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SYMBOLIC PROCESSES IN ERP VERSUS "LEGACY" SYSTEM SUPPORT

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Abstract

Being hailed as possessing the ability to "drive effective business reengineering and management of core and support processes", it is not surprising that Enterprise Resource Planning (ERP) systems have been adopted by more than 60% of Fortune 500 companies as at the turn of the century. In contrast, negative connotations have been commonly known to be attached to legacy systems and in-house developed systems. But yet, some of these legacy systems are not replaced when companies adopt ERP solutions while in-house systems still continue to be developed. This research employs symbolic interactionism as the informing theoretical perspective in an ethnography study of a large government authority in Singapore. Our findings surprisingly indicate that the IS professionals supporting the systems tend to attach rather negative symbols to their SAP system, while viewing their legacy system and in-house software development work in a more favorable light. In this paper, we first describe the different symbolism that has been attached over the years to the ERP vis-à-vis legacy system. We then highlight how certain of the early symbols gradually got sedimented over time, while others did not exhibit similar permanence and presence. As a result of such symbolic realities, we demonstrate the consequent differences in attitudes of the staff involved in ERP support vis-à-vis legacy and in-house system support.

Keywords: Symbolic interactionism, Enterprise Resource Planning (ERP), legacy system.

1 INTRODUCTION

ERP solutions are commercial software packages ("integrated suites") that enable the integration of transaction oriented data and business processes throughout an organization (Davenport 1998). By 2000, more than 60% of Fortune 500 companies have adopted ERP packages and this is a trend that is increasingly embraced by small- and medium-sized enterprises (SMEs) as they realize the cost effectiveness and competitive necessity to follow suit (Klaus, 2000). Boston-based AMR Research estimates that the ERP market will grow from $19.8 billion to $31.4 billion in 2006 at a compound annual growth rate of 10 percent (Surmacz, 2002). This widespread adoption is largely the result of ERP packages being hailed as possessing the ability to "drive effective business reengineering and management of core and support processes" (Al Mashari, 2002). In fact, Davenport (1998) describes them as being the "most important development in the corporate use of information technology in the 1990s".

In contrast, legacy systems have been described as having a "consequentially negative impact on competitiveness" (Brodie and Stonebraker, 1995) while being "non-maintainable and inflexible" (O'Callaghan, 1999). As more organizations follow the trend of implementing ERP packages, there is increasing interest to study the factors determining the places that existing legacy and in-house developed systems are left to occupy within the organization. This is made all the more relevant in view of the negative connotations often attached to these systems. However, it is a well-known fact that some legacy systems are not replaced when companies adopt the ERP solutions (Themistocleous and Irani, 2001), while in-house systems still continue to be developed. While risks and time involved have been highlighted as possible reasons for the non-replacement of legacy systems, little attention has been paid to the process issues (Markus and Tanis, 2000) as well as the symbolic meanings attached to the ERP vis-à-vis legacy systems.

Many researchers have highlighted the fact that extant literature has focused on the early stages of the ERP lifecycle – the implementation phase (Esteves and Pastor, 2001; Bancroft, 1996). While it is recognized that there are many stakeholders involved throughout the ERP lifecycle, as more organizations go live, they face "the challenge of maintaining these costly systems" (Ng, 2001). This has resulted in increased recognition for research effort to be placed on the impact of the relationship between IT support staff and their information systems. As such, this study will focus primarily on the perspectives of the IT support staff.

In this study, we investigate the relative positions of the ERP package vis-a-vis the legacy and in-house developed systems existing within a large government authority in Singapore by noting the difference in attitudes of IT support personnel towards the systems. In particular, we adopt symbolic interactionism as the informing theoretical perspective. Doing so allows this study to differ from prior research, providing valuable insights through the use of a fresh perspective that has been under-utilized in IS research, in spite of its obvious theoretical strengths (Prasad 1993).

2 THE ERP VERSUS LEGACY SYSTEMS DEBATE

Over the years, ERP has served as a powerful and comprehensive tool in aiding organizations on managing their businesses. In fact, it can be regarded as one of the most innovative developments in the information technology of the 1990s, exhibiting both pervasiveness and prominence. Despite the large installed base of ERP systems, academic research in this area is relatively new and related publications within the IS academic community are only now emerging. Much of the existing literature consists of articles or case studies in business press or in practitioner focused journals, while new fields of knowledge remain yet to be explored – with "process" and "human" issues being especially pertinent.

2.1 The Issue of Legacy Systems

Given the potential benefits of ERP, many firms have been trying to standardize their IT environment by deploying ERP packages to replace legacy systems that had been built on outdated technologies (Ross and Vitale, 2000). Further accentuating this trend is the conventional view that such systems "resist modification and evolution to meet business requirements" (Brodie and Stonebraker, 1995).

On the other hand, it has also been argued that ERP packages have in fact failed to achieve application integration and 38 percent of companies who adopt these ERP solutions do not replace their legacy systems (Themistocleous, Irani and O'Keffe, 2001). Specifically, ERP packages do not seem to be able to "cover all the business processes of an enterprise" and as such, organizations typically do not "abandon all their existing applications when adopting ERP solutions" (Schönefeld and Vering, 2000).

Indeed, there is an increasing recognition of the need for legacy systems to persist in the organization according to varying degrees (Holland and Light 1999). In spite of this need for co-existence between the systems, ERP packages are however not designed to be incorporated with existing systems (Schönefeld and Vering, 2000).

2.2 Symbolism at Work?

Against this paradoxical backdrop, it is common knowledge that many ERP implementations are associated with a "mythmaking" process whereby the incoming ERP package is usually slated to be the "ideal system" while the outgoing legacy systems are usually attached with the title of a "dying system" (Alvarez, 2000). In fact, during the implementation process of the ERP packages, legacy systems have sometimes been "constructed" by the organization to assume such a "dying system" identity in order to facilitate the transition (Alvarez, 2000). In the same way, it is frequently thought that IT support personnel would view being assigned to provide ERP support as "ideal" while doing in-house development work and providing legacy system support would be a "dying" responsibility. Clearly, there is much symbolism at work in the implementation, use and support of ERP systems within organizations. Gaining an appreciation of such symbolism may therefore yield new and interesting insights in this ERP arena.

2.3 Roadmap of Paper

To further contribute to the ERP-legacy systems debate, the rest of this paper will proceed as follows. We first elaborate on our choice of symbolic interactionism as the theoretical perspective for this study. Next, we outline the research questions and explain our choice of ethnography (appropriately informed by the symbolic interactionism) as the strategy of inquiry for this study. Our case study findings of a large government authority in Singapore are then presented. We conclude with implications for research and practice.

3 SYMBOLIC INTERACTIONISM

Over the years, there has been increasing interest in the role of symbolism within organizations in general (Turner, 1990) and of the symbolic nature of computers and IT in particular (Prasad, 1993). In IS literature, prominent researchers have also similarly recognized the importance of symbolism when organizational and technological contexts intersect (e.g., Hirschheim and Newman, 1991). However, symbolism interactionism as a theoretical perspective has been largely underutilized and there have been few noteworthy organizational studies in IS literature that explicitly use the interactionist perspective (e.g., Gopal and Prasad, 2000).

Together with phenomenology and hermeneutics, symbolic interactionism is one of several interpretive approaches to social science research. Developed largely by Blumer (1969) and Mead

(1934), symbolic interactionism is a long standing methodological tradition described as a study of the ways in which people assign meanings to objects and events in the course of everyday social interaction. Having evolved over the years by researchers like Maines (1977) and Stryker (1981), symbolic interactionism is now an influential school of thought in social science research (Prasad, 1993) and is employed in multiple fields of management including organizational behaviour (Vaught and Weihagen, 1991) and organizational change (Prasad, 1993). Such a perspective recognizes peoples' capacities for adjustive reflectivity with 3 basic assumptions (Blumer 1969):

- That human beings act towards things on the basis of the meanings that these things have for them
- That the meanings of such things are derived from, and arise out of, the social interaction that one has with one's fellows
- That these meanings are handled in, and modified through, an interpretive process used by the person in dealing with the things he encounters

In this research, symbolic interactionism is particularly appropriate as a theoretical perspective to study the ERP versus legacy system issue because it "simultaneously emphasizes both process issues and the roles of meaning and symbols" (Prasad, 1993). These process issues are important when considering how the symbols and meanings attached by IT support personnel to the various systems come to be "sedimented" over time. The sedimentation process itself is worth investigating because how these symbols come to be impressed upon the actor is usually as important as, if not more so than, the symbols themselves.

4 RESEARCH STUDY

This paper reports on a field study in which the first author was immersed in the organizational context of a large government authority (henceforth referred to as the "Authority") in Singapore during a critical decision-making period.

4.1 Research Site

Since beginning operations in the mid 1900s, the Authority has prided itself in being recognized as a major global hub in the transportation industry. Having more than 10 divisions, the Authority employs around 2000 people.

Given the increasing need to integrate their operations, the Authority implemented the SAP R/2 system in the early 1990s to replace some functions of its legacy system. Only the Materials Management (MM) and Finance modules were implemented. Certain core modules like the Human Resource (HR) applications were not incorporated into the package. Instead, this functionality was left to the responsibility of the in-house developed legacy systems. In 1998, the Authority upgraded the R/2 system to the newer R/3 system in view of the impending Year 2000 (Y2K) problem. Even then, the HR functionality was still left unimplemented. In early 2003, the decision to upgrade the R/3 package to a newer version was shelved, in spite of requests to do so to accommodate communication with external government systems. Instead, the Authority has taken upon itself to do in-house development of a scheduling system whose functionalities can actually be provided by the SAP system with some customizations made. It is said that management will review the decision to upgrade the SAP system sometime in the first half of 2004.

4.2 Research Questions

The following research questions were developed after two weeks of preliminary observations at the Authority with the intention of addressing the aforementioned gaps in the existing literature:

1) What symbols did the IT support staff attach to the ERP package vis-à-vis the legacy and in-house developed systems?
2) How did the manifestation of the symbols impact the organization as a whole?

4.3 Symbolic Interactionist Ethnography

As mentioned earlier, this study uses symbolic interactionism as the theoretical perspective to guide the research. However, as a theoretical perspective, symbolic interactionism does not offer any guidance as to the actual conduct of the research methods, and this is where we select ethnography as the strategy of inquiry for the study.

Ethnographic research comes from the disciplines of cultural and social anthropology. It requires the immersion of the ethnographer into the life-worlds of the people being studied. Observation, participant-observation, and interviews are the three sources of data that an ethnographer will rely on to achieve intimate familiarity within the settings (Prus, 1996). In this study, there is a need for the researcher to be immersed in the naturalistic setting of the research site for a significant amount of time so that he/she can observe the phenomenon in its social/cultural context. Ethnography is therefore an appropriate approach for such research (Lewis, 1976).

With symbolic interactionism as the informing theoretical perspective for this study, it is imperative that the chosen strategy of inquiry respects the intersubjective nature of human group life and maintains a coherence with the researcher's hermeneutic viewpoint (Prus, 1996). An ethnographic approach satisfies this by allowing the researcher the opportunity to be immersed in the life-world of the actors being studied and hence be appreciative of the interpersonal exchanges on a firsthand basis. This allows for the researcher to be more attentive to the ongoing social interactions of the actors.

4.4 Research Methods

For almost three months earlier this year, the first author was immersed in day-to-day activities at the Authority (he also had a similar immersion the previous year albeit not in a formal research capacity). During this period, he worked in the Information Systems (IS) department, whose function is to oversee project implementation of back-end systems (including the ERP package) and to ensure the smooth daily operations of these systems. Such an attachment provided many opportunities for interactions with IT support staff maintaining the various systems. Data collection consisted of observation, participant-observation and interviews (Prus, 1996). Pre-arranged semi-structured interviews were carried out with 18 personnel consisting of employees from the IS department as well as end-users from the Finance and Internal Audit departments (in particular, focusing on employees who had been present since the pre-R/3 days). The focus was set on trying to understand the interviewee's experiences with the information systems as well as to identify any symbolisms that they attach to the system. Information was also gathered from informal chats and minutes taken from meetings, memos, correspondence letters as well as other official documents pertaining to the SAP package's usage and maintenance. This vital source of data, drawn out from the Authority's archives, was instrumental in providing a valuable insight which allowed for a review of the events that took place during the early years of the SAP package's usage. The next four months were spent off-site but there were continuing regular interactions with various members of the Authority to clarify various research findings prior to writing this final ethnographic account. Data analysis was performed employing Emerson, Fretz and Shaw's (1995) recommendations of the initial *open coding* by going through the fieldnotes in an attempt to identify and formulate ideas and themes. This was followed by *focused coding* where the core theme was built up and elaborated.

5 RESEARCH FINDINGS

5.1 Multiple Symbols: ERP package vis-à-vis Legacy and In-house developed systems

To begin, it is important to note that the IT support staff tends to attach multiple symbols to the ERP package as well as the legacy and in-house developed systems, as tabulated in Table 1.

SYMBOLS	ERP PACKAGE		LEGACY & IN-HOUSE SYSTEMS
	PRE-R/3	POST-R/3	
Misalignment	Not in line with corporate vision (but in line with work process objectives); Not cost-saving, profit-generating or customer-facing		-
Distrust	Doubt and disbelief that the ERP package can take on the responsibility of the legacy and in-house systems		-
Uncontrollability	Inability to customize the ERP package to fit current user requirements, *"like a monster"*	*"…tied in to the supplier…"* Indicates that they are "at the [supplier's] mercy"	-
Potential	Gateway to a better career; Stepping stone for future organizational/IT improvements	Untapped capabilities, *"like an ocean [full of possibilities]"*	-
Extravagance	-	Excessiveness and waste of resources	-
Hindrance	-	Viewed as a major obstacle in the IS professional's career path	-
Efficiency	Integration; Speeding up of work processes; Better use of resources; Data collection on site	Similar to the pre-R/3 period, albeit exerting less prominence, possessing more of a residual impression	Capable; Necessary for effective operations
Pride	Recognition as an expert of a highly sought-after system (esp during ERP's boom years)	-	Masterpiece; Ownership
Commitment	-	Obligation to stay on with package, high switching costs, "*marriage without a divorce*"	Sense of responsibility and dedication to its own system
Exclusivity	-	-	Functionalities that cannot be performed by the ERP package, "*the one and only*"

Table 1. Table of prominent symbols

The symbols to describe the ERP package can be classified based on two time frames: the pre- and post-R/3 years. The symbols identified during the pre-R/3 years represent those attached to the package during a period of change and transition. In contrast, there was a clear transition to the post-R/3 years which represented a time when the system was already well-established within the Authority and there were few major changes made to it. As noted by a senior Information Systems manager:

> *"Before the system was upgraded to the present R/3 [system], there were so many problems. Users tried to tweak the system and so many changes were made. And even then, it didn't really come out right. In the end, most of them just entirely left out that function….It took many years after the [initial] implementation before the project could be said to be completed. In contrast, the upgrade to the R/3 system was very fast…about 9 months"*

The symbols from the **pre-R/3** days are determined mainly from comments from members of the implementation team as well as from documents obtained from the Authority's registry. In accordance with the four-phase model proposed by Markus and Tanis (2000), these symbols reflect the sentiments towards the systems mainly during the Shakedown phase of the ERP package, as well as the occasional comments taken during the Project Chartering and Project phases. These symbols were attached to the systems when the ERP package was still in a period of constant change and upgrades. Not surprisingly, the expressed sentiments veered on both positive and negative extremes.

Some of the more prominent symbols during this period and as described in greater detail in Table 1: **Efficiency, Potential, Uncontrollability** and **Distrust**.

The symbols from the **post-R/3 years** are a reflection of the support staffs' impressions of the system during the Onward and Upward phase. Some of the symbols exhibit strong levels of permanence, crossing over from the pre-R/3 period to the post-R/3 period. Yet others simply fail to "sediment" and disappear with the upgrade. These symbols are plainly visible from the speech and behaviour of the support staff – clearly, their sentiments have turned more negative in spite of the system being more "established".

Prominent symbols: **Extravagance, Hindrance** and **Misalignment**.

The symbols attached to the **legacy and in-house developed systems** are representative of the impressions support staff currently have of the systems in comparison to the SAP package. Clearly, they seem to take quite a bit of pride in their own "handiwork", in contrast to the failings of the commercially-developed SAP package.

Prominent symbols: **Pride, Exclusivity** and **Commitment.**

5.2 Temporal meanings of Symbolic Representations

Having identified the multiple symbols attached to the systems, it is imperative to note that different symbols signify different meanings to different people. Symbolic interactionists recognize the need to identify and differentiate these meanings. Mumford & Weir (1979) and Pava (1983) have demonstrated this when writing about how the turmoil and chaos people attach to computerization have different meanings. They also give recognition to the importance of identifying the different local meanings of the symbols identified.

In this study, we find that beyond such local meanings, different symbols also signify different meanings at different times. Between the pre-R/3 years and the post-R/3 years, the differences in the meaning of the various symbols also serve as a demonstration of the difference in impression of the ERP package during a time of change versus a time when the system is considered generally established.

By noting the symbols in the two time frames (tabulated accordingly in Table 1), it can be seen that while some symbols persisted (with/without changes to the meanings), others failed to do so. Such changes, coupled with the fact that there are more negative symbols attached to the ERP package, clearly indicate an improvement of the "status" of the legacy and in-house systems relative to the ERP package.

5.3 Sedimentation of Symbols

The study of the sedimentation process of the symbols is as important, if not more so, as the identification of the symbols themselves and their temporal meanings. This focus is supported by theorists like Fine (1992) who argue that attention should be directed to the forces resulting in the attachment of the symbols to the various subjects.

At any one time, there are multiple symbols attached to the systems (as demonstrated in the earlier section) but only those that exhibit a degree of persistence and presence will develop into organizational realities. Certain symbols exhibit a strong presence within a given time frame, but fail to persist as the system undergoes a transition.

In the case of the Authority, there were four main processes and forces that proved to be instrumental in determining the persistence and presence of the various symbols. They are management influence, innovation fit, external forces and interaction with users.

5.3.1 Result of management influence

Top management influence has long been an influencing factor on the implementation phases and the usage phases of any organizational system (Nah, Lau and Kuang, 2001). In the case of the Authority, it was apparent among the support staff of the Authority that the sedimentation of negative symbols like **hindrance** were largely dependent on management's impression of the system and the subsequent (lack of) recognition for efforts of the support staff. A system analyst commented, *"[The SAP system] is not a good thing to go into because management does not recognize the work that you do."* This impression was the result of attributing the obstacle in one's career path to that of supporting the ERP

package which did not win the favor of management. In contrast, during the boom years of the ERP package, management viewed the system favorably, resulting in the symbolic representation of **potential** being sedimented as a popular opinion among the support staff. By this, they attached the meaning of a gateway to a better career to the system.

One of the visions of the Authority is to provide outstanding service to its customers. Being a back-end system, management did not consider the ERP package to be aligned with the corporate vision in contrast with other customer-facing applications which were viewed in a relatively better light. This resulted in the sedimentation of negative symbols like **misalignment**. This was highlighted when one of the staff highlighted, *"But [the ERP package] is not a customer-facing system and doesn't help to make the customer's experience here more pleasant. True, it is important for our work, but it's not getting recognized [by management] like the rest of the front-end systems."*

5.3.2 Result of innovation fit

Innovation fit is one of the main factors influencing the implementation of new technologies for improved operational efficiencies (Meyers et al., 1999). This is also highlighted as one of the factors impacting the sedimentation of the symbolic representations, clearly demonstrated when considering the symbol **extravagance**. A support staff commented, "*Actually the SAP system is better for manufacturing industries where they actually make use of all the modules throughout the production process. Over here, we only make use of the MM and Finance modules. As for the other modules, [we] never make use…very wasted."*

5.3.3 Result of external influence

A significant number of symbols are the result of external factors like interactions with end-users as well as newspapers and magazines. Though not direct users of the ERP package, the IS professionals themselves were very much influenced by the comments of the end-users, so much so that most of them often consider the position of the end-users and take it as their own. For example, when trying to bring across the idea of **efficiency**, one senior system analyst stated, "*[The ERP package] is a very efficient piece of software, that's what all my end-users say…*"

The symbolic reality, **commitment**, was attached to the ERP package largely due to the external influence of the SAP vendor. The commitment that support staff attached to the ERP package took on the meaning of an obligation and reflected the high switching costs involved. From interviews with several IS professionals, it was found that a common term used to describe the Authority's relationship with the ERP package was that of a *"marriage which cannot be divorced"*. This is in direct contrast to the meaning attached to the legacy system, where **commitment** was often a result of dedication and responsibility to the IS professional's own creation.

5.3.4 Result of interaction with system

The sedimentation of most of the symbols can also be largely attributed to the support staffs' interaction with the systems. Through such daily interactions, opinions were formed and symbols became attached to the respective systems. A senior Information Systems manager present during the early stages of the ERP package provided an analogy which summarized her experience with the ERP package and clearly demonstrated the reason for her attachment of the symbol **uncontrollability** to the pre-R/3 package:

> *"It's like building a house which rest on the ground (original plan) but [the] owner wanted to modify [the] building by putting on stilts/legs. After much argument with the architect who strongly discouraged him to make the modifications, he got his stilts/legs to the house anyway. But through the months/years, the stubborn owner started to see more and more problems creeping into his modified house, and one day he'd to leave it before it collapsed."*

5.4 Symbolic Manifestation

As noted by Prasad (1993), the "process of enactment, whereby symbolic realities mediate meaningful action, is a central concern of any research project" for symbolic interactionists. As such, this section will focus on the pre- and post-R/3 manifestation of the symbolic representations attached to the systems, which contribute to the "cause" of the events observed in the Authority.

During the R/2 to R/3 upgrade phase in 1998, the Authority had the opportunity to incorporate the HR system as part of the ERP package but they chose not to do so. From an interview with an original member of the support team in charge of the upgrade, a reason cited was that they had "*learnt their lesson of trying to customize the system"*. This was clearly a case of the manifestation of **uncontrollability**. During the early implementation and usage of R/2, the Authority had actually attempted to customize the ERP package to fit their work processes but realized that the effort to do so resulted in problems which instead caused them to abandon several functionalities. Furthermore, the support staff exhibited a resistance to change because of a strong sense of **pride**, in this case, a sense of ownership over the particular HR legacy system as well as a belief in the **exclusivity** of the legacy system's functionality. As such, the decision to incorporate the HR functionality did not receive much support from the support staff during the SAP package's upgrade to the R/3 version.

During the post-R/3 years, it was decided that an in-house development of a system, whose functionalities could actually have been provided by the ERP modules with customizations done, was to proceed in favor of the upgrade of the ERP package to a later version (which was actually required to facilitate communication with external government systems).

On reflection, this decision may not be so surprising after all. The symbolic representation of **extravagance** tended to be associated with the ERP package. This was clearly the sentiment of a number of staff who commented that the upgrade was *"too expensive… no budget."* Furthermore, management felt that the need to upgrade the system could not be justified in terms of the returns they could expect.

Another reason for the decision to shelve the upgrade was indicated by a member of the ERP support team. She indicated that one of the reasons acting against the decision to upgrade was because of the "*fear of changing systems and usage of systems*". This is very much the symbol **uncontrollability**, once again manifesting itself among the support staff.

A further demonstration of the manifestation of the symbolic realities within the Authority was apparent in the attitudes of the IS professionals. There was a clear motivation among members of the legacy support team who took **pride** in carrying out their maintenance job. To them, the system symbolized a **commitment** which they were prepared to stay back long hours to ensure the proper functioning of the system. In contrast, the support staff in charge of the ERP package failed to display a similar level of commitment. There was a general perception that the ERP package was a **hindrance** to the career path of the support team and, as a colleague described, that they were *"stuck there"*. Though the ERP package was also a **commitment**, the support staff saw this more as a problem with the lack of vendor support and a high switching cost. It was observed that the level of urgency to solve problems facing the ERP package was somewhat dependent on the ability to obtain vendor support, and it was apparent that these problems did not rank top among the priorities of the support staff. A consequence of this was the delay in conducting a feasibility study of the upgrade of the ERP package.

Taking into consideration the negative symbolisms that the IT support staff attached to their ERP package, further accentuated by the contrasting positive symbolisms attached to their other legacy and in-house developed systems, it is clear that the nature of the symbols attached to the information systems played important roles in determining the decisions in the abovementioned events.

6 DISCUSSION

In this study, the combination of leveraging the theoretical strengths of symbolic interactionism (as a cognitive lens) and the empirical strengths of ethnography (as the strategy of inquiry) has allowed for a unique comparison of the relative positions of the ERP package vis-à-vis legacy and in-house developed systems within a particular organization. As Prasad (1993) recognized in his employment of symbolic interactionism, theoretical insights offered are more like "guiding propositions" than "testable hypotheses". As such, the findings emerging from this study may not be "universally applicable statements", but offer several empirically supported perspectives that aid in the understanding of the co-existence of the ERP package and legacy and in-house developed systems. These findings will be discussed in the context of implications for practitioners as well as researchers

6.1 Implications for Practice

This study suggests that the relative positions of co-existing systems are the result of the sedimentation forces that give rise to the manifestation of the symbolic realities within the organization. Management influence and technological fit have been highlighted as important implementation success factors (Meyers et al., 1999). This study demonstrates that beyond the implementation phase, these factors are also important factors that management should consider as organizations enter the maintenance and usage phase of the ERP life cycle (Esteves and Pastor, 2001).

While See (2001) has proposed a framework for ERP maintenance and upgrade decisions to consist of fundamental factors such as: ERP maintenance, availability of new versions and benefit-realization, this study suggests that symbolisms attached to the systems may constitute another important component of her framework. As demonstrated in this study, the symbols attached to the systems influenced the decision of upgrading and replacing the co-existing systems. Feldman (1989) notes that all too often, managers are liable of focusing on only the technical aspects when considering technological change processes. In doing so, they however, fail to recognize the symbolic aspects attached to the technologies. As such, this study highlights the importance of taking into consideration the social processes surrounding an organization's information systems.

In contrast to the popular belief that IS professionals would exhibit positive attitudes when supporting such high-profile and well-recognized systems like ERP packages, the support staff in charge of ERP support in our study instead reacted negatively to the SAP package. In comparison, the IS professionals supporting the legacy and in-house developed systems displayed positive attitudes, apparent from the high levels of motivation. This proves to be an important issue for organizations to note as the motivation levels of the support staff are usually important determinants of the organization's productivity.

6.2 Implications for Research

This study suggests that symbolic interactionism, as a theoretical perspective, can be harnessed to achieve a deeper understanding of the various phases of the ERP package's lifecycle, and at the same time contribute to the rising interest in the use of symbolism in organizational and technological research. This study also points the way to the employment of complementary theoretical perspectives, particularly those with a focus on community life as suggested by Prus (1996) to shed new light on this phenomenon. For example, interested researchers may wish to further employ the Actor Network, Critical Social and Structuration theories as intriguing lenses to study the complexities of the social processes surrounding the acceptance and resistance to the ERP package.

7 CONCLUSION

The central message of the study is that the symbolic representations attached to the systems may have strong implications on the perpetuation and maintenance of the system. This is in line with the discussion of Feldman and March (1981) who suggest that "information technologies are used and introduced primarily for their symbolic value". This is an especially important factor to consider when studying the legacy and in-house developed systems whose functionalities can be replaced by the incoming ERP package.

Though IS literature has recognized the negative connotations usually attached to the outgoing systems, this study finds this to be not always accurate. As demonstrated in this study, the varying degrees of persistence of the legacy systems may not always be a result of time and risks, but could be due to the organizational impact of the symbolic representations attached to the systems.

Another important point highlighted by this study is the differing attitudes of the IS professionals towards the support of the co-existing systems, as demonstrated by the symbolic realities they attach to the systems. These attitudes, materialized as a result of the symbols the IT support staff attach to the systems, serve to contrast with the popular mindset that prestige and prominence are part and parcel of supporting ERP packages, while IS professionals supporting legacy systems are usually negative about having to support a system facing possible replacement.

In closing, through its choice of symbolic interactionism as the cognitive lens, this study points to the importance of employing different theoretical perspectives (such as critical social theory, actor network theory and structuration theory) to examine the ERP phenomenon. Indeed, we suggest that when such complementary perspectives are purposefully employed in a portfolio of separate studies over time, they may collectively help to shed new light on the complexities of ERP implementations in organizations.

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