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# USING A CASE STUDY TO TEST THE ROLE OF THREE KEY SOCIAL ENABLERS IN ERP IMPLEMENTATION

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## **Abstract**

*The literature indicates that three key social enablers—strong and committed leadership, open and honest communication, and a balanced and empowered implementation team—are necessary conditions/precursors for successful ERP implementation. In a longitudinal positivist case study, we find that, while all three enablers may contribute to ERP implementation success, only strong and committed leadership can be empirically established as a necessary condition. This presents a challenge to future ERP researchers for resolving apparent contradictions between the existing literature and the results of our analysis, and for investigating the nature of interactions among the leadership, communication, and team characteristics.*

## **1. INTRODUCTION**

Enterprise resource planning (ERP) systems, today, are considered to be “the price of entry for running a business” (Kumar and Van Hillegersberg 2000), and large growth rates in ERP implementation, especially among mid-sized and small-sized companies, are expected worldwide (Everdingen et al. 2000; Howle 2000; Oliver 1999; Zeichick 1999). Unfortunately, a significant proportion of ERP implementation projects do not succeed (e.g., Bingi et al. 1999; Ferranti 1998), often, because human aspects are “overlooked” (Mendel 1999) or “remain to be resolved” (Kumar and Van Hillegersberg 2000).

In this study, we focus on three key human/organizational issues or *social enablers* (strong and committed leadership, open and honest communication, and a balanced and empowered ERP implementation team) that have been suggested to be *necessary conditions for ERP implementation success* in the literature.<sup>1</sup> We examine the role of these enablers using an intensive longitudinal case study of a company that implemented an ERP system in three phases. Table 1 summarizes results of our case study, in which we evaluated the outcome of each phase and the presence or absence of the hypothesized necessary conditions. Our analysis reveals that the nature of communication and the characteristics of a team cannot be empirically established as “necessary conditions” (as implied in the literature), and this finding provides future ERP researchers with a puzzle regarding the inter-relationships among the three enablers that needs to be investigated.

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<sup>1</sup>We also consider the business process reengineering (BPR) literature, because ERP implementation usually involves BPR (Mousseau 1998; Scheer and Habermann 2000).

**Table 1. Results of the Deductive Case Study**

Social Enablers	Phase I: Changing organization structure and culture to prepare for ERP software introduction	Phase II: Implementing “core modules” of BASYS—the chosen ERP software	Phase III: Implementing the configurator, an “add-on module” of BASYS
	Outcome: <i>Success</i>	Outcome: <i>Success</i>	Outcome: <i>Failure</i>
Strong and committed leadership	<i>Present</i> at all relevant levels.	<i>Present</i> at the top level, process level, project level, and for the MIS function.	<i>Absent</i>
Open and honest communication	Almost <i>not present</i> between top management and rest of the organization; later, communication channels among functional units started opening up.	Great deal of communication <i>present</i> , although sometimes <i>selective and deceptive</i> . Not much communication among implementation team and shop floor workers.	Communication between implementers and other stakeholders almost <i>absent</i> .
Balanced and empowered team	<i>Absent</i> in the first part of Phase I; no “team” in the second part, although the individuals were somewhat empowered.	<i>Present</i> ; team carefully chosen; members were empowered.	<i>Not balanced</i> , somewhat empowered.

Our paper is organized as follows. In section 2, we develop the propositions regarding the three social enablers. In section 3, we discuss our methodology. In section 4, we describe our case study and test the propositions developed. In section 5, we discuss some implications for research and practice.

## 2. SOCIAL ENABLERS FOR ERP IMPLEMENTATION SUCCESS

Necessary conditions form the foundation for process theories (Markus and Robey 1988). Since it is advantageous to theorize about ERP implementations as a process theory (Koh et al. 2000), and since any functionalist theory/proposition (including process theory propositions) must be falsifiable (Lee 1991), we develop propositions that are stated as:

**<Outcome> can occur only if <condition> occurs.**

This statement is falsified, if <outcome> occurs without the occurrence of the <condition>; however, it is *not* falsified if the <condition> occurs but not the <outcome>, because the <condition> is necessary but not sufficient.

### 2.1 Leadership

Parr et al. (1999), in their study of factors “necessary for successful implementation” of ERP systems, report that all interviewees “stated categorically that management support was indispensable to the achievement of... success” in ERP implementation. Similarly, Willcocks and Sykes (2000) report that “senior level sponsorship, championship, support and participation” is one of the “critical enabling factors if ERP-supported business innovations are to stand a chance of succeeding.” Koh et al. also recognize “management commitment” as a necessary condition for success in all phases of an ERP implementation. Bingi et al. (1999) state that implementation “completely hinges on the strong, sustained commitment of the top management.” Mousseau (1998) views the project manager (PM) in ERP implementation as “the most critical resource,” and adds that a PM must be a “leader” who has “credibility,” possesses “technical knowledge” as well as “business knowledge,” and is able to motivate team members and resolve conflicts among stakeholders. Finally, Willcocks and Sykes state that the IT leadership needs to be “wide awake” and have the “credibility” to build strong/strategic partnerships with functional areas. Based on the above, we have the following proposition:

***P1: ERP implementation can be successful only if there is a strong and committed leadership guiding the initiative.***

## **2.2 Communication**

Communication issues are seen as central by a number of authors. In the study by Parr et al., 50% of the interviewees saw communication as a “necessary condition” for ERP success. Similarly, Mendel (1999) cites “communication breakdown” as a major “ERP project hurdle,” and Holland and Light (1999) see communication as a critical success factor. In the related BPR literature, Hammer and Stanton (1995) portray communication “over and above all their other challenges,” recommending principles including “be clear” and “honesty is the only policy.” Davenport (1993) provides similar guidance: “...communicate throughout the change program....Sensitive issues.. must be addressed honestly and openly.”

Thus, we have the following proposition:

***P2: ERP implementation can be successful only if there is open and honest communication among the stakeholders.***

## **2.3 Balanced and Empowered Implementation Team**

In the study by Parr et al., 80% of the interviewees indicated that a balanced implementation team was a “necessary condition” for ERP implementation success. Willcocks and Sykes concluded that successful ERP implementation requires a balanced multifunctional team that is composed of members with a variety of skills from different areas. These team members must be active until the conclusion of the project (Ferranti 1998).

It is also important to empower the team members for self-management (Mumford 1995) because this increases “user involvement,” a necessary condition for ERP success (Koh et al. 2000). Thus, we have the following proposition:

***P3: ERP implementation can be successful only if the implementation team is empowered and balanced.***

## **3. METHODOLOGY**

We used a critical embedded single-case design within the positivist tradition (Yin 1994). The first author of this study collected the bulk of our data by conducting interviews with several stakeholders (Table 2) using an evolving protocol. The first author also used direct observations, company documents, e-mails, and informal interviews to triangulate our findings.

Consistent with the hypothetico-deductive logic, we utilized well-defined falsifiable propositions, and deductively tested them using “pattern matching” (Yin 1994). We used published methodological guidelines (Lee 1989; Yin 1994) to ensure validity and reliability (see Table 3).

## **4. TESTING THE PROPOSITIONS IN THE CASE STUDY**

In this section, we first describe the company background, and then test the three propositions developed above.

### **4.1 The Company Background**

MANCO is a well-established company that, over its three decades of existence, had earned a worldwide reputation in the air-pollution and dust-collection markets.

Unfortunately, MANCO had become increasingly dysfunctional in recent years, primarily due to the “territorial” culture created and encouraged by the Vice Presidents (VPs) of Engineering, Sales, and Operations. There was little sharing of information among the functional areas because of territorial attitudes and poor technological infrastructure. The resulting coordination problems led to unreasonable lead-times and deteriorating quality of products.

**Table 2. Interview Statistics**

<b>Interviewee</b>	<b>Number of formal Interviews<sup>a</sup></b>	<b>Number of Informal Interactions (including telephone interviews/ conversations, e-mail exchanges)</b>
1. CEO	1	0
2. Senior Vice President	1	2
3. Plant Manager	2 + 1	Few
4. MIS Manager	3 + 2	Several + 1
5. Systems Analyst (1)	2 + 1	Few + 1
6. Quality Assurance Manager	2	0
7. Production Planning Manager	5	Several
8. Human Resources Manager	1	0
9. Purchasing agent	2 + 1	2
10. Engineering Manager	2	Few
11. Accountant	1	0
12. Manufacturing Engineer	Requested, didn't materialize	1
13. Productivity Facilitator	3 + 1	Several
14. Consultant (Vendor)	1	2
15. Consultant (Academic)	0	Several
16. Exports Coordinator	1	1
17. Sales Administrator	1 + 1	1
18. Systems Analyst (2)	0	0 + 2
19. Shop floor Worker (1)	+ 1	
20. Shop floor Worker (2)	0	1

<sup>a</sup>The numbers after '+' indicate the number of interviews/interactions after the core modules of BASYS had been implemented.

Figure 1 shows the process flows involved in custom-order processing, MANCO's core business process (partially described below).

Sales agents would bring orders to the Sales department. At this point, Sales would (1) make the commission payable to the agent for the order and (2) make photo-copies of the order and forward one copy (the "production copy") to Production Planning and another copy (the "shipper") to Accounting. On receiving the "shipper," Accounting would initiate a credit-check on the customer. Only after a successful credit check, which could potentially take up to 21 days, would the shipper be passed to Production Planning from Accounting. Meanwhile, the production copy would have reached Production Planning, which would examine the order and send a memo back to Sales with the estimated shipping date. Several memos had to be exchanged between Sales and Production Planning before a mutually acceptable date could be finalized.

When the shipper (credit approved) finally arrived at Production Planning, the production copy of the order would be forwarded to Engineering, which was required to provide "releases" (i.e., revised bill-of-materials and drawings) as soon as possible so that Manufacturing could meet the shipping deadline. Next, Production Planning would generate the "planning guide"—a step-by-step guide for manufacturing the custom product based on the releases and on purchasing delivery information received from Purchasing. Thereafter, Production Planning would issue a "schedule" allocating machines and labor, and provide necessary deadlines. The planning guide, schedule, shipper, and purchase delivery information would then be forwarded to Manufacturing. In case of incomplete product specifications, Production Planning would send memos to Sales, and sales personnel would, jointly with the customer, provide necessary information, based on which the planning guide or schedule could be revised. If Manufacturing required any clarifications regarding the "releases," it would notify the Production Planning function, which would then send official memos to Engineering. Likewise, clarifications from Engineering, in the form of official memos and documents, would be routed through Production Planning (unnecessarily) on their way back to Manufacturing.

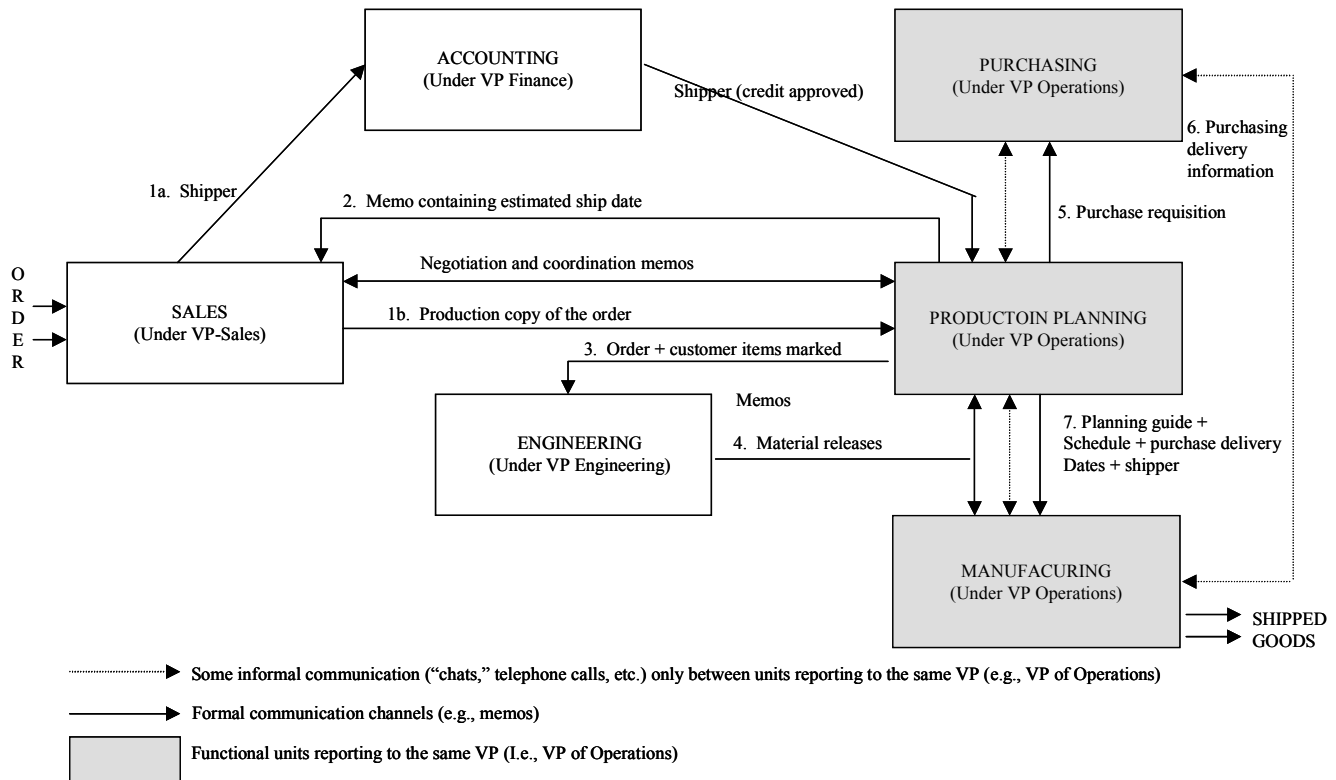


Figure 1. Custom Order Processing at MANCO Before the ERP Initiative Was Undertaken

Table 3. Rigor of the Study (Positivist Criteria)

Criterion	Guidelines from the literature (Lee 1989; Yin 1994)	Whether/how the guidelines were followed in the study
<b>Internal validity</b>	Pattern Matching	Predictions derived from falsifiable propositions were matched with empirical patterns. Also, “natural controls” used wherever feasible.
	Explanation-building	Not relevant since, in this paper, we are testing propositions.
<b>Construct validity</b>	Using multiple sources of evidence	Multiple interviews with multiple stakeholders at different points of the project; other modes of interaction—over dinner, e-mail, telephone, etc.; documentary evidence
	Having key informants review the case study report	The Production Planning Manager, a Systems Analyst, and the MIS Manager reviewed drafts of the case study; also other forms of “member checking.”
	Establish a chain of evidence	Detailed processual narrative developed; some cross-referencing with transcripts
<b>Reliability</b>	Creating/maintaining a case study database	<ul style="list-style-type: none"> <li>• Case study notes (annotated transcripts)</li> <li>• Case study documents (questionnaires, brochures, summary tables)</li> <li>• Case narrative</li> </ul>
	Developing a case study protocol	An evolving set of questionnaires; literature review; proposal; etc.
<b>External validity</b>	Increasing degrees of freedom	<ul style="list-style-type: none"> <li>• Multiple observations for each prediction</li> <li>• Multiple (three) embedded cases</li> <li>• However, no competing theories tested</li> </ul>
	Applying replication logic (not sampling logic)	Same propositions tested in each of the three phases; each phase can be seen as a separate study where we test different instantiations of the same proposition.

The dysfunctional structure and culture of MANCO significantly contributed to the ineffectiveness of the process. For example, the Sales agents/Sales managers were evaluated on bookings rather than on shippings. Consequently, Sales had little incentive to provide complete specifications to Manufacturing in the production copy or to respond to clarification requests promptly. Other difficulties arose because of the animosity between Production Planning and Engineering. Production Planning would unilaterally set release deadlines for Engineering that were often not compatible with the engineers' schedules. In addition to being annoyed with the deadlines, the engineers perceived the creation of releases as not contributing to their mission of developing new products and, consequently, provided late and sometimes inaccurate releases.

Another problem was that no department knew the status of an order until it was its turn to process it. For example, while Accounting was performing the credit check, Engineering and Manufacturing would not know that such an order had actually been placed, and thus could not schedule their personnel in advance, incurring tremendous overtime expenses for meeting deadlines that suddenly appeared without warning.

Finally, MANCO's processes were swamped with a "sea" of paperwork generated by organizational members to cover for the lack of trust as well as the absence of appropriate technological infrastructure.

## 4.2 The Initiative

The *first phase* of the initiative at MANCO, in preparation for the implementation of the ERP system, involved the recognition of territorial walls in the organization and dismantling them through the implementation of radical changes in the organizational structure, the reward systems, and the organizational culture.

The *second phase*, involved information and business process requirements analysis, ERP package selection, IT infrastructure preparation, and the implementation of "core modules" of the chosen ERP package (BASYS) by an implementation team.

The *third phase* involved the implementation of a "configurator," an add-on module of BASYS with the capability to transform order processing by facilitating the configuration of products on-line and the generation of bills-of-material and routings pertaining to the configured order.

To summarize, Phase I focused on social and cultural issues, Phase II focused on the introduction of the core technology, and Phase III on technology enhancement. It is important to note that these phases reflect how stakeholders at MANCO themselves viewed the stages of ERP implementation, not how the IS literature would view implementation.

## 4.3 An Evaluation of MANCO's ERP Implementation

Evaluation of reengineering (whether or not using ERP systems) is a complex activity, and no universally accepted criteria exist for such evaluations (Boudreau and Robey 1996; Jones 1994). Further, success/failure of an ERP system is multi-dimensional, and the evaluation criteria tend to vary with the phase of implementation (Markus and Tanis 2000).

Lyytinen and Hirschheim's (1987) notion of "expectation failure" suggests that an assessment of ERP implementation success requires the recognition of the existence of multiple stakeholders having different values, levels of power, and interests and, hence, different expectations at different points of time. Consistent with the notion of expectation failure, and with our positivist approach, we consider implementation to be successful if different stakeholders *state* or *indicate through actions* that such was the case during the different phases. Our evaluation may be summarized as follows:

**Phase I** (Organizational structure and culture change): *Successful*

**Phase II** (Implementation of core modules of the selected ERP package): *Successful*

**Phase III** (Configurator implementation): *Not successful*

We provide evidence in support of our evaluation in Table 4.

## 4.4 Deductive Testing

***PI: ERP implementation can be successful only if there is a strong and committed leadership guiding the initiative.***

**Table 4. Evidence Regarding the Outcome of Each Phase**

Phase I Outcome: Success	Phase II Outcome: Success	Phase III Outcome: Failure
<p><b>SAMPLE QUOTATIONS:</b></p> <p><b>The Plant manager:</b> <i>Even though the process is the same... the culture and value systems changed remarkably. We started focusing on global goals, that being serving the customer.</i></p> <p><b>The Senior VP:</b> <i>In the fiscal year that just ended...we said, let us ship the sales forecast and let us try to under-spend the operating budget, which we did, and we were able to have a record year.</i></p> <p><b>OTHER EVIDENCE</b></p> <ul style="list-style-type: none"> <li>• The Engineering manager walking down to the Production Planning area for a “chat” with the planners</li> <li>• The Production Planning manager visiting the Purchasing agent to informally negotiate the purchase delivery date.</li> <li>• HR manager estimated that over 50% of the shop floor workers were positively affected by the changes.</li> </ul>	<p><b>SAMPLE QUOTATIONS:</b></p> <p><b>Production Planning manager:</b> <i>When we started the project, we needed to change our system and our organization’s processes ASAP....We are online with “basic features” within the time-period...in future, as we make improvements, I don’t expect any conflict among departments...I am confident that this project, overall, is a success.</i></p> <p><b>The Productivity Facilitator:</b> <i>Our number one priority was that outside people [customers] should not be affected, we wanted to run the business as usual....So we have definitely succeeded in that and we did not have a bad month in shipment or anything...I would say that the resistance level was pretty much low in all the departments.</i></p> <p><b>The Purchasing Agent:</b> <i>The entire project of integrating BASYS, the new environment, the new technology has been a success....We definitely are more integrated together from a systematic standpoint...we have more capability on-line to access information, gather data....My personal job has become easier....It allows me to spend more time doing other purchasing related functions, negotiating, vendor relations.</i></p> <p><b>A shop floor worker:</b> <i>As far as BASYS versus what we had before, it was a step for the better....A lot of these people [other workers] never sat down in front of a terminal before...it was hard for them to understand, but...what we have is a step toward good.</i></p> <p><b>A Sales Administrator:</b> <i>Sales can pull up sales information and use for forecasting.</i></p> <p><b>A systems analyst:</b> <i>Even though you have a spectrum of reactions, it [BASYS] has been accepted. The bottom line is that it was a successful implementation...people are using it.</i></p> <p><b>The MIS manager:</b> <i>All the modules that we had intended to put in place are being used.</i></p>	<p><b>SAMPLE QUOTATIONS:</b></p> <p><b>The Plant Manager:</b> <i>We...under-estimated the complexity of the configurator plus two key people who were involved in BASYS are no longer here. So it hurt the [configurator] implementation.</i></p> <p><b>A Purchasing Agent:</b> <i>I don’t know anything about the configurator. I hear it is coming, but have not seen it.</i></p> <p><b>The former MIS manager</b> (regarding the Purchasing Manager, who was charged with clearing some roadblocks to configurator implementation): <i>[His] personality being the way it is, people don’t have a lot of confidence... so I think what should have had a good success... did not make any change...who ever is trying to guide this has to have people’s respect.</i></p> <p><b>A Systems analyst:</b> <i>[The] last I heard, the configurator was still not on-line.</i></p> <p><b>OTHER EVIDENCE</b></p> <ul style="list-style-type: none"> <li>• Configurator implementation viewed as an “Engineering” project; other stakeholders have lost interest.</li> <li>• The BOMs being used to implement the configurator cannot be used by any department other than Engineering.</li> <li>• The configurator not implemented three years after the original deadline.</li> </ul>

MANCO’s CEO Tom came to realize that the company’s mediocrity was due to the inefficient processes that needed to be improved using ERP. Yet, before a system could benefit the company, he realized that the territorial wars between the different functional areas, created and fuelled by three of the Vice Presidents (VPs), would have to be rooted out. In Phase I, Tom directed his attention to solving the territorialism problem by dismissing the VPs who were harboring this attitude. Next, Tom modified the structure of the organization, creating a new position of a Senior VP (Operations) and appointing a suitable person, John, who would be the “owner” for order processing, MANCO’s core business process. All functional areas involved in order processing were made accountable to John. The above moves were carried out with decisiveness and firmness, indicating that leadership was



strong. Tom also appeared committed to his vision of creating a cooperative work environment as a foundation for ERP implementation. In the following months, with the assistance of some hand-picked managers, Tom instituted programs (quality, profit-sharing, etc.) to help foster a cooperative culture in MANCO, and personally monitored the progress. John (the Senior VP) also proved to be a strong and committed leader and pursued Tom's vision with enthusiasm.

Similar strong and committed leadership was in evidence in different functional areas. For example, the *Production Planning manager* explained his stern approach to managing his planners, emphasizing his commitment to cross-functional cooperation:

*I made it very clear to the planners that we have to be very honest, that is the key.... no games, we cannot play games...*

Phase II, which involved the acquisition and implementation of the ERP system, was led by the MIS manager (Judith), whom the CEO and (especially) the Senior VP unconditionally supported throughout this phase:

*Judith has my full support...I go around and whenever somebody gets in her way, I try to smooth that around...I've been kind of cavalier about it. I have said in meetings...get in her way, and I'll kill you.*

A Systems analyst's comments also showed the firm commitment of the leadership towards BASYS implementation:

*The general message was that we are going to use this and this is the way it is going to be, get on board or you will get behind. Most people after their initial fear...adapted to it.*

The Plant manager was convinced that the project would be successful, citing leadership as the primary reason:

*This project will succeed because we have the senior VP of Operations who is in-charge of all the disciplines involved...he has stated that it will succeed...if you have the guy at the top saying that it will succeed, then us soldiers will make sure that it will succeed...because that has been the edict from the top.*

The MIS manager, who also served as the project manager (PM), enjoyed organization-wide credibility and was seen as capable of balancing technical and organizational concerns, and was described by the Quality Assurance manager as a "real authority" whose judgements and insights were well-respected by all. The Plant manager also credited the MIS manager's participative but firm leadership style for the success of the implementation in this phase.

Unfortunately, during Phase III, the leadership for the organization as well as for the configurator implementation fell into complete disarray. MANCO had been acquired by another company (referred to as "the Corporation"), Tom (the CEO) had left the company and had been replaced by John (the Senior VP). The Plant manager, a major supporter of John earlier, expressed his dissatisfaction with John's leadership:

*He thought that we can run the business without a VP of operations. The gridlock...started to come back and reoccur, and John started to become very autocratic....Our president does not know what needs to be done.*

With John's agenda dominated by other concerns, he appointed a former Purchasing manager to sort out problems in the inventory, BOM, and labor reporting, that needed to be addressed before the configurator could be implemented. In Judith's view, the former Purchasing manager could not provide effective leadership to the initiative:

*[His] personality being the way it is, people don't have a lot of confidence. Upper management does, but the people he works with do not...who ever is trying to guide this has to have people's respect.*

To add to the leadership problems plaguing the configurator implementation, Judith, in recognition for her excellent leadership in Phase II of the initiative, was promoted to the position of Corporate MIS manager, and placed in charge of implementing ERP throughout the Corporation. With her departure from MANCO, the ERP team members stopped meeting, and the MIS function was reduced to the role of maintaining the computing infrastructure. The responsibility of the configurator implementation was thrust on two engineers who had not been part of the initiative until this time.

Eventually, John hired a VP (Operations) and also put him in charge of MIS. Unfortunately, the new VP's management style was not well received by the MIS department. For example, a Systems analyst said that the VP "didn't know much about IS but thought he did." Another Systems analyst expressed his dissatisfaction:

*Judith's management style was to treat you as an adult....As long as things are on schedule...working OK, she was very open rank, and you decide...how you go about doing it. There is a change now....The new vice president of Operations... who IS was now reporting to, has no experience with running an IS department.... He preferred to bark orders rather than listen to what the problems were.*

Also, the new VP showed little interest in the configurator implementation, which was by now being viewed as an Engineering project that did not really concern Operations or MIS. The Productivity facilitator summarized the situation:

*We lost our leadership and our key figures, and so people tend to go separate ways.*

It is clear that strong and committed leadership was present in Phases I and II, but not in III. Given that Phases I and II were successful and Phase III was unsuccessful, we conclude that the empirical patterns match those suggested by proposition P1. Thus, P1 survives empirical testing.

***P2: ERP implementation can be successful only if there is open and honest communication among the stakeholders.***

The dismissal/replacement of three VPs was done swiftly and without much discussion with other members of the organization. According to our informants, the official “story” introduced into the organization grapevine by the HR department was that the VP’s were moving on to “better opportunities.” Based on this, the communication in MANCO during this earlier part of Phase I of the initiative cannot be characterized as “open and honest.”

In the latter part of Phase I as well as during Phase II, issues about restructuring and the ERP implementation and their implications were being addressed in the company-wide profit-sharing meetings. We found that the Plant manager, who was aware of the potential negative impacts of the new ERP system on the shop floor workers, was planning to address these workers during the profit-sharing meetings in a way that would amplify the potential benefits (e.g., “their take-home pay can go up with them working fewer hours” while completely omitting any of the expected negative effects (e.g., anxiety because “big brother is watching them too much”).

However, there was some evidence indicating that communication among functional areas was becoming open and honest. For example, the Production Planning manager, reflecting on the vastly improved cross-functional communication, said:

*It all goes back to trust and honesty and truthful communication...if you don't have this foundation, whatever system you have will not work.*

In Phase II of the initiative, most of the information regarding the progress of the project was being communicated, rather passively, to the employees through announcements and project status reviews displayed on a notice board. The MIS manager explained the implementation team’s communication strategy:

*We have a bulletin board down by the cafeteria...to communicate what's going on with the rest of the company. We decided to do that with a very simple graphical chart....we elected not to put any dates....if something slipped...we didn't want people thinking, well, there is something wrong...it is failing or whatever.*

Our own observations of the infrequent updates to the bulletin board (e.g., it had not been updated for over a month in one instance, even though it was to be updated weekly) also indicated to us that this mode of communication was not designed to communicate openly and honestly. Instead, it served to create a facade that the ERP implementation team was diligently communicating its progress to the rest of the organization.

The instances presented above demonstrate that communication at MANCO during the initiative was not open and honest, but selective and deceptive. However, we did find that the communication among the implementation team members and between top management and the implementation team, during the latter part of Phase I and throughout Phase II, was fairly open and honest. There was also evidence indicating open and honest communication among representatives of functional areas. For example, according to the Productivity facilitator:

*Good people in different departments communicated and coordinated, and are very understanding of what others' problems are.*

In Phase III, communication between John (the former Senior VP who had become the CEO) and middle management suffered greatly. Even the Plant manager described the CEO as “autocratic.” The Plant manager also observed that the gridlock due to lack of trust and communication among functional areas (which was addressed during Phase I) was again becoming apparent. The new VP (Operations) was described as being “from the old school” who “preferred to bark orders rather than listen to what the problems were.” The person coordinating the streamlining of the BOM, inventory, and labor as the foundation for the configurator database, was also described as uncommunicative. Further, with the implementation team no longer meeting after the promotion of Judith (MANCO’s former MIS manager), there was very little communication regarding the configurator in the organization, or between the two engineers charged with configurator implementation and the BASYS implementation team members. This point was obvious from the remark of a Purchasing agent (an active team member in Phase II), who said “I don’t know anything about the configurator,” and also from the comments of a Systems analyst who discussed how Sales had completely incorrect expectations regarding the configurator’s capabilities.

To summarize, while communication regarding the initiative was present in the organization during Phases I (latter half) and II, it was not predominantly honest or even open. In Phase III, there was almost no communication regarding the configurator, and it was apparent that the honesty and trust in the cross-functional communication that had been so carefully nurtured during the first two phases was declining.

Based on evidence from Phases I and II, we conclude that open and honest communication is not a necessary condition for successful implementation (i.e., the proposition is falsified). The evidence in Phase III was insufficient to test the proposition, although data does indirectly suggest that lack of communication could have negatively influenced the configurator implementation.

***P3: ERP implementation can be successful only if the implementation team is empowered and balanced.***

The first part of Phase I (which involved replacing the three VPs) was executed *solely* by the CEO (Tom). This reorganization was done without much discussion with other organizational members. The only other person who had peripheral involvement was the HR manager, who facilitated the transition by providing job-search assistance to one of the VPs, and working out adequate compensation to ensure that the VPs parted MANCO without much ill-will. Tom also personally envisaged and executed well thought out changes in the organization structure to prevent the resurgence of territorialism in the organization.

Soon after reengineering the organization at the top, Tom offered the Production manager (“Stan”) the position of Plant manager, and gave him a “clean sheet” assignment of reorganizing the shop floor. Stan accepted the position, initiated some reorganization in the shop floor, and also appointed a new Production Planning manager, who would help him manage the critical production planning function.

While the organization was adjusting to the structural changes, a serious attempt to change MANCO’s culture was initiated. For example, the Quality manager, was asked to start a program to instill a sense of quality in MANCO. Around this time, Tom defined the vision for MANCO as “Enterprise Agility,” and also formulated the mission statement.

To summarize, the first part of Phase I did not involve any team since the *CEO himself* implemented the change. Thereafter, the CEO did involve the Senior VP, the Quality manager, and the new Plant manager who, in turn, brought onboard the Production Planning manager, to help in reorganizing the structure and transforming the culture of MANCO. In the second part of Phase I, while the CEO did involve a few individuals to help him, they were not really part of a team since they were not working collaboratively, but rather implementing changes in specific organizational areas under the direct supervision of the CEO. Also, the representation in the group was not balanced in the sense that many important functional-units/levels were not represented.

Phase II was spearheaded by the ERP implementation team. There was careful attention given to the selection of the team, reflecting the fact that the leaders of the initiative recognized the importance of creating a well-balanced team with competent members. The selection of team members was carried out in two phases: first, the MIS manager obtained nominations for potential team members from each functional area; and second, the nominees were evaluated based on their understanding of their areas’ functions, the inter-relationships among different functional areas, their ability to work constructively as a group, and their ability to represent their areas’ special interests. As observers in the team meetings, we could sense the importance of bringing together a group of people from different functional areas. It was obvious in many cases that the absence of a team member from any functional area would have resulted in the implementation of the business process that would violate some fundamental assumptions of a functional area not represented.

The fact that the implementation team’s recommendations regarding process, procedures, and technology, developed through a collaborative effort among team members, was respected and acted upon by MANCO’s top management indicates that the team

was empowered. The only constraint set by the CEO was that the ERP system selected should not require significant customization. Emphasizing the importance of empowering a group to rethink the business and select/implement the relevant information system, the Plant manager of MANCO had said in an interview:

*I guess what that boils down to is participation in the project....Judith (the MIS Manager) was in-charge of the project...but she formed teams...that is the second biggest reason that it (the project) will succeed...because the people who are going to make it succeed were involved in the decision.*

During Phase III, the implementation team had ceased to function and the configurator implementation had been delegated to two (relatively junior) engineers, who had not been players in the initiative earlier. They were left on their own to complete the project, without regular supervision of a project manager or a senior manager, or without regularly scheduled interaction with representatives of other functional areas or the implementation team members. Thus, the configurator, which was the heart of BASYS as far as making customized order processing significantly efficient, came to be seen as an Engineering project. The bills-of-material (BOM) created by the two engineers were useful for engineers (designers), but were different from the ones used by Manufacturing. Lacking a broad view of the organization's business processes, and the political credibility or patronage from the top management, the two engineers chose not to resolve the discrepancies between the two BOMs, which eventually, became the fundamental reason why the configurator implementation has not yet been completed satisfactorily.

The evidence from Phase II does not contradict P3. The evidence from Phase III, while insufficient to test P3, suggests that not having broad representation on the team may have contributed to the failure of the configurator implementation. However, the evidence from Phase I indicates that a balanced and empowered team is not a necessary condition for implementation success, thus falsifying P3.

## 5. CONCLUSION

In attempting to build a foundation for a process theory of successful ERP implementation, we discerned three propositions (P1, P2, and P3 in section 3) from the ERP literature.

Our case analysis validated proposition P1. The practical implication of this finding is that *strong and committed leadership* at the top management level, at the project management level, and of the IS function **must** be given significant priority *throughout* the life of an ERP implementation project. However, our study refuted P2 and P3, thereby showing that *open and honest communication*, and *balanced and empowered teams* (while possibly helpful) are not generalizable necessary conditions for successful ERP implementation as indicated in the literature.<sup>2</sup>

This contradiction between the literature and the empirical evidence from the MANCO case study presents a challenge to future ERP researchers for investigating, perhaps interpretively, as Lee (1991) suggests, the nature of interactions among leadership, communication, and the implementation team characteristics during an ERP implementation initiative.

Also, the finding that the first two phases of MANCO's ERP initiative were successful even though appropriate communication and team characteristics were absent/marginally present, suggests the need for further research on contextual factors that, perhaps, allow strong and committed leadership to compensate for the absence of other "key" social enablers.

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<sup>2</sup>A contrary perspective appears in the recent work of Markus and Tanis (2000). They show that different necessary conditions enable different phases. Hence, a major issue for future empirical research to resolve is whether a necessary enabling condition pertains with a particular phase or across phases.

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