It’s My Tool, I Know How to Use It: A Theory of the Impact of BYOD on Device Competence and Job Satisfaction

Research-in-Progress

Laurie Giddens
Baylor University
Laurie_Giddens@baylor.edu

John Tripp
Baylor University
John_Tripp@baylor.edu

Introduction

IT departments have historically ruled their realms with iron fists. When an employee entered the organization, they were given standardized, organizational-owned hardware, and were instructed to use that hardware to complete all work-related activities and communications. Only through this standardization and control could IT departments hope to manage the huge number of devices needed to support and protect the organization. For the majority of the business IT age, the average users’ work-issued hardware was superior to their own personal equipment. However, as hardware capabilities have soared, and prices have dropped, the average users’ personal hardware has become more than sufficient to support typical business activities using such tools as email, productivity suites, and web-based business client software. As this personal hardware has become more capable, the boundary that separates the corporate-owned from the personal hardware has begun to erode.

Consumer products are invading the workplace and the trend is showing no signs of abating. This invasion – the use of personal devices at work, on the work network, to complete work-related activities – is called IT Consumerization, or “Bring Your Own Device” (BYOD). BYOD does not simply indicate a change in user behavior, but represents a fundamental change in the economics and culture of work-based client computing (Willis 2013). This trend is being driven by the user. In fact, nearly half of employees recently reported that they believed that their personal devices were more useful and efficient than their work devices. Further, nearly one third of those surveyed would disregard corporate IT policy to use their personal device (Harris et al. 2012). Through the development of robust, narrowly focused applications, mobile and other personal device platforms are allowing users to perform work-related tasks on the majority of devices (Andriole 2012). Because of the easy access to programs that support their work, users are becoming less and less dependent upon the IT department to provide tools for them. This is fundamentally shifting the relationship between the IT department and the organization’s users (Niehaves et al. 2013).

The literature on BYOD has focused primarily on the impact of BYOD on the organization. BYOD has been associated with both negative and positive impacts. Security is the most common risk associated with BYOD. When opening the network to personal devices, the network may be put at a higher risk of viruses and other malware (Harbert, 2013). Further, consumer devices enable employees to store corporate files using their consumer cloud applications thereby increasing the risk of corporate data leak (Ingalsbe et al. 2011). Additionally, home users may not receive the same kind of communication and training regarding their organization’s existing safeguards for securing and protecting their personal devices and the broader organization network (Anderson & Agarwal, 2010).

On the other hand, several benefits of BYOD have been reported. Employees who use their own devices at work have reported that they are more satisfied, more innovative, more efficient, and happier (Harris et al. 2012).

---

1 For a review of IT consumerization literature, see the article: IT Consumerization: A Theory and Practice Review (Niehaves et al. 2012).
al. 2012; Willis 2013). Even so, at this point there has yet to emerge a theory as to how the use of personal devices at work leads to positive work outcomes. This motivates our research question:

How does the use of personal IT devices at work impact job performance and job satisfaction?

Social Cognitive Theory (Bandura 1977) and the Job Characteristics Model (Hackman & Oldham) describe relationships between user’s beliefs about the tools they use, their ability to accomplish tasks, and their perceptions of the outcomes. User competency theory, and personal innovativeness theory illustrate the manner in which a user’s nature of use of a technology allows her to perform their technology-dependent job tasks well. In the remainder of this article, we use these lenses to motivate a theory of the impacts of BYOD on job performance and job satisfaction. We contribute by proposing a mechanism to explain the relationship between the use of personal devices at work, and the previously observed work outcomes described above.

**Theoretical Development**

**IT Consumerization - BYOD**

Bring your own device (BYOD) refers to the use of personal devices within the work context to complete work-related activities. As such, it goes beyond using a web browser on a personal device to periodically check email from home. Instead, it refers to the use of personal IT devices as the primary means through which to accomplish required work tasks. While the phenomenon of BYOD is rather new, employees have for some time perceived advantages to using their own devices. Employees have been found to be motivated to use their own devices because they believed that they could do their jobs better. In turn, this led to the desire of other employees to use their personal devices as they observed their coworkers using theirs (Ortbach et al. 2013).

We propose that BYOD impacts individual work outcomes due to its effect on the use of the technology for work tasks in innovative ways. However, the mechanism through which BYOD manifests in individual performance has yet to be fully explored. In this paper, we theorize that the impact of BYOD on individual work outcomes is specifically related to the mediating constructs of Device Self-efficacy, Personal Innovativeness with a Device, and Device Competence. We discuss these constructs below.

**Device Self-Efficacy**

Self-efficacy refers to the extent or strength of one’s belief in one’s own ability to complete a task or reach a goal (Bandura 1977). Self-efficacy is therefore an important determinant of the beliefs that one holds regarding one’s ability to affect outcomes. Self-efficacy influences individuals’ response to perceived challenges. When a person has strong self-efficacy beliefs, he possesses a level of self-confidence in his ability to successfully manage challenging situations. Because of this, a person with high self-efficacy tends to persevere when challenges arise. In the context of BYOD, device self-efficacy describes a person’s belief in her abilities to use her IT technology devices to accomplish tasks.

CSE is a broad-based, individual belief that a person possesses, as to their ability to use computer technology (Compeau and Higgins 1995). It is not technology-specific. In most roles in organizations today, an individual’s performance in their job requires confidence to work with a broad variety of information technology devices and applications. Because of this, CSE is an important dimension of self-confidence that deals with the challenges caused by technologies in most modern work settings. DSE refers to an individual’s belief in his or her ability to successfully complete specific tasks using their specific devices.

**Personal Innovativeness with a Device**

Personal innovativeness with information technology (PIIT) means the level of individual willingness to try out any new information technology. As such, personal innovativeness with information technology is the general propensity to have more positive beliefs about technology use (Agarwal and Prasad 1998). Individuals with higher personal innovativeness are expected to develop more positive beliefs about the target technology. PIIT can also be posited to lead to “risk-taking” with a technology. Risk taking has been shown to be associated with innovation, and even argued to be a fundamental component for innovation.
(Kirton 1976). Importantly, personal innovativeness in general has been shown to be heavily, if not inseparably related to a specific context.

We propose that PIIT is salient in this context for the same reason as CSE. Because of the broad range of technology-mediated activities in many of today’s work contexts, a general level of innovativeness, along with the associated positive beliefs about technology, is important. Device innovativeness means the level to which a user is willing to experiment with a particular device. It is likely that even a person with high general PIIT will have the same willingness to experiment with every device. At the same time, it is likely that users who complete a broader range of activities with a single device (e.g., work-related and personal) will have more opportunities to take risks and experiment with the device. If these experiments are successful, it is likely that the user will be more willing to continue to experiment in the future.

**Device Competence**

Device competence refers to the ability of a user to exploit the full potential of a device to conduct a job task (Marcolin et al. 2000). When a task is dependent upon the use of a device, device competence is necessary to achieve high job performance. Device competence moves beyond the adoption and use of a technology and instead measures a user’s ability to bring technology to bear for maximum performance in the work setting. Therefore, an individual with high device competence will demonstrate that they not only can use their device for work tasks, but do so effectively. If an employee is already familiar with a device, as is the case with BYOD, then they will likely have an easier time utilizing the device in an efficient manner to complete their work tasks.

**Theoretical Model and Propositions**

Our theoretical model is presented as figure 1. We draw on Social Cognitive Theory (Bandura 1997) and the Job Characteristics Model (Hackman and Oldham 1980) to show the impact of IT consumerization on job performance and job satisfaction. (Note that the dashed line relationships are included for completeness, but due to length restrictions and these constructs well-established relationships in the literature, we do not theorize propositions for them in this paper.)

**Figure 1: Theoretical Model**

**Job Autonomy, Performance and Satisfaction**

Job autonomy, performance and satisfaction are widely studied constructs that have received heavy attention in both management and IT literature. Job autonomy is an employee’s sense of having a choice in initiating and regulating their work task (Hackman and Oldham 1980). As such, employees feel responsible for the outcomes of their work tasks. According to the job characteristics model of work motivation, employees with a high sense of autonomy will experience high job performance and
satisfaction (Hackman and Oldham 1980; Spreitzer 1995). Furthermore, prior studies have found autonomy to be highly correlated with innovative behavior (Hammond et al. 2011). In the context of technology use in organizations, employees in jobs low in autonomy were less likely to explore or interact with their IT device (Ahuja and Thatcher 2005). Lack of autonomy has been associated with work exhaustion and poor work performance (Moore 2000). Job satisfaction is an affective response that is associated with one’s experiences at work (Weiss and Cropanzano 1996). It is defined as the extent of positive emotional response to the job resulting from an employee’s appraisal of the job as fulfilling or congruent with the individual’s values (Morris and Venkatesh 2010). Job satisfaction has been linked to several other significant work outcomes including organizational commitment and turnover intention. The constructs that are salient to our discussion are presented in Table 1.

\textit{P1: The level of Job Autonomy will have a positive impact on job satisfaction.}

\textit{P3: The level of Job Autonomy will have a positive impact on job performance.}

<table>
<thead>
<tr>
<th>Construct</th>
<th>Definition (source, if applicable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extent of IT Consumerization</td>
<td>The proportion of personal devices that are also utilized to complete the work activities required for the user to complete their job.</td>
</tr>
<tr>
<td>Device Self Efficacy</td>
<td>An individual’s belief in his or her ability to complete tasks using their consumer device.</td>
</tr>
<tr>
<td>Personal Innovativeness with Device</td>
<td>An individual’s level of willingness to innovate with a device.</td>
</tr>
<tr>
<td>Job Autonomy</td>
<td>Job autonomy is an employee’s sense of having a choice in initiating and regulating their work task. (Hackman and Oldham 1980)</td>
</tr>
<tr>
<td>Device Competence</td>
<td>Device competence refers to the ability of a user to exploit the full potential of a particular device to conduct a job task. (Marcolin et al. 2000)</td>
</tr>
<tr>
<td>Length of Use of Device</td>
<td>The length of time of use of a device that is owned and paid for by the user.</td>
</tr>
<tr>
<td>Extent of Use of Device for Work Activities</td>
<td>The number of different work activities necessary to complete the job that are completed with the device, and the intensity of the device’s use to complete those tasks.</td>
</tr>
<tr>
<td>Job Performance</td>
<td>Completion of work tasks effectively and efficiently.</td>
</tr>
<tr>
<td>Job Satisfaction</td>
<td>Job satisfaction is an affective response that is associated with one’s experiences at work. (Weiss and Cropanzano 1996)</td>
</tr>
</tbody>
</table>

\textbf{Table 1: Construct Definitions}

\textbf{Device Competence}

Device competence is the ability to exploit a particular device for the completion of a job task. Users with a high level of competence can exploit the features and capabilities of a particular technology to complete work tasks with efficiency and effectiveness, thereby increasing job performance (Munro et al. 1997; Wang and Haggerty 2011).

In previous studies, users have reported a higher sense of autonomy when they are able to use their chosen consumer devices in the workplace (Harris et al. 2012; Niehaves et al. 2013). It is intuitive that when users choose how to apply their device to complete a job task, they would be expected to have a higher sense of autonomy, than users who are directed to use particular technology. In the case of IT consumerization, employees are able to choose which device they want to use for work, as well (to some extent) how and when to use them. We would argue, that individuals who apply their chosen devices in a way to successfully complete a work task will have a higher sense of job autonomy and higher job performance. Therefore, we propose:
**P2:** The level of Device Competence will have a positive impact on job satisfaction.

**P4:** The level of Device Competence will have a positive impact on job performance.

### Device Self Efficacy and Innovativeness

Social Cognitive Theory states that high self-efficacy will increase the outcome or performance of a task (Bandura 1977; Wood and Bandura 1989). Self-efficacy affects the level of persistence and effort that individuals are willing to put into a specific task. As a result, individuals with high self-efficacy will work through challenges that would normally impede success of a task. Self-efficacy has been found to be a significant predictor of innovative behaviors and performance (Gist 1987; Hammond et al. 2011). The same has been found true for CSE as well (Marakas et al. 1998). The use of technology for personal tasks has been shown increase competence of similar tasks in a work setting. In a study on virtual competence, virtual self-efficacy was found to increase virtual competence in the workplace (Wang and Haggerty 2011). In the same vein, the extent of use of Web 2.0 tools outside of an organization affected the use of Web 2.0 tools in the organization for work tasks (Cummings et al. 2009). The implication of these studies is that one’s personal use of a device or technology will affect the level of device self-efficacy for work purposes and thereby increase user competence. Further, those who demonstrate high personal innovativeness with their devices will likely be able to apply this behavior while conducting work tasks. Therefore we propose that:

**P5:** The level of Device self-efficacy will have a positive impact on Device Competence.

**P7:** The level of Personal Innovativeness with Device will have a positive impact on Device Competence.

### IT Consumerization

IT consumerization is defined as the proportion of devices that are owned by and paid for by the user, which are utilized to complete the work activities required for the user to complete their job. When a user utilizes a high proportion of personal devices for work, it follows that the user chose those devices for a reason. The specific reason may vary across users, but it is likely that if the user has chosen a particular device, the user will feel that they can better use the device to accomplish their goals. We propose that this ability to choose which device to use for certain work tasks increase an employee’s sense of autonomy. Further, as a user utilizes a device for a wider range of activities (e.g., personal and work-related), it is likely that the user will need to explore and utilize a wider range of potential features and applications on the device. We propose that the use of a personal device may impact device self-efficacy and device innovativeness due to the complementary effects of using the device for personal as well as for work related activities. By using the device for multiple activities motivated by personal needs, the user is likely to more fully understand the capabilities of the device. Further, the user is more likely to customize their use of the device using applications and other software that support their ability to use the device for the purposes they choose. In addition, as the length of time of the use of the device increases, it is likely that this effect will increase.

At the same time that a user is building proficiency for the use of their device by completing personal activities, the user is also using the device for work-related activities. This can impact a user through increased familiarity, and increased mindfulness. Whereas in the past, a user might perform the same activity, such as “write email”, differently for personal and work related activities, in the context of BYOD, this can be accomplished using the same client software. Even in the case where a work-related activity cannot be completed in the same manner as the personal activity, because the user is able to configure the device according to their needs, there is additional familiarity with the device. We would argue that this concurrent use of devices for work and personal activities will create ample opportunities for the employee to gain experience using her device, as well as overcoming problems that arise during the use of the device. Finally, because of this wider exposure to the features and applications available on the device, the user will likely be more competent in their use, and more innovative in the application of the features themselves. For this reason, we propose:

**P8:** The extent of IT Consumerization will have a positive impact on Job Autonomy.

**P6:** The extent of IT Consumerization will have a positive impact on Device Competence.
**P9:** The extent of IT Consumerization will have a positive impact on Device Self-Efficacy.

**P10:** The extent of IT Consumerization will have a positive impact on Personal Innovativeness with Device.

### Length of Use

No matter what the device, the length of time that the user has operated the device is likely to increase their ability to use it. Users are expected to gain experience with their device as opportunities arise for them to use various features to conduct their daily activities. Further, prior good experiences, or successes, of an activity will affect one's belief in their ability to perform the task. Overcoming difficulties that arise while performing a particular activity will also increase an individual's self-efficacy. This antecedent of self-efficacy is known as enactive mastery (Wood and Bandura 1989). One way individuals develop enactive mastery is through direct experience in applying knowledge. In fact, direct experience has the largest influence on self-efficacy (Hackbarth et al. 2003; Wood and Bandura 1989). In their review of computer self-efficacy literature, Marakas, Yi, and Johnson found that prior experience had a significant effect on CSE (Marakas et al. 1998). As individuals gain experience using their device over time, their DSE, Device Competence, and Personal Innovativeness are likely to increase. For this reason, we propose that the length of time that the user has used their devices will positively impact their ability to use the device.

**P11a:** Length of use of Device will positively moderate the impact of the Extent of IT Consumerization on Device Self-Efficacy

**P11b:** Length of use of Device will positively moderate the impact of the Extent of IT Consumerization on Device Competence

**P11c:** Length of use of Device will positively moderate the impact of the Extent of IT Consumerization on Personal Innovativeness with Device

### Extent of Use for Work

The extent of use of the device for work activities is defined as the number of different work activities necessary to complete the job that are completed with the device and the intensity of the device's use to complete those tasks. This is distinct from the construct IT Consumerization, because it is specifically related to the *breadth* of use of the device, rather than simple gross use. Metcalfe’s Law states that the value of a network grows as the number of nodes are connected. In this case, the value of the device and the effects of its use are multiplied by the number of tasks connected to its use. We assume that all of the work activities completed with the device are impacted by the user's competence and innovativeness of use. While all of these tasks may not be impacted to the same degree, we propose that the number of *different* work activities completed with the device, will multiply its impact. Further, because many work activities can be completed on a number of devices, we propose that the proportion of those activities completed with the device, or the intensity of its use to complete the tasks is salient to its impact. Because of this, we propose:

**P12a:** Extent of Use of Device for Work Activities will positively moderate the impact of Device Competence on Job Autonomy

**P12b:** Extent of Use of Device for Work Activities will positively moderate the impact of Device Competence on Job Performance

### Next Steps

In order to measure the effects of IT consumerization, we intend to conduct a research project in the second half of 2014 that compares the performance of individuals who use a consumer device for work tasks to individuals who conduct the same tasks using employee-provided hardware. We currently are in the process of creating measures for the new constructs and developing a survey to measure the impacts of IT consumerization on Job Satisfaction. In order to obtain our sample, we will recruit organizations to participate. We intend to recruit approximately 20 organizations. We seek to recruit pairs of similar (e.g., size, industry, etc.) organizations, with one member of each pair utilizing BYOD, and the other not.
Once an organization has agreed to participate, we intend to survey users and their direct management. Users will complete the survey for all constructs. Management will complete the survey for each employee, but will only answer the job performance component of the survey. By doing this, we intend to reduce common method variance, and ensure that we reduce bias in the job performance measurement.

Once we collect the data, we intend to perform measurement and structural model testing, as well as testing the differences between the high-BYOD and low-BYOD groups of respondents using analysis of variance, as well as other methods.

**Conclusion**

In this paper we contribute by motivating a theory of the impact of IT Consumerization on User Device Competence and Job Satisfaction. By doing so, we propose a mechanism through which to view the impacts of BYOD and IT consumerization on individual work outcomes. Further we contribute by proposing definitions and dimensions of IT consumerization, and other salient constructs. It is likely that the consumerization trend will continue to grow as consumers integrate technologies their lives. As the saying goes, “You can’t unscramble eggs”. Similarly, organizations have found that they cannot separate the consumer from his or her device. Our paper suggests a lens through which to investigate the potentially positive outcomes IT consumerization at the individual level. While today's conversation about IT consumerization mainly centers on mobile devices and applications, the future of consumerization will likely be wearable technology and other devices connecting the Internet of things. The new demands on organizations will be to understand and manage both the potential negative and positive impacts of this blurring of the lines between “personal” technology and “business” technology. As such, gaining an understanding on how the use of personal technology within the business setting impacts the competence, performance and satisfaction of employees is an important step to understanding and navigating the new world of IT consumerization.

**REFERENCES**


