

# Do Industry-University Alliance Programs Corrupt the Mission of the University: A Theoretical Perspective

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## Abstract

Industry-University alliance programs allow educational institutions to train students on current products at reduced prices. One consequence is that students are exposed to one product over another. This paper theorizes an educational program tilted toward one vendor's products result in unintended, long-term consequences for the student. Is the student harmed by learning Oracle versus Informix (for example)? Do such programs reduce the university to a technical training institute? The problem is described in this paper from the perspective of the student, the vendor, and the professor. The analysis of this phenomenon builds on Lederer and Mendelow's (Lederer and Mendelow 1990) model of the impact of the environment on I.T. evolution. A model is developed which suggests mitigating strategies and possible outcomes.

**Keywords:** Resource dependence, Transaction cost economics, Vendor selection, Vendor bias, industry-university alliance.

## 1. Introduction

Information systems planning can be an important tool for the overall management of information technology in a firm. This planning can be seen as a set of activities which recognize problems and opportunities where information technology might be applied; identifies resources needed to tackle the identified problems and opportunities; and lastly develops strategies used to implement the solutions (Boynton and Zmud 1987). A variety of researchers have developed objective techniques for selecting vendors as a component of information systems strategic planning (Mandal and Deshmukh 1994)(Kasilingam and Lee 1996)(Petroni and Braglia 2000). As Hann and Weber (Hann and Weber 1996) point out, most research on information systems planning prescribes how planning should be done, not how it is done. Looking at how information systems planning is done might expose particularly successful strategies as well as reasons why some plans fail.

Strategic information systems plans for technical curriculum development are put together with the assistance of I.T. faculty members (CS, CIS, MIS, etc.). These faculty members often differ from those in other disciplines in that technical education is more likely to be based on one vendor's products. This is because these products cost a substantial amount of money, require significant training to master, and are often related to supporting textbooks. Universities seem

always strapped for funds for new computer lab hardware and software. A gift from a corporate sponsor is rarely turned down. How many I.T. faculty members, however, could sit down and teach a database class using Informix without specialized training or textbook support? Technical training is becoming as important to I.T. faculty as it is to I.T. professionals. Once trained, faculty are committed. There is no time to get trained on DB2 as well, even if IBM were to offer such training. Lastly, faculty are particularly dependent upon pre-packaged course materials. Products embedded in such textbooks such as Microsoft Project, lead faculty toward one text and product over another. Faculty cease to be university faculty and begin to become an <insert vendor name here> trainer. This is certainly what the vendor wants, but is it in the best interest of the students? Is it in the best interest of the university? Perhaps most importantly, is it in the best interest of I.T. faculty? Can the Informix trained graduate get a job in an Oracle shop? How does the university differentiate itself from the MCSE training company offered at the mall? Will faculty limit job searches (or employers limit recruitment) only to other S.A.P. alliance institutions?

This paper explores the bias university faculty may inadvertently exhibit as a result of championing an industry-university alliance program. Assuming this vendor bias does exist, what are the consequences for the student, the faculty, and the university? If a faculty member is in a position to make strategic decisions, one might hypothesize vendor bias can have a substantial

effect. Decisions may be slanted toward the familiar instead of what is best for the student and the university.

## 2. The Strategic Vendor

Entering in to an industry-university alliance is a strategic technology decision. One aspect often overlooked is the impact of strategic technology vendors on this information systems planning process. The vendor might vary depending on how committed the organization is to their products. If a university has many strategic applications on an IBM mainframe then IBM might be a strategic technology vendor. In another instance it might be Novell, Microsoft, Dell, Sun, etc. In some instances multiple vendors might play a strategic role. This is an aspect of information systems planning which has received scant attention from IS researchers while receiving wide attention in the annals of industrial marketing.

Hardin (Hardin 1998) points out strategic vendors have an interest in locking in a buyer. Hewlett-Packard, for example makes more profit from printer cartridges than from the printers for which they are known. Dell partners with a system administration company which only supports Dell systems. If customers change suppliers they must also change system administration companies as well. Examples of vendors building in high switching costs abound. Virtually any vendor using proprietary technology does so, in part, to build in switching costs. The cost of conversion must then be factored in to the information systems plan for the relationship with a strategic vendor to be terminated.

Countering the argument on switching costs, several researchers conclude that building a relationship with a strategic vendor can lead to lower overall costs, better problem solving, and more reliable service (Wallace 1992). Masson (Masson 1986) found strategic vendors gave problems a higher priority for strategic customers than for casual customers. Bank of America goes so far as to define various levels of vendor relationships up to strategic alliance, believing dealing with one vendor on a strategic basis can yield long term benefits (Brounes 1999). Still, Sharland (Sharland 1997) concludes there are times where the cost of building a relationship may not be worth the investment costs.

This is clearly a two-way street. Vendors try to manipulate the decision making process to their advantage while customers may realize benefits from such relationships. Is the university different? Faculty may get better support in training, problem-solving, and textbooks. But high switching costs may make a bad alliance hard to terminate. How can the consequences be minimized?

## 3. Selecting a Strategic Vendor

Much of the research in this area centers on how to pick a strategic vendor (Wallace 1992)(Glazer 1999). Vendors selling themselves as strategic partners have benefited from marketing research on how individuals and groups select vendors (Patton et. al. 1986)(Brown et. al. 1993)(Patton III 1996)(Patton III 1997). This research stream focuses on whether buyers make decisions individually or as a group, buying pattern differences between high socializing and low socializing buyers, and the use of different decision-making models. The general conclusion is that different people in different situations use different mental models in making vendor selection decisions (Patton III 1996). Individuals are more conservative than group decision makers and tend to be risk-avoiders (Patton III 1997). Vendor selection decisions made by an individual tend to be re-buy decisions for current vendors based on experience with and loyalty to the current vendor (Patton et. al. 1986). Low socializers are more objective in their decision-making processes (performance vs helpfulness) than high socializers (Brown et. al. 1993). Bensaou (Bensaou 1997) expanded on social characteristics finding successful vendors built up a level of trust through successive and successful business dealings. Based on a review of this literature, individual buyers may select the current vendor to avoid uncertainty as well as switching costs.

Applied to faculty one might conclude faculty decision-makers might continue teaching ADA well past the time when the market has moved on, to the detriment of students, because it is familiar. Familiarity minimizes risk but, in this case, results in adverse consequences for the students upon graduation.

## 4. Applying Theory to this Problem

Transaction Cost Economics (TCE) is a synthesis of economics, law, and organizational theory. Its early proponent, Ronald Coase, received a Nobel Prize for his writings on the subject of the theory of the firm. Coase initially proposed that firms and markets are alternate markets that differ in their transaction costs. He suggested that under certain conditions the costs of conducting economic exchange in a market may exceed the costs of organizing the exchange within a firm. As such, transaction costs are the costs of running the system, and they include, for example, costs such as drafting and negotiating contracts as well as controlling and enforcing such agreements (Rindfleisch and Heide 1997).

Transaction cost economics focuses attention on the attributes of the transaction, with economizing on transactional costs viewed as the main purpose of economic institutions. TCE relies on three behavioral assumptions in predicting how firms choose governance

structures: bounded rationality, opportunism, and risk neutrality (Chiles and McMackin 1996).

Oliver Williamson's approach to transaction cost economics places great emphasis on bounded rationality. The assertion is that limitations in the ability of decision makers to be rational (bounded rationality) and their inclination to pursue their self-interest in opportunistic and deceitful ways (opportunism) imply that transacting under conditions of uncertainty and/or complexity becomes expensive and hazardous. TCE claims that it is the interaction between transactional/environmental characteristics such as asset specificity, uncertainty, and complexity with behavioral characteristics such as bounded rationality and opportunism that creates transactions costs (Moschandreas 1997). These transaction costs are evidenced as the cost of surveillance to reduce opportunistic behavior. Vendor bias, emanating as it does from inside the firm, is difficult to spot through normal surveillance techniques.

As proposed by Pfeffer and Salancik (Pfeffer and Salancik 1978) Resource Dependence recognizes the effect resources from the environment can have on the organization. All organizations need resources from the environment in order to survive. These include qualified people, customers, and vendors. As an economic theory, transaction cost economics posits that organizations will contract with outside agents at the lowest total cost for the resources they need. Once these contracts are in place, however, Pfeffer and Salancik (Pfeffer and Salancik 1978) argue that a dependence is built by the using organization with the supplier. To the extent the resource is important, is in short supply, and is only available from one source, the vendor has resource dependence control over the using organizations.

To be considered a strategic vendor the vendor must be a full service vendor, providing a wide array of products and services to customers. For purposes of this research a vendor is any firm which requires so much specialized training to use its products that those that receive the training and use the products consider themselves an <insert vendor name here> I.T. professor. According to Scherer (Scherer 1980) these full service vendors create tying arrangements such as proprietary add-ons between products to limit competition for add-on business. The add-on business is where the real profit rests. In academia, however, profit occurs from secondary exposure to students who then graduate to buy the vendor's products. The university becomes a marketing arm of the vendor.

Sriram (Sriram et al. 1992) used resource dependence and transaction cost economics to explain buyer-seller collaboration from the buyer's perspective. The more important the transaction the greater the perceived buyer dependence on the supplier. The higher

the perceived dependence the more likely the buyer will seek collaboration. Collaboration is most likely to occur when the supplier has made investments in the relationship (such as dedicated equipment). Buyers feel this investment lowers the chance of opportunism. Absent investment on the part of the seller, transaction costs rise as buyers feel compelled to put an early warning system in place to guard against opportunism.

Hann and Weber (Hann and Weber 1996) apply this idea directly to strategic information systems planning. A strategic information systems plan is seen as a contract between principals (senior management) and their agent (the IS manager) and use transaction cost economics to predict the characteristics of the relationship between management levels as well as the characteristics of the IS plan itself. The less senior management knew about the IS function the greater the control they exercised over the IS plan. The less senior management knew about the IS manager's job responsibilities the less control they exercised over the IS plan. The longer the IS manager had been the IS manager the less control senior management exercised over the IS plan. The greater difficulty senior management had in evaluating the performance of the IS manager the less control they exercised over the IS plan. The more the IS plan focused on the superior's goals and objectives the higher senior management's control over the IS plan. Lastly, the more the IS plan focused on the superior's goals and objectives the more likely the plan would be used to manage the IS function. In many instances senior management left IS planning, and presumably strategic vendor selection, to the technical expert – the IS manager.

Lederer and Mendelow (Lederer and Mendelow 1990) developed a model of the relationship between dimensions of the environment, categories of problems the environment caused, and organizational coping mechanisms in organization I.T. departments. The authors identify technology (vendors) as one cause related to many problems and several coping mechanisms. Our research proposes the faculty member in the organization is another environmental agent (see Figure 1). This agent constrains coping mechanisms by suppressing alternatives incompatible with their training and expertise.

Watson (Watson 1990) found MIS managers ranked information from vendors as the source of information most used. Second most influential were staff reports, many of which relied on information from vendors as well. From an organization level perspective, the vendor supplies a critical resource to the organization. The vendor may provide proprietary computer hardware such as the IBM RS6000, a relational database such as Oracle, or an application such as S.A.P. These products are central to the strategic use of information technology within the curriculum. Therefore, to the extent the vendor can

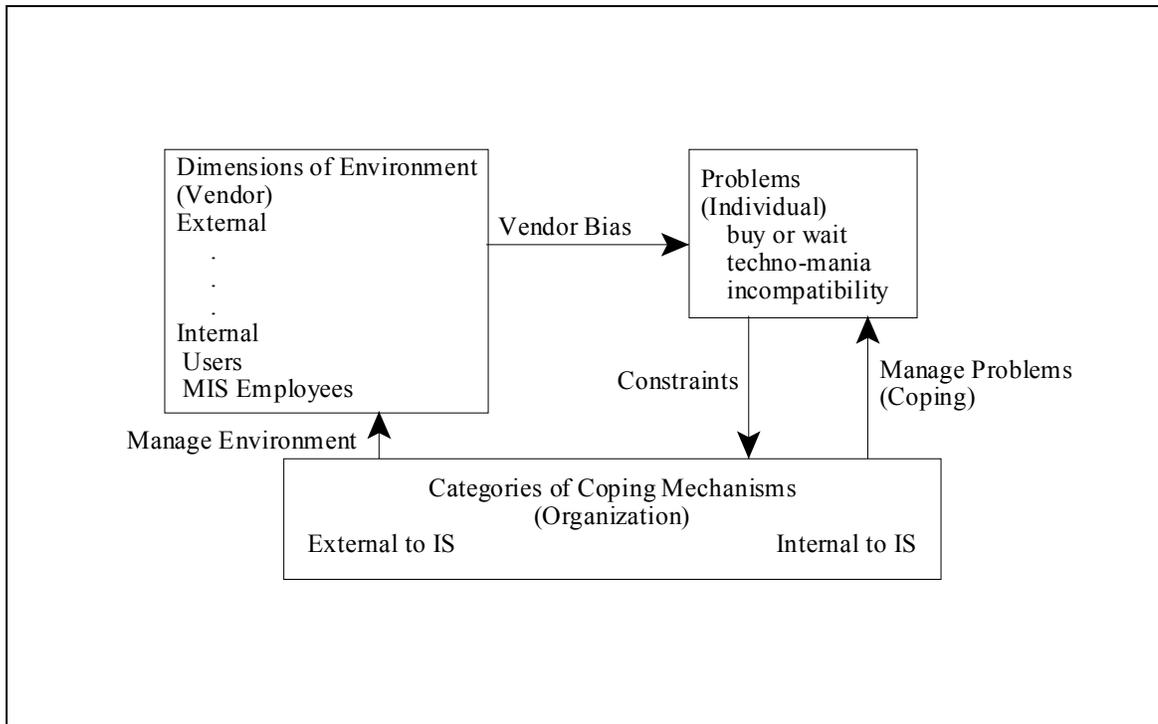


Figure 1  
Research Model of Vendor Bias

maintain “account control” over the faculty member, it has exercised resource dependence control over them.

In response to a resource dependence threat, individuals in administrative authority respond. Typically these individuals are central to the workflow and offer non-substitutable services. I.T. faculty members who make vendor recommendations are also central to the workflow and exert expert power. French and Raven (French and Raven 1959) characterize this type of power as expert power. Their expertise grows out of exposure to the vendors and the use of the technology. They are responsible for the success of any implementation. Few executives will overrule an I.T. faculty member with expert power. The consequences of such action would be to jeopardize the success of any alternate acquisition decision.

### 5. Model Development

It is important to point out that vendor bias emanates from the I.T. faculty member and not the vendor. Certainly, the vendor encourages such action, but it is not the source of such action. Agency theory describes, from an organizational perspective, the impact of the psychology of the agent on the organization. Agents and non-owning managers exhibit self-regarding behavior that maximizes their own utility – at times at the expense of the employer (principal). Agency theory provides theoretical support for the employee as an organization level variable who, through self-regarding behavior, affects information technology

evolution. Gurbaxani and Whang (Gurbaxani and Whang 1991) go so far as to illustrate an example of this phenomenon as the “empire builder” syndrome in which the employee’s preferences do not match those of the employer (assuming an economically rational employer) and seeks to grow her/her domain with bigger budgets, state-of-the-art computers, etc.

When an organization takes action in response to a resource dependence threat (or fails to respond), decisions are made by individuals. Resource dependence recognizes this internal political process of decision-making. Those resources which are strategically important to the firm help the organizational actors responsible for the functions which use those resources to hold great power. Hinings, Hickson, Pennings, and Schneck (Hinings et. al 1974) identify certain strategic contingencies which recognize power to those whose able to deal with uncertainty, are central to the workflow, and offer non-substitutable services. This power, in turn, affects who is selected to hold administrative positions. And those in power, obviously, make the decisions which respond to the resource dependence threat (Pfeffer 1982).

We have seen first that planning is the overt activity which drives information systems evolution. Second, planning is affected by the environment. Third, the environment includes the vendor. Fourth, the vendor actively attempts to influence buying actions, planning, and evolution. Fifth, the employee, acting in their own best interest, champions the vendor. Sixth, to ameliorate

the effects of this vendor activity MIS organizations institute certain coping mechanisms. And seventh, these coping mechanisms themselves may exhibit properties of institutionalized vendor bias.

The key to understanding the vendor bias phenomenon, though, lies within the theory of resource dependence. Technology is a critical resource to most organizations. Contracts for technology bind the organization for many years to come, because it is so difficult and expensive to convert if you change your mind. Vendors are, therefore, more anxious in technology companies than in other fields to enter an industry-university alliance. It establishes a resource dependence relationship which allows the vendor to supply their customers with trained technicians and a marketing arm under the guise of a university.

Resource dependence is normative in the sense that it offers predictions based on the value of variables in the model. As a general prediction, resource dependence can predict that:

1. The greater the number of internal and external constraints on the organization, the more likely the organization is to suffer from vendor bias.
2. Resource dependence goes beyond mere explanation of the phenomenon and contributes to our understanding of vendor bias by predicting relative outcomes based on the variables in the model identified in Table 1, below:

<b>Internal Constraint</b>	<b>External Constraint</b>	<b>Coping Mechanism</b>	<b>Bias</b>
individual rewards	tying arrangements	corporate culture	self-regarding behavior
all-competent managers	sphere of influence	policies	empire builder
autocratic hierarchy	expert power	vendor watch	techno-mania
satisficing	contracts	P.R.	No downsize
bounded rationality	computers	user groups	standards
scarce resources	buy or wait	beta site	
competing experts	techno-mania	buffering	
	incompatible		
	conversion		

**Table 1**  
**Vendor Bias Model Variable Illustrations**

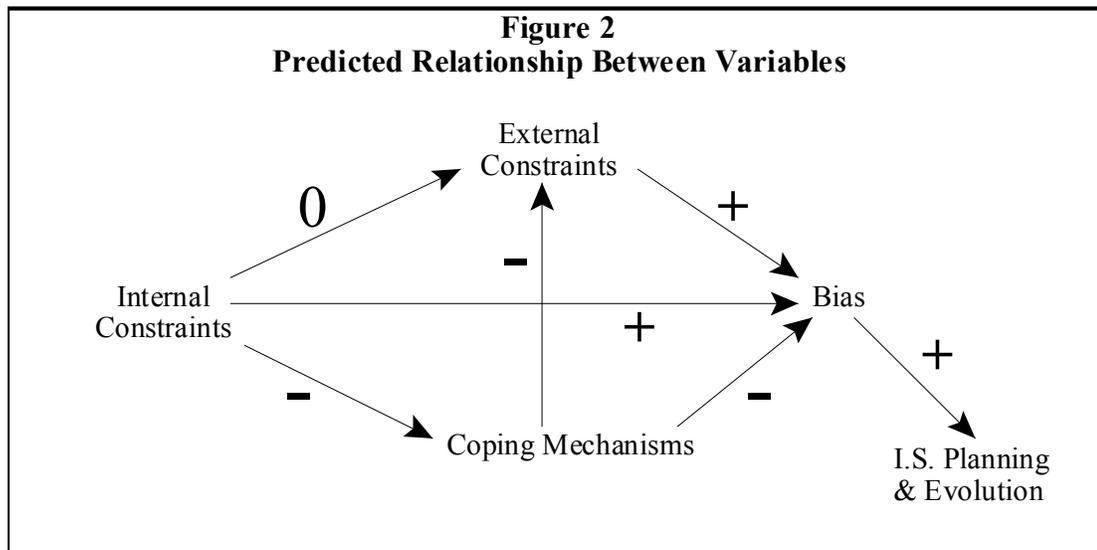
Our research concludes with a model providing predictive relationships as shown in Figure 2:

1. Bias positively affects IS planning and evolution.
2. Internal and external constraints are positively correlated with vendor bias.
3. Use of coping mechanisms is negatively correlated with vendor bias.
4. Organizations with many internal constraints will probably have few coping mechanisms.
5. Those with many coping mechanisms will probably have fewer effective external constraints.

## 6. Conclusion

Given the requirement of the technology for long-term strategic relationships with the vendor, it is unrealistic to expect any organization to not be dependent on the computer vendor for this critical resource. The effect on information systems strategic planning and technology evolution is evident. It is also evident that vendor bias is something the organization does to itself (it emanates from its own employees) and therefore is something the organization can fix itself.

Do industry-university alliance programs corrupt the mission of the university? It may, the effect is really in the hands of the I.T. faculty member. I.T. faculty wield tremendous expert power in making these types of strategic decisions. While this paper provides only anecdotal evidence such bias exists the evidence suggests it certainly could exist. If and where it does exist vendor bias may harm the reputation of the university and limit job opportunities for graduates. Still, technical programs do need technology. The model suggests coping mechanisms which might be used to mitigate the impact of bias. First, Universities should do business with more than one vendor. This elevates the university to an objective consultant. Second, instructors should try to use multiple vendors in one course. For example, the database class might start by using Access and end up using Oracle. Each product may have different strengths. Third, faculty should concentrate on concepts which will stay with students long after the product or release level has been replaced. Universities educate, and that is something greater than mere training. Fourth, instructors should use software most likely to be used by local industry. Don't teach CICS COBOL if the business base of the community you serve is largely NT C++. Lastly, don't be engulfed by an all consuming technology vendor (such as S.A.P.) which requires heavy university commitment for all business courses for many years to come. The I.T. faculty member has it within their domain to exploit industry-university alliances for the benefit of students,



the university, and themselves while not being exploited by vendors.

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