

IT acceptance: understanding the words which describe what happens between users and technology

Research-in-Progress

Ricardo Engelbert
ISE Business School / UP
ricardo@engelbert.com.br

Alexandre Reis Graeml
UTFPR / UP
graeml@fulbrightweb.org

Abstract

This is a work in progress paper in which we discuss the relationship between users and IT artifacts by means of the terms and expressions most frequently used in the literature to refer to this relationship. We propose the use of two new terms that we believe could help understanding some particularities of the IT implementation process, which happen after an organization adopts an artifact and its users accept to use it. Those terms are: 'technology embracement' and 'technology grappling'. We will next study a case of IT implantation where we believe we will be able to find users that are favorable to the introduction of the new technology and others that are not. By analyzing their attitudes we plan to validate these expressions as representative of ways users behave in their interaction with artifacts and other users while they build their own versions of the 'technology in use'.

Keywords

IT adoption; IT acceptance; IT appropriation; IT embracement; IT grappling

Introduction

The relationship between users and IT artifacts is described by means of different words. The most usual (and most discussed in the literature) are: adoption, acceptance and appropriation.

Adoption, acceptance and use of information technology (IT) by individuals in organizations are recurrent research themes in the information systems (IS) field. The reason for this interest is that if the available technology is not used by the employees of an organization, no advantage can be obtained from its intended adoption (Davis, 1989; Venkatesh V. , Morris, Davis, & Davis, 2003). The most relevant issue for organizations is not to look for the possible economic returns *on the technology*, but to look for the returns *on the use* of it (Orlikowski W. J., 2008).

A technological artifact's cycle inside an organization frequently involves several different stages, such as choosing, deciding, presenting, adopting, accepting, using, adapting, building, transforming and discharging it (Bagozzi, 2007; Fichman, 2004).

Organizations' expectations about IT adoption go from efficiency improvement to innovation boost. They adopt IT "to help managers make better decisions, better understand the nature of customers, discover new market opportunities, improve the productivity of the employees, and so forth" (Hirschheim, 2007, p. 204). However, adoption and acceptance are punctual. They happen at a specific moment in time and they may happen in a "bureaucratic" way, without much enthusiasm. In an organizational environment, one may accept a technology because one is expected to, having no choice to go in a different direction. Does that mean that real effort is going to be put into converting acceptance in usage and success?

This is a work in progress paper in which we discuss the relationship between users and IT artifacts by means of the terms most frequently used in the literature to refer to this relationship, and we humbly propose the use of two new terms that we believe could help us understand some particularities of the IT implementation process, which happens after an organization adopts an artifact and its users accept to use it. Those terms are: ‘technology embracement’ and ‘technology grappling’.

Theory

To describe the relationship between users and IT artifacts some authors (Benbasat & Barki, 2007; Venkatesh & Goyal, 2010) use the terms “adoption” and “acceptance” in an interchangeable way. When Venkatesh and Goyal (2010) talk about the “technology *adoption* literature” they give examples of the “technology *acceptance* model” (see pages 287, 290, and 291), and when they suggest the models to test technology *adoption* they explicitly suggest the use of the “unified theory of *acceptance* and use of technology” (p. 299). Another example of this interchangeable use of the verbs ‘to adopt’ and ‘to accept’ is when Benbasat and Barki (2007) mention the “IT adoption literature” and “adoption models” (p. 214) when they are actually talking about technology *acceptance* models.

Do these words really mean the same, with respect to the process of introduction of new technologies in organizations? Who is really adopting the artifact? Who is accepting it? Is that all that is necessary to determine usage and success?

The word *adopt* has its origins in the latin word *adoptare*, meaning ‘choosing for oneself’, the prefix ‘*ad*’ meaning ‘*to*’ and ‘*optare*’ meaning ‘*choose, wish*’. The meaning therefore involves ‘taking by choice, selecting, or choosing. You adopt something when you have options. The options may be a simple ‘yes’ or ‘no’ matter, but one needs to have options in order for us to talk about adoption. This is exactly the meaning proposed by Roger (2003) in his diffusion of innovation theory. There, adopters choose ‘if’ and ‘when’ they will adopt something.

When studying the use of IT in organizational settings, adoption happens by the organization when its decision makers analyze and assess available options of IT artifacts. The organization adopts an IT artifact and, after that, starts its implementation process. The end user has no option due to the mandatory condition that is usually set for him/her (using the artifact is compulsory). Vehring *et al.* (2011, p. 5) use the expression “a mandated adoption at the user level” to describe this situation where an adopted artifact has to be used by individuals in an organizational setting, but this is obviously etymologically not very precise. There is no adoption in that case, because there is no choice, in mandatory environments.

Delone and McLean (2002) defend the idea that no system use is totally mandatory, however, and that users have flexible limits to relate to a system, as do the decision makers that decided on the adoption of the system by the organization. Executives can change their decision about adopting an IS, based on evaluations of outcomes and, as they are not forced to continue using a system forever. They can switch to another alternative or just stop using the current system. Of course, after organizations have adopted an artifact, they may be trapped into using it for a long time, if they are locked in by restrictive and severe switching costs (Chen & Hitt, 2002).

After an organization has adopted an IT artifact, a group of users will evaluate the artifact, attributing new meanings, negotiating these meanings among themselves, discovering new uses and generating outcomes that had not been planned before the adoption and acceptance process begun (Pinch & Bijker, 1984). Those negotiations and decisions are not limited to the technology’s designers, innovators, industrialists, developers, programmers and engineers, because even after the adoption of a technological artifact by an organization has taken place, users can still participate in its development. Taking this rationale into consideration, in order to study IS adoption and acceptance, one should investigate what happens with users and consumers that are happy to use the IT artifact as-is, but also with those who refute, change, replace or complement it, acting as developers ‘on the fly’ of their own technological solutions. We understand that, in a mandatory situation, the difference in use will be dictated by the different types, forms, and levels of use instead of a simple matter of accepting (or not) the artifact. Some users will be more suspicious about the new technology and its effects on their lives and may take a less enthusiastic usage approach, while others will identify themselves thoroughly and that will have an impact on their attitudes towards the artifact.

If use were volitional, the adoption concept could also be used to describe the relationship between the end user and the artifact, because the end user would be the decision maker involved with the adoption decision, in that case. To adopt a proposed artifact would mean 'to accept' someone else's suggestion about using the specific artifact. However, in mandatory settings, there is no (or very little) possibility of the end user going against what was previously decided, with respect to the adoption of an artifact, by people in higher hierarchical positions in the organization.

Under mandatory conditions, it would sound strange to say that a 'forced user' *adopts* the artifact. Actually, s/he uses the artifact, even if s/he does not accept it, as part of a rule or norm that has to be followed, but that does not mean that s/he has accepted it. 'To accept' something may only mean that 'there was no other option'. So, if there is an option, we can say that there is adoption and acceptance, otherwise, there may be acceptance, as a result of alignment of interests or resignation, but no adoption, at all.

The term 'acceptance' has become very popular in the IS field due to the success of the Technology Acceptance Model (TAM), proposed by Davis (1985) in his doctorate dissertation. TAM adapts TRA's concepts related to attitude and behaviors to analyze the acceptance of information technology.

The easy application (and replication) of TAM, in addition to the big interest attached to the theme, resulted in more and more studies about the model itself. It is not rare that studies and researchers are so enthusiastic about the model itself that they forget to analyze the actual phenomenon, i.e., technology acceptance and use, according to Schwarz and Chin (2007). However, they call our attention to other behaviors related to usage that are missed by TAM but should be considered in investigations about IT acceptance, "such as infusion, routinization, substantive use, exploitive usage, or faithfulness of appropriation" (Schwarz & Chin, 2007, p. 230).

Schwarz and Chin (2007) go a little further in their effort to understand the concept of acceptance. For them, acceptance does not occur during the initial adoption process, "but throughout the lifecycle of usage" (2007, p. 231). Although those authors did not discuss the distinction between a mandatory and a voluntary setting, they proposed an etymological analysis of the term "acceptance", which relates to the Latin word *accepto*, or *acceptio*, meaning "the action or result of the action of the verbs". This etymological analysis allowed them to think of five different dimensions of acceptance, considering "the action and the result of the action" (p. 236):

- to receive – this form is not necessarily related to the behavior of using, just to the possession of the object;
- to grasp the idea – it relates to intellectually grasping the understanding of an object, and involves comprehending how to use the object, why the object was given and how it will change someone's life;
- to assess the worth – this relates to understanding the relative advantage and the perceived usefulness (to whom is it worth? To the individual or the organization);
- to be given – how the individual tolerates the change required due to the acceptance of the object (the willingness to alter routines to fit the IT artifact);
- to submit – the internal part of the subjective norm, when "the individual considers whether to surrender to an object to the point that it becomes part of his/her identity" (Schwarz & Chin, 2007, p. 236).

These dimensions make the complexity of the term 'acceptance' clear, which does not happen when acceptance models are used that do not allow for the users' feelings about the artifact to be understood, neither the feelings about how to use it.

The word '*appropriation*' is used by some researchers to describe this deeper relationship between users and technology, but it is hard to attribute all the complexity involved in the relationship between users and artifacts to a single word.

Appropriation has its origins in the Latin word *adpropiare*, where the prefix '*ad*' is followed by the word '*propriare*' which means 'one's own'. It means 'taking (something) as private property', 'especially suitable'. It definitively has a stronger meaning than '*adoption*' or '*acceptance*' because the user can build his/her own options (*ad-optare*) about how to use the artifact in a way s/he thinks more suitable to his/her needs, while addressing his/her organizational obligations. Building his/her 'own-new-artifact'

will make it easier to accept and to use it, even in mandatory settings. ‘Appropriating something’ involves the idea of ‘adopting’ and ‘accepting’ something, after adjustments to one’s needs and intents are made.

Let us summarize the concepts discussed in this paper that are used to describe the relationship between users and artifacts.

Considering that an organization has options of artifacts from which to choose, it is ‘adopting’ one of them when its decision makers choose a specific artifact among several possibilities. The end users can then ‘accept’ or not the artifact. In mandatory situation ‘to accept’ or ‘not to accept’ does not play an important role in defining usage, because users must use the artifact, regardless of their impression or feeling about it. However, it may represent a big difference on the level or intensity of use that will be achieved and this needs to be further explored. Researchers have already described in detail the impact of voluntary use over acceptance and use (Venkatesh V. , Morris, Davis, & Davis, 2003), but little has been discussed about what happens in mandatory settings. Besides, they have done so using different ontological assumptions to those that are emphasized here.

What becomes important, when use is compulsory, is how users actually use the artifact. How they ‘appropriate’ the artifact in their activities and how they adapt themselves and the activities they have to perform in order to use the artifact suitably.

Now, we would like to go a little further and propose two new words to help us investigating and describing the relationship between users and IT artifacts: ‘embracement’ and ‘grappling’.

Discussion

When we analyze *use*, we can easily perceive if individuals are ‘using’ or ‘not using’ the artifact. ‘Use’ is the most tangible characteristic identified in the relationship between users and artifacts.

If the individual is not using the artifact, and s/he is not obliged to use it, we understand it as a personal option/decision that happens in a volitional setting. The user is open to use the artifact, but s/he prefers not to do it.

On the other hand, when use is compulsory and, even so, the user opts for not using the adopted artifact, there is a clear rejection situation. This may be uncommon, considering that the user is usually in the weak side of the ‘tug of war’ with those trying to enforce an artifact’s use in an organizational setting, so, we are not going to focus our attention on it. We will concentrate our analytical effort in the ‘use’ situation, in compulsory settings, which we believe to be the most usual situation of IT adoption/acceptance/use. What we expect to find in our field experiments is that there are different levels of use, in addition to distinct attitudes toward use.

We expect to find users who want to use the artifact, no matter what they have to do to accomplish that. More than accepting the artifact, users with this kind of attitude embrace the technology, because they really identify themselves with its objectives or procedures.

We also expect to find those individuals who will use the artifact because they are forced to. They may not even accept the artifact but they will use it so that they are not penalized. Of course, they will not show the same level of enthusiasm that the embracers do, although they may have the same level of usage, or even higher, in spite of the disagreement with the ‘spirit’ of the technology.

In fact, we believe we will find a myriad of different levels of use between the extreme of “full as-is” usage of the artifact and “no use at all”, or just the minimum usage that is required not to suffer the negative consequences of not using it, imposed by those who are interested in the artifact’s implementation success.

In an initial observation of the field, which we intend to confirm by a more rigorous investigation, we were able to find users that apply different techniques and strategies to deal with the artifact, different appropriation moves, as they are called by the Adaptive Structuration Theory (Desanctis & Poole, 1994).

We would like to expand the description of this relationship between users and technology going a little further than the explanations given by appropriation moves of the AST theory, though. We understand that the user is an active participant not only in the ways the artifact is used in his/her activities, but also in molding what the artifact is, or will become. We believe on the existence of a process of adaptation of

users and artifacts, in which movements of embracing and grappling are present all the time. There will be users with a more positive attitude towards conserving the 'spirit' of the technology, as proposed by its designers, while it is introduced and structured into the organization's routine, and there will be users who will resist and try to change the purpose and the processes originally conceived. But we believe there will also be moments when embracers will grapple and moments when grapplers will embrace. This will happen while each user, individually or in group, acts politically and plays a role as an agent in permanently building the 'technology in use'.

The diagram in Figure 1 shows the proposed concepts and their roles in shaping the technology in use. The use of the artifact can lead the user to a situation of "embracement", where the technology is fully accepted. But, the use can also be forced and not a matter of acceptance. User has to put up with the technology presented to him. As described earlier, user deals with the technology grappling, adapting, appropriating and embracing, in a continuous process. S/he participates actively in the construction of the technology in use.

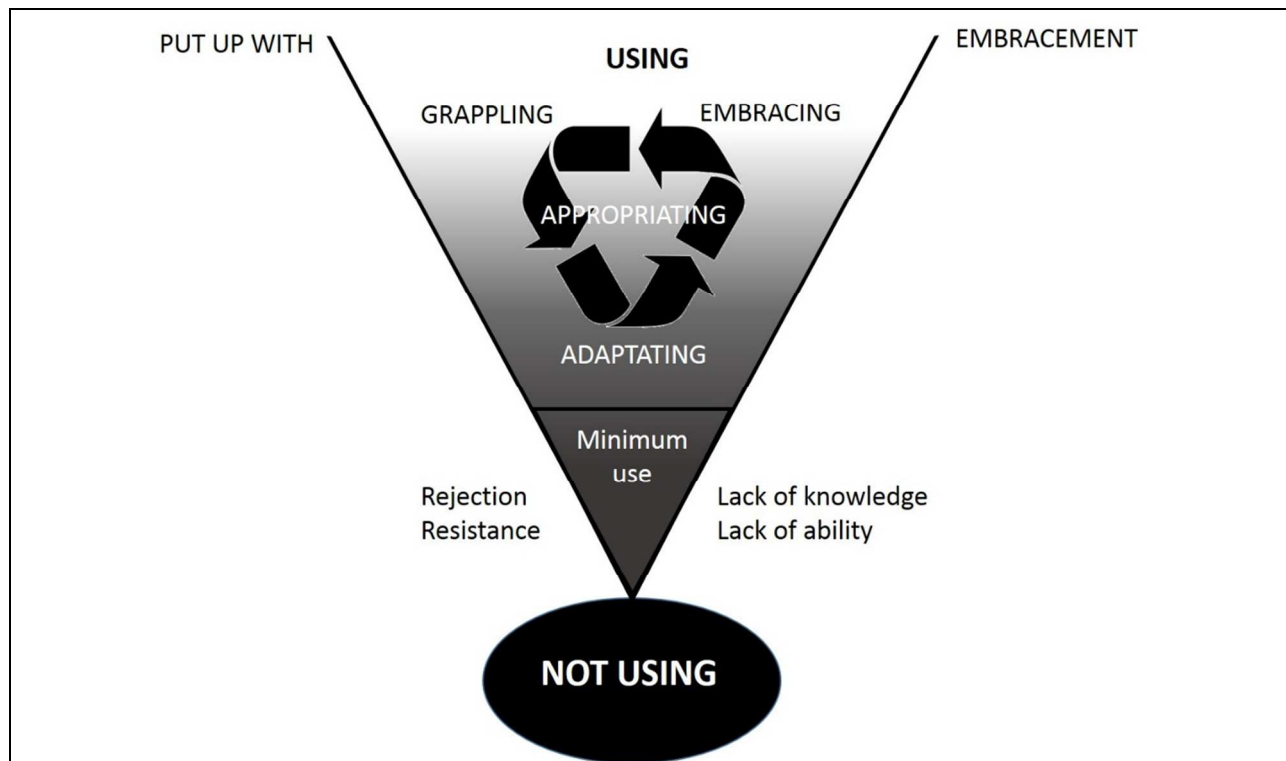


Figure 1. Proposed concepts to describe the relationship between users and technology.

Conclusion

It was our intention in this paper to propose a discussion about what happens after adoption and acceptance of an IT artifact. A lot of research take acceptance as a binary variable. You either accept or refute something, but we believe that this phenomenon has to be investigated using different approaches, techniques and concepts.

In this paper, we humbly propose the use of two new terms: 'technology embrace' and 'technology grappling' to describe the processes that take place in the relationship between users and technological artifacts. Embracing and grappling are processes that can help us to better understand not only adoption and acceptance, but also the appropriation process.

We expect to receive helpful feedback to improve our discussion about these concepts.

References

- Bagozzi, R. (2007). The legacy of the Technology Acceptance Model and a proposal for a paradigm shift. *Journal of the Association for Information Systems*, 8(4), 244-254.
- Benbasat, I., & Barki, H. (2007). Quo vadis TAM? *Journal of the Association for Information Systems*, 8(4), 211-218.
- Carroll, J. (2004). Completing design in use: closing the appropriation cycle.
- Chen, P. Y., & Hitt, L. M. (2002). Measuring switching costs and the determinants of customer retention in Internet-enabled business: a study of the online brokerage industry. *Information Systems Research*, 13(3), 255-274.
- Davis, F. D. (1985). *A technology acceptance model for empirically testing new end-user information systems: theory and results*. Doctoral dissertation, MIT.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340.
- DeLone, W., & McLean, E. R. (2002). Information systems success revisited. *35th Hawaii International Conference on System Sciences*, 00(c), 1-11.
- Desanctis, G., & Poole, M. (1994). Capturing the Complexity in Advanced Technology Use : Adaptive Structuration Theory. *Organization Science*, 5(2), 121-147.
- Fichman, R. (2004). Going beyond the dominant paradigm for information technology innovation research: emerging concepts and methods. *Journal of the Association for Information Systems*, 5(8), 314-355.
- Gosain, S. (2004). Enterprise information systems as objects and carriers of institutional forces: the new iron cage? *Journal of the Association for Information Systems*, 5(4), 151-182.
- Hirschheim, R. (2007). Introduction to the Special Issue on "Quo vadis TAM? Issues and reflections on technology acceptance research". *Journal of the Association for Information Systems*, 8(4), 203-205.
- Orlikowski, W. J. (2008). Using technology and constituting structures: a practice lens for studying technology in organizations. *Resources, co-evolution and artifacts*, 11(4), 404-428.
- Pinch, T. J., & Bijker, W. E. (1984). The social construction of facts and artefacts: or how the sociology of science and the sociology of technology might benefit each other. *Social Studies of Science*, 14, 399-441.
- Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). New York: Free Press.
- Schwarz, A., & Chin, W. (2007). Looking forward: toward an understanding of the nature and definition of IT acceptance. *Journal of the Association for Information Systems*, 8(4), 231-243.
- Vehring, N., Riemer, K., & Klein, S. (2011). "Don't pressure me!" Exploring the anatomy of voluntariness in the organizational adoption of network technologies. *Thirty Second International Conference on Information Systems*, (pp. 1-18). Shanghai.
- Venkatesh, V., & Goyal, S. (2010). Expectation disconfirmation and technology adoption: polynomial modeling and response surface analysis. *MIS Quarterly*, 34(2), 281-303.
- Venkatesh, V., Morris, M., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: toward a unified view. *MIS quarterly*, 27(3), 425-478.