

5-2013

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David Hudson
Carleton University, davidhudson@cmail.carleton.ca

Gerald Grant
Carleton University, Gerald_Grant@carleton.ca

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Recommended Citation

Hudson, David and Grant, Gerald, "A Theory of the Firm Perspective on Entrepreneurial Use of Consumer IT as Corporate IT" (2013). *CONF-IRM 2013 Proceedings*. 6.
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A Theory of the Firm Perspective on Entrepreneurial Use of Consumer IT as Corporate IT

David Hudson
Carleton University,
davidhudson@cmail.carleton.ca

Gerald Grant
Carleton University,
gerald_grant@carleton.ca

Abstract

Why do some employees bring their own information technology (IT) to work? This behavior occurs in firms that provide considerable IT for employee use and in firms that have policies and governance that discourage employees from using consumer IT as corporate IT. In the theory of the firm, IT policy and governance are means for a firm to maximize value from its IT and to ensure employees do what they are supposed to do under their contracts. However, IT governance generally assumes that the only IT that is relevant to the firm is the IT that the firm owns. Employees can create value for the firm using their personal IT in conjunction with the firm's. Actions like these are consistent with entrepreneurship, if the employees invest in their own IT in expectation of return. Entrepreneurship theory, however, tends to focus on founders and not employees of established firms. This paper proposes a link between the theory of the firm and entrepreneurship theory. This link is significant because it advances the notion that employees of established firms can be entrepreneurial when they use their own consumer IT as corporate IT. This link is also significant because it suggests that managing employee entrepreneurship requires tolerance of value creation that is emergent and that can occur widely within a firm, including anywhere where IT is used.

Keywords

Consumer Information Technology, Entrepreneurship, IT Governance.

1. Introduction

Consumer information technology (IT) is IT designed for personal use by consumers, such as smartphones, touch screen tablets, and associated application software and services. A 2009 survey of information workers indicates that over one third bring devices, applications or services originally acquired for personal use to work for purposes that “aren’t sanctioned by IT” (Bernoff & Schadler 2010: 124). IT organizations face a future that includes IT acquired by “individual employees who no longer need technology to be contextualized for them by an IT department” (The Gartner Group 2011: 1). The phenomenon of employees bringing their own application, service and device IT assets to work to do their jobs may be referred to as *consumer IT used as corporate IT*.

Consider an example from the authors' research. A group studied at one firm is the customer service department. Employees of the department are *on call* and required to go into the office when they receive a customer service request outside the normal workday. Most often these employees use a trouble-shooting system that provides, in effect, a decision tree to address such requests. One employee recognized that this trouble-shooting information could be transferred to his personal smartphone and be immediately available wherever he happened to be. This employee obtained software, learned how to convert the information into a simple application for his smartphone and began responding to customer service requests outside the office. He later added enhancements to the application such as photographs and a navigation mechanism to improve usability on a smartphone. In this example, personal and firm assets were used in combination and, initially, without management approval of the IT choices or the new customer service practice within the firm.

The problem addressed by this paper is that there is no theoretical explanation for why employees use consumer IT as corporate IT in such a manner. Furthermore, it appears that consumer IT used as corporate IT may bring both firm and employee value (Harris, Ives & Junglas 2012). Consequently, a theoretical explanation should address the potential value to both.

Entrepreneurship theory explains how people create value from novel combinations of assets (Foss & Klein 2009). This theory emphasizes activities of founders who are motivated by profit. Entrepreneurship theory does not specifically explain entrepreneurial effort by employees of established firms except within formally sanctioned corporate venturing initiatives (Amit, Glosten & Muller 1993).

The theory of the firm explains why firms have governance, including IT governance, and how this allows firms to maximize value creation from their assets (Williamson 1996). The theory of the firm has not been used to explain situations where employees might combine their own assets with the firm's to create value or to explain why employees act entrepreneurially.

Either theory alone is insufficient to explain entrepreneurial effort by employees. The objective of this paper is to develop a link between the two theories that can be used to explain why employees use their consumer IT as corporate IT to create value for the firm and themselves. The linked theories may be valuable as an explanation for why employees use their consumer IT as corporate IT because there could be more at stake than a trade-off between employee preferences and IT security (Bernoff & Schadler 2010; Harris, Ives & Junglas 2012).

This paper reviews entrepreneurship theory and the theory of the firm to identify the components of the separate theories that allow a link between them to be proposed. First, entrepreneurship theory defines what is entrepreneurial effort and identifies who can be entrepreneurial and why. Second, the theory of the firm explains the contract between the employee and the firm, how employees do not always perform to the letter of their contract and the role of governance given the variable performance of employees. Third, this paper proposes a link between the two theories and uses it to explain one instance of employees of established firms acting entrepreneurially: employee use of their own consumer IT as corporate IT.

2. Entrepreneurship Theory

Entrepreneurship has diverse definitions and no comprehensive theory base (Aldrich 2005; Virtanen 1997). Knight (1921) provides one of the earliest definitions of an entrepreneur that remains consistent with contemporary use (Amit, Glosten & Muller 1993). Knight argues that entrepreneurs inherently deal in unmeasurable uncertainty (Knight 1921). Mises (1949) emphasizes that entrepreneurs are purposeful and take action. Kirzner's entrepreneur is alert to new opportunities and to newly available assets (Kirzner 1973). Schumpeter (1950) observes that entrepreneurs explore value-creating novelty.

Shane and Venkataraman (2000) provide one of the most widely referenced definitions of entrepreneurship in management journals. They define the field of entrepreneurship as how, by whom, and with what effects opportunities to create future goods and services are discovered, evaluated, and exploited (Shane & Venkataraman 2000: 218). This definition captures Knight's uncertainty, Mises' action, Kirzner's alertness, and Schumpeter's value creation perspectives.

Entrepreneurship is often associated with the effort of founders because "new firm creation is more consistent with popular perceptions of entrepreneurship" (Shane 2012: 12). However, firm formation is simply a convenient instance for studying entrepreneurship and there is "entrepreneurial activity in existing organizations" (Thornton 1999: 26). Entrepreneurship is not limited to firm formation.

Entrepreneurship by employees within established organizations can occur as corporate venturing or intrapreneurship (Aldrich 2005; Amit, Glosten & Muller 1993). Corporate venturing and intrapreneurship are formal management-led activities (Thornton 1999).

There are informal forms of entrepreneurship within established firms where employees pursue entrepreneurship on their own initiative. In "proxy entrepreneurship," employees of established firms act as if they were founders (Foss, Foss & Klein 2007: 1895). In "occupational entrepreneuring," employees innovate within their jobs (Courpasson, Dany & Marti 2011: 3). "Entrepreneurial bricolage" includes improvisational acts by employees doing their jobs (Baker & Nelson 2005: 329). These descriptions of employee entrepreneurship emphasize non management-directed and voluntary effort by employees.

It is important to distinguish entrepreneurial effort from other creative effort that employees might make. Entrepreneurs are purposive and act intentionally in response to a need (Mises 1949). Entrepreneurship also requires investment, or deliberate commitment of resources, by the entrepreneur and return where there must be Knightian uncertainty and the potential to "suffer losses" (Rothbard 1985: 283). Investment, expected return and uncertainty distinguish entrepreneurial effort from acts of general creativity.

While there is often a profit motive for entrepreneurship, there are other motivations, as well (Aldrich 2005; Penrose 1959). For example, the benefits realized may include the choice of workplace, co-workers or tools (Jensen & Meckling 1976). Employees also perceive use of "particular" or "familiar" technologies as a benefit (Hart & Holmstrom 2010: 486). Employees can realize non-monetary returns from entrepreneurship.

Emancipation describes one general motivation for entrepreneurial effort (Rindova, Barry & Ketchen Jr 2009). Emancipation is the act of setting oneself free from another's control and changing one's environment in more than just economic terms – through “the creation of newness” (Rindova, Barry & Ketchen Jr 2009: 478). Emancipation is an active process of self-determination and distinct from management-led initiatives (Alvesson & Willmott 1992). Employees motivated by emancipation may use IT to increase control over how they do their jobs, take over relationships like those associated with finding new IT for work and share how they are using IT with others to encourage change (Rindova, Barry & Ketchen Jr 2009).

While entrepreneurship theory emphasizes profit-motivated founding of new firms, it leaves the door open to employees of established firms being entrepreneurial as acts of emancipation.

3. Theory of the Firm

The theory of the firm explains that transactions, or any economic exchange of value, are costly because they entail gathering information, negotiating, writing up contracts and monitoring proper execution of those contracts (Coase 1937; Nee 2005). Consequently, firms purchase assets or hire employees when it is more economically efficient to have an ownership or employment contract than repeatedly procuring those resources from the market (Demsetz 1988). Contracts are “a vehicle for voluntary exchange” between individuals and their employers (Jensen & Meckling 1976: 310). A set of contracts therefore describes the boundary of the firm in terms of the assets owned and people employed.

A fundamental argument in the theory of the firm is that contracts are necessary for “telling the story ... [of] ... why there should be firms in a market economy” (Foss 1996: 4). Economic exchange is a function of what is captured in the contracts as well as how people actually behave concerning those contracts. Property rights or ownership of assets, asymmetric information between parties, and assumptions of individual self-interest, opportunism and moral hazard influence behavior and are important to understanding how contracts are created and why they must be overseen by managers (Williamson & Winter 1993).

Contracts are necessarily incomplete because a firm and its agents agree to contracts where not all eventualities can be anticipated and where the parties do not have perfect, or even the same, knowledge of what must transpire to fulfill the contract (Aghion & Holden 2011). Uncertainty, and hence cost, arises from the different, incomplete knowledge of the parties (Hart & Moore 1990), as well as how these parties later address the consequent risks of incomplete contracts (Grossman & Hart 1986). In the theory of the firm, there is cost associated with acquired knowledge as well as with what is unknown.

Moreover, incomplete contracts allow for opportunism and moral hazard. Opportunism and moral hazard include actions by an agent that may conflict with the principal's desires because the agent possesses information that the principal does not, because circumstances arise that are not addressed in the contract or because the agents' actions to fulfill the contract are not observable (Jensen & Meckling 1976). As agents are assumed to be self-interested (Williamson & Winter 1993), the attractiveness to an agent of “leisure, conveniences, and ease of work [means that] viable shirking is the result” (Alchian & Demsetz 1972: 781). In other words, because contracts are necessarily incomplete, managers and governance exist to mitigate

opportunistic bad behavior, such as shirking or other self-interest, and to ensure that agents deliver as expected and in unforeseen situations (Nee 2005).

In the theory of the firm, governance as the formal allocation of decision rights in an organization is one consequence of incomplete contracts (Foss 2012). There are substantial bodies of literature describing certain elements of firm governance. For example, highly detailed process and practice methodologies are available describing all aspects of IT governance, including IT strategy, selection, implementation and operation (Weill & Ross 2005).

Even though overseen by managers, compliance to a contract is not binary, since a contract is a “reference point” for a transaction (Hart & Moore 2008: 2). Because feelings and each party’s interpretation of the contract are involved, “parties ... may have different views of what they are entitled to within the contract” (Hart & Holmstrom 2010: 484). Consequently, a strict legal interpretation of a contract only constrains the parties’ actions to an extent. An agent may shade or withhold effort but still operate within the letter of the contract (Hart & Moore 2008). Shading is similar to shirking but emphasizes that withholding varies by degree without violating the letter of the contract.

Alternatively, an agent may use care, materials or techniques that exceed what a contract specifies without the principal’s knowledge. This is “consummate performance, that is, ... performance within the spirit of the contract” (Hart & Moore 2008: 3). With the contract as a reference point, there exists a continuum of possible outcomes consistent with the contract but varying insofar as they meet the letter of the contract or its spirit. While the theory of the firm emphasizes the manager’s role in minimizing shading, the manager is also able to encourage consummate performance.

4. Developing a Link between the Theory of the Firm and Entrepreneurship Theory

Entrepreneurship theory allows that employee owned consumer IT used as corporate IT might be entrepreneurial, if there is a novel combination of IT assets and if there is some value created from some investment made. The theory generally assumes that employees take advantage of idle or underused firm assets, such as IT, not their own (e.g. Penrose 1959).

The theory of the firm allows that an employment contract is incomplete such that an employee might do more than required, including investing in consumer IT assets to benefit the firm. IT governance in organizations also focuses on IT owned by the firm, not the employee, and emphasizes the virtues of IT standardization (e.g. Weill & Ross 2005).

4.1 Incomplete Contracts Allow Consummate Performance

The requirement to manage risk arises from incomplete and asymmetric knowledge between the manager and employee (Williamson & Winter 1993). This risk management extends to how managers supervise employee agents who may choose to shade or be consummate (Hart & Moore 2008). The risks themselves as well as the acts of supervision and risk management are costly. So effective contracts, incentives and monitoring are used to minimize cost and shading by agents (Jensen & Meckling 1976).

Consequently, the theory “focuses almost exclusively on ... how to ... provide appropriate incentives for the agent to make choices which will maximize the principal’s welfare, given that uncertainty and imperfect monitoring exist” (Jensen & Meckling 1976: 309-310). The theory does not assume that all agents are opportunistic all the time, but does assume “that some individuals are opportunistic some of the time and that it is costly to ascertain differential trustworthiness *ex ante*” (Williamson 1996: 48). Therefore, principals – including managers – strive to minimize shading by agents – including employees – under incomplete contracts.

However, incomplete contracts do not just mean that unknowable outcomes and risks are in play in a strictly negative sense. While agents may choose to shade, they have alternatives (Shane 2012). Employee agents can choose to perform in a consummate manner, so there are “positive aspects of the theory” (Jensen & Meckling 1976: 310). Consummate performance is allowed by incomplete contracts and is a way to describe the action of an employee who does more than required by their job to create novel combinations of their own IT assets together with the firm’s, for example.

Employees who use consumer IT as corporate IT may not express that they are acting *consummately* or because their *contracts are incomplete*. However, employees do indicate that their own IT provides “better results” than IT provided by the firm, that they use their own IT “to do my job to the best of my abilities,” and so on (Bernoff & Schadler 2010: 125-126). Voluntary effort for reasons like these is consistent with working to the spirit of the employment contract rather than to the strict letter of the contract.

4.2 Consummate Performance May Be Entrepreneurial

Imperfect knowledge and bounded rationality explain why contracts are incomplete, however “there is a more positive side to bounded rationality and uncertainty, namely the formation of judgment” (Foss 2012: 24). Judgment is the entrepreneur’s conjecture accompanied by action to combine assets in a novel way (Foss & Klein 2009; Shane & Venkataraman 2000). Such action characterizes entrepreneurs (Penrose 1959).

Actions to create novel combinations of assets where there is some value to be realized, even though uncertain, are consistent with consummate performance (Hart & Moore 2008). Strict execution of current business practices when the employee might imagine advantageous ways to operate would be “commonplace” or “dull” actions (Penrose 1959: 36). Therefore, voluntary employee effort to work to the spirit of their contract while making investment in their own IT assets in expectation of a possible return is not only consummate, it is also entrepreneurial.

4.3 Investment and Return: More than Monetary

An agent may skew their effort to consummate performance to realize incremental benefit. Consummate performance is *over* performance or *over* investment by the agent and may take the form of higher quality materials than specified chosen for use, superior techniques of implementation, or extra care and time taken by the agent in completing their task (Hart & Moore 2008). The key point is that over investment in time, skill or financial terms is not readily observable by the principal, not required by the contract and made voluntarily by the agent.

Investments by employees under consummate performance may be monetary or non-monetary but they are investments because they are voluntary contributions.

An employee may expect to perform better using their consumer IT and may expect that performance to be rewarded through advancement in position or salary. However, there are other returns or benefits from entrepreneurial effort (Jensen & Meckling 1976). The assumption that people are self-interested and benefit maximizing need not be relaxed, however the economics must include benefits such as increasing personal satisfaction and removal of uneasiness (Hart & Holmstrom 2010 Jensen & Meckling 1976; Mises 1949). Non-monetary benefits also include employees' "human capital tied to particular technologies ... with which they are familiar" (Hart & Holmstrom 2010: 486).

Emancipation can be one of the benefits of entrepreneurial effort using consumer IT as corporate IT. Where technology change increases uncertainty by threatening the firm's environment (Dosi, Orsenigo & Labini 2005), then emancipation can be understood as a non-monetary benefit to individuals who are uncomfortable leaving the change response to others (Alvesson & Willmott 1992). Emancipation satisfies an entrepreneur's "moral obligation to act" rather than being directed towards personal monetary gain (Courpasson, Dany, & Marti 2011: 4).

5. Discussion and Conclusions

A link between the theory of the firm and entrepreneurship theory is developed to explain employee use of consumer IT as corporate IT. Incomplete employment contracts allow employees to do more than strictly required in their jobs. When employees invest in expectation of benefit, such consummate performance can also be entrepreneurial. The firm may benefit financially through improved processes or even new products while the employee benefit may be emancipation. Consumer IT used as corporate IT may be one example of such behavior under the linked theories.

The authors are using the proposed link between the theories to examine instances of consumer IT used as corporate IT in firms in the following manner. Instances of use may be entrepreneurial, if the employee invests time or money in expectation of benefit (Mises 1949; Rothbard 1985). If the employee seeks greater control or reduced uncertainty, takes on relationships that the firm previously provided, or makes declarations about change, then emancipation may be a benefit (Rindova, Barry & Ketchen Jr 2009). There may be benefit to the firm, if there is evidence of increased productivity, improvement to a business process, or new products or services then there may be benefit to the firm (Keen 1988). Finally, the boundary of the firm or IT governance may have been affected, if there is evidence of change to how the firm obtains or manages its IT. Employee interview data is being coded using these criteria.

In the earlier example from our research, the CIO of the firm learned of the customer service smartphone application implemented by the employee and described it as a valuable improvement to the firm's operation even though its development and use did not conform to firm policies. Later, the firm productized the application as a customer self-service offering. This example provides evidence of investment and return. The employee invested time to develop the tool and saw emancipation as a benefit. The firm realized a process improvement and then a new product. The combination of IT was novel, not any of the components. The IT combination was

created through an employee's consummate effort, not through the firm's product development or IT departments.

The linked theories can also be useful in less dramatic examples. An employee at another firm described using her own smartphone and paying the monthly bill herself, even though the firm would have paid for both. She described how using her own IT not only allowed her to better manage her personal and business activities but to remain in control of any work done outside the office. In this example, emancipation appears to be a benefit of the consumer IT that is used in place of corporate provided IT.

In another firm, employees described using an Internet social media service to work with their customers in a new way. Managers opposed use of the service because it was not controlled by the IT organization. One of the employee users wrote a social media IT policy for the firm and campaigned for its adoption. This example demonstrates firm process improvement and a change in IT management practice in the firm from consumer IT use.

While use of consumer IT as corporate IT reflects technology preferences of employees, it can also simultaneously create new ways for companies to serve their customers. As with any entrepreneurial activity, outcomes are often uncertain, emergent and controversial (Baker & Nelson 2005; Foss 2012). The key point is that while employees may free themselves from constraints using consumer IT as corporate IT, that use may also benefit the firm through product, service or business process innovation (Bernoff & Schadler 2010; Harris, Ives & Junglas 2012).

We do not argue that all use of consumer IT as corporate IT is entrepreneurial or even that all entrepreneurial use is constructive for the firm – just that some may be so. Firms can distinguish constructive entrepreneurial use and further distinguish where this creates the potential for positive change in the firm or IT governance. While the sourcing and support relationships implied by consumer IT used as corporate IT might conflict with how IT has traditionally been governed, the value created by entrepreneurial employees may be significant. Restricting employees from using consumer IT as corporate IT may not only impinge on employee preferences, it may deny new value creation in many areas of firm operation. Firms depend on innovation for differentiation and therefore must recognize and encourage constructive entrepreneurship by employees. As a practical contribution, the link suggests that managing consumer IT used as corporate IT is about more than how employee preferences affect IT security and other policies.

We also do not argue that IT departments should ignore employee use of consumer IT as corporate IT. However, the way IT is governed may be changing as the boundary of the firm shifts because the IT that is of value to the firm may now include IT that belongs to employees. The boundary of the firm is an economic trade-off, so a change in the technology environment affecting relative transaction costs can shift the balance for firms between sourcing internally versus from the open, or employee-provided in this instance, market and cause the firm boundary to be redrawn (Nee 2005).

Such technology change affects a firm directly through the actions of competitors who take advantage of the technology to deliver superior products or services (Williamson 1996). Technology change also affects a firm indirectly by altering how employees choose to perform their jobs (Bernoff & Schadler 2010). Because of these effects, some IT may move outside the firm boundary. IT departments can adhere to traditional governance policies and restrict how their employees use IT, however they cannot restrict whether their competitors take advantage of those IT innovations.

Employee use of consumer IT used as corporate IT is, therefore, an indication of change in the technology environment that presents an opportunity to entrepreneurs (Penrose 1959). Some entrepreneurs may take advantage of this opportunity by starting new firms. However, employee entrepreneurs may use this technology to change the firm from within by discovering novel sources and uses for IT and creating a case for change in IT governance to permit, and even encourage, appropriate use of consumer IT as corporate IT.

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