User commitment is essential to the success of even the best-designed IT systems. And to make that connection successfully begins by examining the burning question: "Does IT matter?"

Building Systems That Users Want to Use

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In 1994, Markus and Keil asked "Why are some information systems that companies have invested millions of dollars in developing never used or avoided by the very people who are intended to use them?" They pointed out that "Technically successful, but unused or underused systems cost U.S. businesses millions of dollars each year" [10]. Their question, "If you build it will they come?" highlights important disconnects in current understanding of the IT productivity paradox. Even the best-designed information systems are not used if they are not aligned with the system users' motivations and commitment. We define the best-designed systems as systems that adhere to good technical design principles, that is, they are technically successful. Such problems occur regardless of user participation in system design, and even when platform, interface, and training problems are not the root cause for system non-use.

ILLUSTRATION BY PETER HOEY

Since the effective utilization required for the system to improve business performance is not built in, these systems never achieve their potential for improving organizational performance despite their technical soundness and attention to human factors. Essentially, users are not motivated to do what the system enables them to do. In the worst cases, the system makes it difficult for them to do what they are motivated to do. Evidently, such non-use is primarily attributable to behavioral rather than technical issues. There is thus an imperative must understand the role of these behavioral factors in IT performance. Such factors must be considered together with the strategic factors to ensure that IT implementations deliver expected business performance [1, 2, 5, 11].

The debate around Carr's controversial article "IT Doesn't Matter" [2] reveals that the opposing arguments depend upon one critical shared premise. Neither of the opposing camps can ignore the fact the business performance of IT derives not from IT investments alone (that is, if IT matters) but depends on whether and how IT is used [1, 2, 11]. The causal links between IT and productivity depicted in macroeconomic [1], firm-level [5], and country-level [7] research ultimately depend upon system-level use by motivated and committed users. Neither of these analyses can ignore the fact that usage behaviors finally determine if the systems are effectively used, misused, abused, or not used at all [8]. Hence, it is time to move beyond the rhetoric on "Does IT Matter?" to a more pragmatic and precise understanding of how the business performance of IT systems depends upon their effective usage (for more articles on this topic, see www.ITUse.com). Given the current emphasis on doing more with less, managers should also recognize that a firm's direct investments in IT may not correlate with the business performance of IT [3, 9].

Studies of corporate IT spending show that greater IT expenditures rarely translate into stellar firm-level business performance. A comparison of IT expenditures and financial performance of 7,500 U.S. companies by the consulting firm Alinean in 2002

revealed that the top business performers had some of the lowest IT investments. The 25 top performers spent just 0.8% of their revenues on IT, in contrast to an overall average of 3.7%. The highest IT spenders typically underperformed by up to 50% compared with their best-in-class peers.

Insights from organizational change management practices [6–10] can help bridge existing gaps in the IT performance equation depicted in Figure 1. Internal and external change management determines IT success [9]. External change management ensures that an organization's business models and processes remain aligned with a changing business environment. Internal change management ensures that IT systems are adopted and used effectively. Recognizing and understanding the strategic and behavioral factors necessary for the business performance of IT provides a possible solution to the economists' IT-productivity paradox [1]. It can also help open the black box by illuminating the managerial and user practices that are responsible for firm-level performance, regardless of the diversity of IT investments and platforms.

A review of IT successes and failures affirms the role of system users' motivation and commitment in business performance. We focus on how users' motivation and commitment—concepts generally misunderstood in practice [8]—influence IT performance.

Organizational Transformation Enabled by IT

A major national health care research and service center, located in a metropolitan area of the "rust belt" region of the U.S., was the site of the IT implementation studied. A new communication, coordination, and collaboration (C3) system was expected to enable the company's "organizational transformation," which was intended to boost productivity and cut costs. The new system was intended as the primary interface for users throughout the organization to interact and engage with each other as well as with the outside world. The simultaneous rollout of an enterprise-scale functional workflow coordination system was expected to provide the necessary digitization of inter- and intra-enterprise business processes. In highly publicized meetings, top execu-
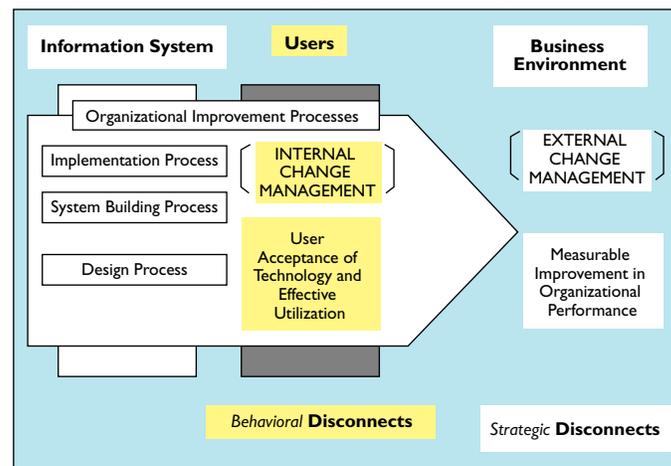

Figure 1. Overcoming the behavioral and strategic disconnects of IT performance.
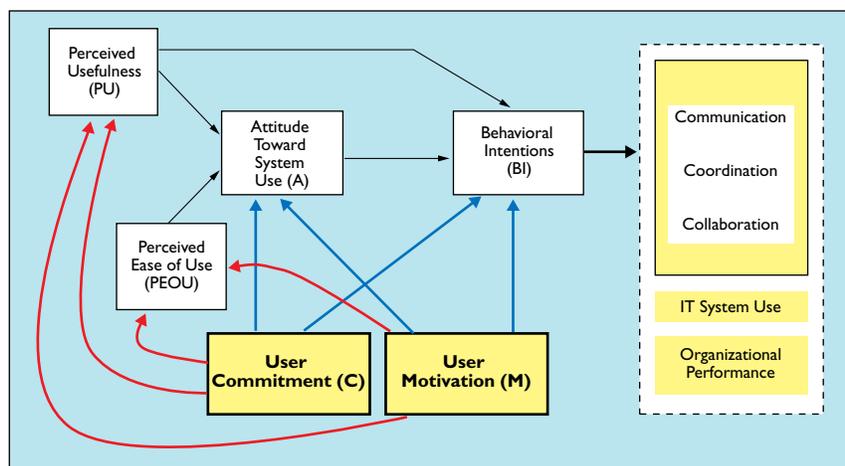
Figure 2. Opening the firm's black box. How user commitment and motivations affect IT performance.

completion of the initial system usage training and again after the users had been using the system at work for five months. (Completed surveys were collected from 700 users immediately after they had completed the instructor-facilitated hands-on training. After they had been using the C3 system for approximately five months, 500 users were sent follow-up surveys. About 200 completed surveys were received by the deadline. Statistical tests confirmed that there were no significant differences between the two data samples.) Prior research on IT acceptance and use has found users' intentions and attitudes to be good predictors of system use [7]. Our research model, shown in Figure 2, adds the constructs of system users' motivation (M) and commitment (C) within the context of organizational change management.

We analyzed both direct effects (shown in blue) and indirect effects (shown in red) of M and C on user attitudes and behavioral intentions. In contrast to the direct effects, the indirect effects influence attitude and behavioral intentions through perceived usefulness (PU) and perceived ease of use (PEOU). Analyses of system user responses summarized in the table reveal how users' commitment and motivation affect IT use. The plus sign (+) denotes positive influence of C and M on system use at the time of initial use as well as during sustained use. Our findings affirm suggestions [10] about the predominant role of C and M in affecting system use in the beginning as well as over an extended time period. Here, we explain the findings and relate them to lessons learned as well as guidelines for practicing managers.

tives shared the vision of a thin client browser-based interface with employees who were potential users of the C3 system. Specialized user training was provided by a professional IT training company. This hands-on training focused on developing users' understanding of the key systems activities that managers had previously identified as most relevant to business performance.

The theoretical, empirical, and practical underpinnings of this study emphasize the organizational work context within which system use is embedded. System use in and of itself is of little personal relevance to most users. Unlike IT specialists (who may be excited about acquiring new skills), functional system users perceive system use primarily as a means and not as an end in itself. Users with higher commitment to and motivation for the end goals of system use tend to make a greater effort to master the system. In contrast, users who are detached from these goals tend to misuse, abuse, or ignore the system [9, 10]. Our model of performance-focused usage of the system treats consideration of business performance as a precursor and not an afterthought to IT use.

Our goal was to understand what the user expects to derive from system use and to ensure it is consistent with what the managers expect in terms of business performance. Accordingly, users' motivation and commitment toward performance-focused activities define this happy intersection of expectations.

Research in organizational change management and IT acceptance and use [8] guided the development of our methodology and data collection instruments. (This research takes into account developments over the past 45 years in the domain of organizational change-related contexts of work motivation and commitment.) A systems usage instrument was developed, pilot tested, and administered after the

IT System Users' Commitment and Motivation

"Systems do not improve organizational performance or create business value; users and their managers do" [10]. Systems may not be used if the users are not motivated to do what the system enables them to do. Also, systems that make it more difficult to do what the users are really motivated to do tend to fall out of use. Thus, IT designers must focus on what users and their managers expect from the system in terms of business performance. Understanding users' commitment and motivation to business performance, and designing systems that support this performance, is indispensable for delivering IT systems that improve business performance. When

users are committed to the performance outcomes expected from system use, they are highly motivated to master even complex systems. Conversely, even simple and easy-to-use systems fail if users do not perceive them as useful in achieving their goals [10].

User commitment. If a new IT system requires extra time or effort to learn, there is a natural tendency to avoid using it. This is a serious problem when users do not perceive any direct personal benefits from the system. A scientist at Pillsbury Company found this out the hard way. He had the IT department install an intranet for knowledge sharing about batter and other products. Thereafter, he seeded the forum with questions, and sent out email invitations, and then waited ... for six months! But no one showed up for knowledge sharing. This episode, published in an IT trade journal, is archetypical of similar failures of IT systems such as intranets, portals, and CRM systems. In most such cases, the systems were technically sound, and user training was provided. However, these factors may be necessary, but they are not sufficient for gaining user commitment.

It is essential to balance technical usability (from an IT designer's perspective) with performance usability (from the users' perspective). System use may vary from pro forma and uninvested use to committed and enthusiastic use. Based on differences in users' motivation and commitment, different levels of system disuse, misuse, and abuse may be expected. Different levels of commitment can be related to three different types of managerial social influence processes: compliance, identification, and internalization.

Compliance. System users often feel they have to use the IT system, even if they don't want to. In other words, they comply. Systems designed for seeking compliance get compliance. When system use becomes a proxy for appeal to seductive rewards or threat of punishment, the uncommitted use it in

	At Initial Use of the IT System				Over Extended Use of the IT System			
	PU	PEOU	A	BI	PU	PEOU	A	BI
User Commitment (C)	+	+	+		+	+		+
User Motivation (M)	+	+	+	+	+	+		+
PU			+	+			+	+
PEOU			+					
A				+				

How system users' motivation and commitment affect IT use.

ways that do not improve business performance [10]. In cases of mandatory system use, extreme resistance by users can abort the implementation, causing significant project scope creep and cost overruns. An illuminating example is the $6.9 billion Navy/Marine Corps Intranet (N/MCI). "[Users] have just been fighting N/MCI so long, it has become a passion," noted an engineer from the IT implementation team in a *Computerworld* report. Also, resistance by "very smart and resourceful users" escalated three-month deliverables into two-year-long resource drains. The contrasting case of voluntary system use is where professional users choose whether to make discretionary use of the IT system [9]. Users' pro-social attitudes and good organizational citizenship are needed for success in collaboration, communication, and coordination.

Identification. System use resulting from users' desire to be accepted by peers and managers is characterized as commitment by identification. The user may not care much about system use or expected performance outcomes. Rather, use is driven by self-esteem derived from recognition by those (peers, colleagues, or managers) the user identifies with. Identification may be used positively if the primary focus remains on performance and value creation and not on "keeping up with the Joneses." Companies such as Xerox and McKinsey have successfully utilized peer recognition for rewarding pro-social and collaborative system usage behavior. However, identification may be difficult to realize in an iconoclastic culture characterized by disapproval or dislike of role models.

Internalization. This is the ideal case, wherein system use is driven by the internalization of values

related to performance outcomes. The system users' values and beliefs about performance and how the system facilitates such performance drive effective system use. The system enables the users to do what they are motivated to do [10]. The user makes personal sense of system use as contributing to personal and organizational improvement. There are fewer attempts to deceive the system in terms of superficial but visible use that gets counted but may not create value. Internalization of organizational values should be supplemented by knowledge of the correct ways to use the system. Users' enthusiasm for efficiency and productivity should not sacrifice system securities and controls that are essential for sustained performance. Interestingly, internalization may result from users empowering themselves (with the help of systems) in pursuit of organizational and individual values. For instance, the "technologically superior" corporate intranet of PriceWaterhouse Coopers (PwC) remained an institutional document repository. In contrast, the ordinary mailing list Kraken, started by self-selected "creatives" at the same organization, became a primary channel for communication and collaboration on new ideas.

System Users' Motivation

System designers assume that users are not only able but willing to use the system. They also consider users as the system's primary beneficiaries. However, users have to stretch their own time and effort in realizing the systems' benefits for organizational performance. Not surprisingly, this is a leading reason for system non-use. The assumption that if an information system is good enough, people will want to use it, is incorrect [10]. Understanding the role of users' self-determination is important for designing systems that they actually want to use. As noted in *Information Week* by the VP and director of IT at a major PR firm: "What makes a successful deployment is when you have users aggressively adopting a technology and asking for more, rather than having to sell it to them." Such recognition of users' motivation needs to be translated into performance-oriented design of IT systems.

Practitioners' knowledge about "intrinsic" and "extrinsic" motivation gets muddled in debates about rewards, incentives, and disincentives. Managerial understanding about motivations and incentives for system users is inaccurate and incomplete [8]. A common mistake involves treating extrinsic motivation as external to the user and intrinsic motivation as internal to the user. Another common mistake is considering extrinsic and intrinsic motivation as opposites. Such incorrect assumptions can result in misplaced overemphasis to "buy in" users' motivation. Wenger, McDermott, and Snyder observe that rewarding voluntary behavior poses a dilemma: "How do we encourage behavior through extrinsic means when the intrinsic motivation for such behavior is considered a matter of pride and identity?" [12].

Intrinsic motivation. Poor understanding about users' motivation could lead to an overemphasis on incentives, reprimand, or appeal to feelings of guilt. Research on users' behavior [8] suggests that such measures may be inadequate, unnecessary, or even detrimental to system performance. Users may see through manipulative techniques dressed up as incentives or sweet-talk and find such maneuvers controlling and pressuring. A correct understanding of intrinsic motivation is necessary to ensure appropriate managerial or cultural interventions. One such interpretation, based upon more than three decades of research on intrinsic motivation, identifies intrinsic motivation as the "inherent tendency to seek out novelty and challenges, to extend and exercise one's capacities, to explore, and to learn" [4]. It is interesting to observe that intrinsic motivation has nothing to do with monetary incentives and punishments, which are often used in practice with mixed results. Systems designed to leverage the users' inherent behavioral capacities would perform well even in absence of incentives, rewards, and reprimands. Perhaps this observation explains the contrast between the usage patterns for the sophisticated intranet and the ordinary mailing list at PwC. This also seems to explain the success of public Usenet groups, virtual communities, Amazon.com book commentaries, online opinion forums, Weblogs, and electronic auction sites such as eBay, where system users incur costs in terms of time and labor to create public or private value for others. Not surprisingly, intrinsic motivation has been associated with greater performance, more persistence, and higher levels of satisfaction and creativity. Intrinsically motivated system users appear to be less preoccupied with incentives or reprimands used by managers as instruments of coercive control. The challenge is to leverage intrinsic motivation in systems where structural expectations overemphasize mechanisms of coercion, surveillance, and compliance.

Extrinsic motivation. IT use in and of itself is of little interest to the system user. There is a chasm between system use and the separate outcome sought by the user. These separate outcomes include the desire for reward or recognition, or avoidance of punishment or guilt. Users feel pressured and controlled for making use of the system. This is the key cause of system non-use discussed earlier. When users feel pressured or controlled, their behavior is driven by

extrinsic motivation. A command-and-control-driven organizational culture may make the system user feel pressured and controlled. Users' self-imposed feelings may also have a similar effect. It is important to recognize the self-referential nature of what the user feels. The user may feel pressured or controlled because of an external mandate or because of internal self-imposed feelings of guilt or shame. In either case, the user feels controlled and pressured rather than autonomous.

Extrinsic motivation in and of itself is not inherently bad or good. Rather, what matters is whether the behavior is self-determined and freely chosen. When extrinsic motivation is self-determined, the system user feels as autonomous as he or she would feel when intrinsically motivated. Therefore, extrinsic motivation can be understood as a continuum. On one end of the continuum are behaviors resulting from feeling pressured and controlled by the separable outcomes, while on the other end are behaviors resulting from feelings of self-determination. In most organizational work contexts, systems are used to attain separable outcomes (salaries, rewards, incentives, and so on). However, user empowerment (for example, by giving the users sufficient control over how the job gets done) can facilitate self-determination, which is related to intrinsic motivation. When rewards or punishments are not overemphasized to manipulate or control behavior, system users feel self-determined even when working for extrinsic rewards. This is the state of self-regulated extrinsic motivation. However, the use of extrinsic rewards for what the user perceives as an intrinsically satisfying behavior may reduce motivation. Overemphasis on rewards and incentives may lead users to value the rewards more than the specific value created from system use.

Well-designed IT systems motivate the users to do what the system enables them to do and make it easier for them to do what they are really motivated to do. It is in resolving these two goals that we find the balance between technical usability and performance usability.

Conclusion

Technically sound systems with well-designed interfaces can remain neglected or misused if users lack commitment or motivation to use them. IT practitioners are demonstrating increased awareness of the importance of user behavioral issues to business performance. To help them further leverage the behavioral enablers of IT systems success, this article clarifies the core understanding of system users' motivation and commitment. Our findings also inform the discussions about the IT productivity paradox to enable integration of economic, sociological, and behavioral understanding about IT performance. Prior debate on IT adoption has focused on the question "If you build it will they come?"

Within an organizational change management framework, we have addressed what happens after the users are exposed to the new system. Our findings suggest that user commitment and motivation are critical not only for adoption of new information and communication technologies but also for their sustained use. The proposed framework and model attempt to connect the macro-level, firm-level, and national-level analysis of the IT-performance equation to specific system level implementation success. **C**

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