured supplier cooperation, PPC/ Execution met customer delivery dates easily. The customers were satisfied and paid a premium to place an order on ConveyorCo. ConveyorCo was in a happy position of customers and suppliers vying to be with it. Employees preferred ConveyorCo for the good salaries. The employee turnover was less because of high job satisfaction.

Pre-1996, the suppliers got their payments the day after submitting their invoice — much before the supplier expected and much before the contracted date of payment, usually 30 days after invoice! Hence ConveyorCo exercised high influence over the suppliers. Suppliers were more than willing to support ConveyorCo when sometimes customers changed requirements. This helped in keeping the delivery schedule intact. Complete, in-time, high-quality deliveries endeared customers to ConveyorCo. Customers not only paid on time, but were also ready to pay a premium on their next PO in order to stay with ConveyorCo! The cash surplus Finance department was more than ready to make payments immediately, removing the need for scheduling payments in the future, and removing the work-item off their list instantly.

- **The Change:** In mid 1990s, liberalization policies in India lead to a growth of demand in the market. ConveyorCo's market reputation made it easy to get new orders and ConveyorCo decided to increase its scale of operations. It recruited new employees rapidly at all levels to take care of the growing number of orders accepted. The organization became too big and unwieldy for the management that was used to managing a small, known, close-knit, experienced group of people. The pattern broke at about 1996 end, when industry recession set in, dramatically shrinking the market size. The market was left with many sellers and too few buyers, and the buyers did not have enough money. Margins decreased and so did the order size and volume. More efforts were required to get an order and to execute it, leading to an increase in overhead burden. ConveyorCo's performance and profits deteriorated through both — market forces and internal weaknesses.

Organizational Subcultures

Finance Subculture

Finance had a high internal focus. Their activities and processes were highly internally oriented — making monthly, quarterly and yearly internal reports, financial transactions related suppliers and employees,

managing internal finances (investments) and financial decisions on purchases and payment terms on orders. They were responsible for healthy state of internal finances. As long as this is achieved, they were ready to give way to other people's reasonable demands. In ConveyorCo they exceeded suppliers expectations due to historical processes established at its time of inception, when it required good supplier cooperation to initiate business. However, the external focus present in terms of payments to suppliers and collections from customers were internally focused, as was seen when the market situation worsened. The situation demanded tight financial controls on cash out flows and the first casualty was supplier payments, as they constituted the single largest part of cash out-flow. The justifications — Direct contribution to the bottom-line in tough business situation, and, assistance from an unlikely quarters to help order acquisition — directly appealed to Top Management. However, the orientations were purely to save on working capital. As the customers started delaying/ refusing payments either due to their monetary problems or ConveyorCo's performance problems, it was very difficult for Finance to make the recovery through Sales. It was much easier instead to delay supplier payments, citing reasons of financial pressures. This localized internal view even gave them a feeling of superiority of being more effective when all other departments were failing.

Supplier Sub-Culture

As this was a complex, external entity, not many observations were made on this. There were few very high value A-class items being procured, leading to few big suppliers, who led to almost half the purchases. The rest were from local suppliers and fabricators. Many of the big suppliers did not supply without prior payments. Those allowing deferred payments were usually small suppliers. For many of these suppliers, material cost constituted a large part of their cost structure, with local manufacturing labor coming at a cheap rate. When ConveyorCo delayed payments, it immediately affected their business profitability, due to big working capital loans from banks. The suppliers, being highly vulnerable, were delighted at ConveyorCo treating them well. Cooperating with ConveyorCo on delivery fronts, as, adding a few more laborers, allocating better-trained laborers, helping them understand drawings, was a small, almost costless task as a repayment of favor. Any non-standard requests by ConveyorCo were taken as opportunities to prove their usefulness and get better performance ratings from ConveyorCo. As ConveyorCo delayed payments, suppliers after a while started non-cooperation to the extent that a some suppliers have begged for some advance payments to purchase material to start work on the order [now a routine request complied to by ConveyorCo], and once the payment was received, he adjusted it against earlier payments due from ConveyorCo and broke all contacts with ConveyorCo. This delayed order delivery as the whole process of locating a new supplier, negotiating and ordering had to be restarted. "Some suppliers are so very depend [dependent] on us, they cannot *live* [stressed by interviewee] without our order. But at the same time also they cannot live without payment also. They cry [about financial problems].....they beg. So I am in a problem."

Execution Subculture

They had the responsibility of ensuring that each order with its different characteristics of delivery terms, component specifications, etc, reached customer on-time, with quality and the customer was billed. Execution had the full view of the order execution across various departments situated at geographically different locations. They were also the ones to have this perspective across orders, helping them decide overall execution priorities and work allocation. They were the first people to be briefed on receiving an order. Having this broad perspective made them realize the problem areas of the organization. It leads them to sympathize with the top management as well as the customer. "Everybody needs to walk toward a common organizational goal" was a sentiment voiced only by the Execution. However, this often leads them to perceive other line functions with their narrow focus to be too parochial in their outlook and their work execution. "We have to come down to their level and talk." And yet, being one among the equals and

being non-specialists, they attracted very less attention or resources or even respect from others. They had high responsibility but no concomitant authority for order execution. "The design managers and the production managers, they dictate terms."

They discussed with other departments and decided on the time frames for delivery by others. As this requires them to get active collaboration from peers, they always make targets objective and customer oriented. "We try to show that it is not I, but the customer who wants (this)", so that they do not feel being ordered around by their peer. Their interpersonal approach was soft-spoken, sympathetic and of a problem-solving nature. However, their drive and the measure of their organizational performance was the invoicing targets. These targets were considered to the exclusion of everything else. Although otherwise they had the organizational perspective in mind, they actively violated it while ordering urgent procurements through costly transportation, when such could have been avoided through better planning and monitoring.

Customer Subculture

The researcher had no access to this entity, and its properties were imputed from its understanding gleaned from others. For customers, the material conveyor systems and special purpose process machines were an important part of the customer's plant. Though it was low cost, it had the ability to hold-up production and make customers face direct financial losses. They had a strong orientation of punishing bad deliveries. The customers came to ConveyorCo for their high-quality product, delivered in time as compared to any local vendor. However, the local vendors promised very low prices and very low delivery terms. In a booming economy of early 1990s, customers were more than ready to go for ConveyorCo, as their focus was not cost containment, but gaining greater market share, which required high quality, in-time outputs. ConveyorCos quality products helped customers build their quality. As the markets deteriorated, the focus changed from quality to cost considerations. The delivery period came under pressure, as the customer choose to lock-in the advance payments for a smaller duration. This lead to customers actively considering local players and pitching them against ConveyorCo at negotiations. This change in orientations of customers led to problems for ConveyorCo.

Interaction between these different functional orientations originating in past experience, training, daily work responsibilities and many such factors had led to virtuous causal patterns that turned vicious as the market situation changed. As each order and its requirements were unique, it was impossible for ConveyorCo to enforce any strict operating-level rules to stop negative behavior.

As ConveyorCo did not change its processes over the years, this critical aspect was completely missed out in pure process view of ConveyorCo. Observations in ConveyorCo firmly established existence of causal patterns and it established them as separate and distinct from business processes.

CONCLUSIONS

The research started with the observation that process analysis methodologies focus on processes and the application of information technology. Beyond giving a caveat that human issues need to be considered, they do not provide the wherewithal to capture, understand or, analyze it. This was vividly seen in ConveyorCo, where a large amount of important data could not be analyzed by existing process analysis methodologies. This data was extremely valuable in understanding the context of the business processes and the root of performance failures.

The research suggests revision in change methodologies that earlier gave only a caveat to consider the human context. This is important today as "The revolutionary impact of the Internet will be in dissolving boundaries between companies... Just as businesses reengineered internal processes to reduce inventory, overhead and cycle times, they will now reengineer externally by combining certain processes across enterprises to gain even bigger benefits." [13]. This is the virtual integration between organizations on non-core competence areas, like transporta-

Figure 1. ConveyorCo's Virtuous Causal Pattern - 1

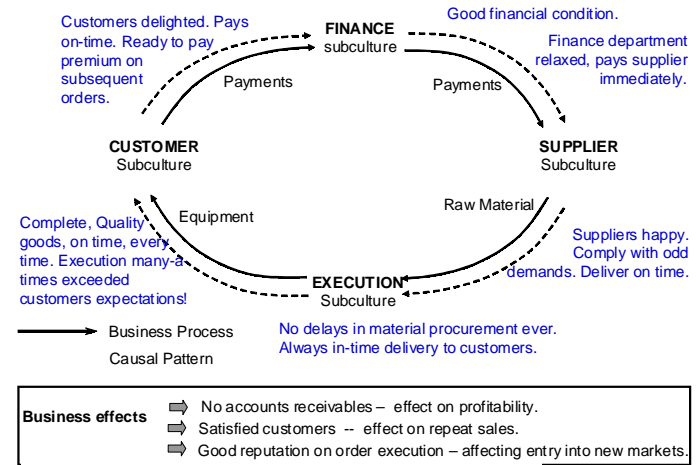
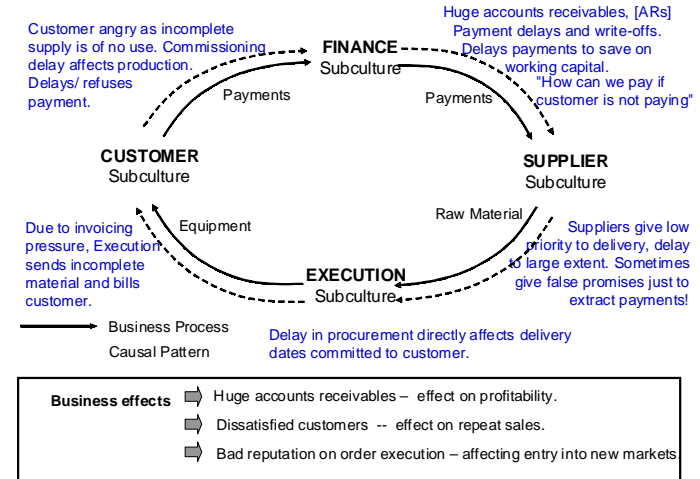


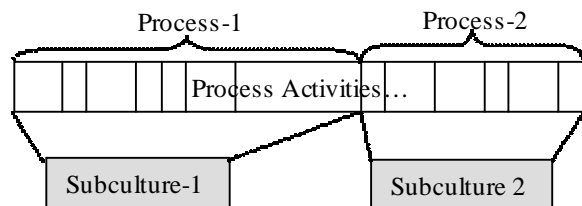
Figure 2. ConveyorCo's Vicious Causal Pattern



tion of their goods, financial accounting, etc. However the Sales/Marketing functions and the Purchase function have very different orientations or subcultures and can lead to as rapid a failure if the surrounding context (causal patterns) is not considered and integrated.

Another area is of determining process granularity for process change in ERP implementations. This is an important issue, as business processes are almost infinitely divisible [6], pg 27. According to Davenport [6], pg 28, a key source of process benefit is improving handoffs, and hence processes need to be broad enough. If a process output is minor, radically changing it is likely to produce sub-optimization and hence cause more harm than benefit. Davenport proposed from his experiences a number between 10 and 20 for identifying processes. There are no firm rules to decide on process boundaries. As BPR is often taken up before implementing ERP, this problem assumes serious proportions. With current research, process identification for effective organizational change becomes easy — the natural process boundary is the organizational sub-culture, as it is the sub-culture that supports and impedes process change.

The process boundaries are now clear and so are the handoffs. The process is not infinitely divisible, but divisible only in terms of sub-cultures and no further. The change efforts can now focus on a combination of business process and its human context. This leads to a possibility of superior ERP implementations.



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