ENHANCING THEORETICAL CONTRIBUTION IN IS RESEARCH: THE CASE OF TECHNOLOGY ADOPTION

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ENHANCING THEORETICAL CONTRIBUTION IN INFORMATION SYSTEMS RESEARCH: THE CASE OF TECHNOLOGY ADOPTION

Research paper

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Abstract

Many editors of top information systems (IS) journals often blame the lack of theoretical contribution as a major reason for rejecting articles. This essay proposes an actionable approach for IS researchers that views research and the process of theorizing as a discursive practice and applies discourse analysis to (1) analyse the extent of their study’s theoretical contribution, (2) suggest alternative theoretical strategies, (3) consolidate the theoretical foundation of the study and, (4) use generative theoretical products that modify existing concepts or invent new concepts to declare the insights and value the study offers. To demonstrate this approach, one of the IS field’s most prolific research programs, technology acceptance and adoption, is analysed to show the efficacy of the approach. The analysis demonstrates that the trajectory of technology acceptance research could have taken a more impactful route if its underlying theories were seriously addressed.

Keywords: Information systems theory, Foucault, contribution to theory, discursive formation, products of theorizing, novel concepts
1 Introduction

Many editors of top information systems (IS) journals blame the lack of theoretical contribution as a major reason for rejecting articles (Straub, 2009; Ågerfalk, 2014). The IS field is not alone in struggling to enhance the theoretical contributions of their research (Corley and Gioia, 2011; Shapira, 2011; Cornelissen and Durand, 2014). A premier journal in the management field, the Administrative Science Quarterly, noted: “If manuscripts contain no theory, their value is suspect” (cited in Sutton and Staw (1995, p. 371)). Theoretical contribution continues to be highly challenging to researchers in the IS field and allied disciplines (Weber, 2012; Hassan, 2014; Hassan and Lowry, 2015; Mueller and Urbach, 2017; Shepherd and Suddaby, 2017). All research is based on some set of assumptions that may or may not be explicitly described. These assumptions are in turn based on a theory or set of theories that explain why and how the researcher conducted the research in the way it was conducted (Slife and Williams, 1995). This essay proposes an actionable approach to enhancing theoretical contributions by applying Foucauldian discourse analysis on those assumptions and methodically (1) uncover the existing theory or theories that the research is based on through the nature of its discourse, (2) evaluate alternative theoretical strategies that could be crafted based on the discourse and the foundational elements of the study, (3) consolidate the foundations of the research by identifying and focusing on the disciplinary questions that are or are not being asked, paradigms leveraged, and any elements of practice associated with the research and, (4) use generative theoretical products such as analogies, metaphors, myths, models and frameworks to invent new creative concepts and propositions that become part of the theory for the phenomena being studied. Using the ease of technology acceptance and adoption research in the IS field which takes up a large proportion of all its journal space, this essay demonstrates how the trajectory of that research stream could have been enhanced with the help of the proposed approach. With the help of this exemplar, other researchers will be able to evaluate the extent of their own theoretical contribution and find ways of enhancing the theoretical contribution of their own research.

2 What Does “Theoretical Contribution” Amount to? A Foucauldian Theory

Many articles refer to “theoretical contribution,” but do not agree on what it means exactly (Whetten, 1989; Colquitt and Zapata-Phelan, 2007; Corley and Gioia, 2011). Does theory testing qualify as theoretical contribution? Management theorists say that as a field that routinely borrows from other disciplines, the management field needs to test the theories it borrows (Colquitt and Zapata-Phelan, 2007). Is it enough for a study to apply theory to have theoretical contribution, or does the study need to invent new theory? It doesn’t help that experts disagree on what constitutes theoretical contribution. For example, while Dubin (1969) and Whetten (1989) consider models and theories to be the same thing (in which case, articles that contain box-and-arrow diagrams contain theory), Sutton and Staw (1995) say otherwise. Another way of phrasing this issue is to ask if the research “makes a contribution to theory” (Shepherd and Suddaby, 2017, p. 59). Does adding an extra variable to or taking one out from an existing theory constitute making a contribution to theory? Corley and Gioia (2011) do not think so unless adding that extra variable is both revelatory and seen as useful. If merely adding variables constitutes a significant contribution, the endless formulaic combinations and permutations of variables in the Technology Acceptance Model (TAM) and its variants (F. D. Davis, 1989; Venkatesh and Davis, 2000; Venkatesh, Morris, Davis and Davis, 2003; Venkatesh and Bala, 2008) would qualify as the exemplar of making contribution to theory. Instead, Benbasat and Barki (2007) argue that subsequent variants of the original TAM study merely brought the IS field back full circle to the original Fishbein and Ajzen (1975) models that TAM started out with. If their analysis is correct, the many thousands of pages of research that TAM filled did not make any substantial theoretical contribution.
Perhaps, originality or newness can be used to describe what constitutes a theoretical contribution. There are two ways in which originality and newness can be assessed: First, newness in terms of the content or concept offered and second, newness in terms of the value offered. As can be seen from the references within key research studies on theories and theorizing, the IS field accepts much of its understanding of theory and theorizing from the management field (Gregor, 2006; Gregor and Jones, 2007; Grover, Lyttinen, Srinivasan and Tan, 2008; Weber, 2012; Rivard, 2014). One of the earliest discussions within the management field concerning theoretical contribution was not exclusively about theory, it was about contribution. It was about believing and hoping that in some way, our research will make a difference to someone, either other researchers or those the research was intended to help. More specifically, articles were rejected because they were just not contributing very much to the “stock of current knowledge and practice” (Rynes, 2002, p. 311), regardless of how well the study collected, measured or analysed the data. Indications that suggest the contribution is minimal include (Rynes, 2002): (1) addressing the phenomenon of interest in a similar way that existing research had done, albeit with different constructs and theoretical frameworks, thus duplicating existing work, (2) adding one or two moderating or mediating variables to existing frameworks and claiming that a contribution has been made, (3) producing a conclusion that is not very surprising, and (3) failing to demonstrate the importance or significance of the study. Of course, no amount of contribution is going to be enough if the topic of the research itself is trivial or considered insignificant. It is vitally important that researchers choose topics that matter or likely to be so in order to enhance the probability that the study will make a significant contribution to knowledge. To whom these topics should matter and who gets to decide will be elaborated in the next section.

The other aspect of originality and newness is in terms of the value offered by the study, that is, whether or not the study added an insight that is important for other researchers or practitioners. For the researcher, this means: Does the contribution revise or extend any theories? For the practitioner: Did managers learn something new from the study or is it going to be of any practical use? Bergh (2003) notes that incrementally adding variables to a research framework may not seem to be adding much value, but if the study can explain how or why that additional variable significantly revises or extends knowledge, that might qualify as a significant contribution. Or if adding the variable constitutes a different explanation or rare finding that was not introduced previously, then, the contribution is indeed significant. This quality of “rarity” of the research is seldom discussed in IS circles, in part, because researchers often duplicate much of what’s already being studied or work exclusively just towards extending existing research. Extending research is commendable, but sometimes it is necessary to step out of the box or be “box-breaking” (Alvesson and Sandberg, 2014) in order to gain insights. As the philosopher-mathematician Whitehead (1917, p. 115) remarked, "A science which hesitates to forget its founders is lost."

Contributing to theory does not mean, as Sutton and Staw (1995) explain, offering a list of concepts, hypotheses or a gallery of diagrams to justify that the paper does indeed contain theory, for conceptual definitions do not relate the concepts to other concepts, hypotheses do not explain the background it is derived from or how they may be operationalized, nor do diagrams provide answers to “why” the diagram chose a particular set of concepts to depict. Therefore, studies that contain those elements do not yet qualify as having contributed significantly to theory. As Whetten (1989) explains, theory must include plausible and cogent explanations why certain concepts and relationships are expected in the data. In addition to that, the theory must also specify conditions (commonly called “boundary conditions”) that limit the description and explanation offered by the theory and constitute the scope of the theory.

This is where Foucauldian theory of originality and newness becomes relevant and is chosen as a framework for proposing how to enhance theoretical contribution of research. Foucault (1970, 1972) spent a large part of his oeuvre uncovering “the principles and consequences of an autochthonous transformation that is taking place in the field of historical knowledge” (p. 15). He summarizes the result of studying the growth of knowledge in economics, language, biology, psychiatry, medicine, criminology and sexuality in the Order of Things (Foucault, 1970) and The Archeology of Knowledge.
Enhancing Theoretical Contribution

(Foucault, 1972). Foucault (1972, p. 64) explains that contribution to knowledge in the human sciences takes place as a process of building different discourses giving:

... rise to certain organizations of concepts, certain regroupings of objects, certain types of enunciation, which form, according to their degree of coherence, rigor, and stability, themes or theories.

For example, even though the computer as an object of study in the IS field is the same as in computer science, the IS field formulates its propositions surrounding that object using a strategy that is different from the one based on symbol-processing rules in computer science (Newell and Simon, 1976; Denning, 1999). Because each field of study follows different rules of forming its discourse, and strategizes in different ways, each field builds different theories concerning their phenomenon of interest. We define theorizing as making certain claims in the form of statements that reflexively apply specific rules of formation to constitute a discourse within a field, thus creating “a group of statements in so far as they belong to the same discursive formation” (Foucault, 1972, p. 117).

This set of rules, or discursive formation, governs how additional statements are enunciated by that field, and those additional statements constitute the field of study itself. The statements enunciated by one field of study should differ from the statements enunciated by another field, thus distinguishing economic discourse from legal discourse, medical discourse from biological discourse, and computer science discourse from IS discourse. At the same time, each discourse is comprised of different sub-discourses. For example, the economic discourse developed mercantilist, Physiocratic, classical, Keynesian (Foucault, 1970), and monetarist discourses throughout its history, each making different claims based on different rules of discourse concerning how value and prices are determined, and how human economic needs and wants could be satisfied.

A sense of unity in discourse allows a community of scholars to say that they are talking about “the same things,” “at the same level,” or “applying the same or different principles” with their colleagues. This practice of theorizing is what Foucault (1972) calls the discursive practices (pp. 46, 48–49), in which certain relations among a heterogeneous group of concepts, claims, and other discursive practices are built. Discursive theorizing practices include, but are not limited to, formulating ideas, creating imagery, and engaging in deductive or inductive reasoning or logical inferencing. These discursive practices consist of “a body of anonymous, historical rules, always determined in the time and space that have defined a given period, and for a given social, economic, geographical, or linguistic area,” which define the conditions for the formation of concepts and claims (Foucault, 1972, p. 117). Thus, in computer science, the concept of “acceptance testing” falls under the section within Software Engineering Body of Knowledge (Bourque and Fairley, 2014) labelled “Software Requirements” that checks for certain criteria present in software, whereas in the IS curriculum (Topi et al., 2017) or body of knowledge (Hassan and Mathiassen, 2017) it is listed under “Systems Development” that concerns adoption and use. The distinction becomes significant when the discourse is analysed.

In the chapter “The Original and the Regular,” Foucault (1972, pp. 141–148) describes how a discourse becomes original by making evident what is not, and by putting into operation a new set of rules that changes the way the object of study is manipulated. Making evident what is not means either offering something of value that has no similar antecedent or integrating new concepts in existing structures in the way that changes the game or reformulating existing concepts in an enunciatively different way. Essentially the growth of knowledge is represented in part from the birth of new disciplines. For example, the secret of genetics was hidden until Mendel uncovered a notion that had no antecedent. Even after its discovery, the environment around Mendel that favoured a model of continuous variation in evolution actively sought to stop him from making his findings known (Brannigan, 1979). The rules of discourse concerning genetics at the time saw offsprings as the mixture or blend of the parents’ characteristics. Instead, Mendel’s experiments with peas found no intermediate blends and introduced new concepts including the notion of the “dominant” gene, and he reasoned that “recessive” traits show up only when a copy of the recessive gene form is inherited from each parent. This finding makes evident what is not, and puts into operation new rules of discourse, therefore making it
original. What is significant about this example is the invention of new concepts and new objects of study that did not exist before.

The process by which new concepts are generated begins, according to Foucault (1970, 1972), when new objects of study emerge as a result of the interaction of people or the experiments conducted by researchers. Genes as objects began to be studied seriously in the early 1900s, some half a century after Mendel’s experiments because other objects, such as cells, rose in significance within the study of natural history. From the relationships and rules surrounding these objects, new concepts of genetic inheritance were developed. This process of the invention of new concepts occurred in all forms of knowledge, not just the natural sciences. Before modern economics took shape, objects of political economy that included goods and coinage were being studied amongst merchants, laborers and their places of business. The relation between merchants and different conceptions of coinage resulted in the concepts of value and prices. Other relations among laborers and the institutions that employ them resulted in new objects of wages, incomes and the new concept of the “circulation of money.” After a century or so, Adam Smith (1776) and Ricardo (1817) would replace these concepts with new concepts of labour and production, which at the time changed the rules of the discourse of political economy and gave birth to modern classical economics (Foucault, 1970). It is interesting to note that these original discoveries involve no box-and-arrow diagrams or conceptual frameworks. Their scholars theorized and developed their objects of study and associated concepts organically as their data and investigation enriched their research.

The process by which different new discourses emerge, as described above, is depicted by Foucault (1972) as the point of divergence in discourse – when two objects or concepts appear in the same discursive formation but appear to be contradictory and cannot therefore be positioned in the same group of statements. When this divergence takes place, and especially when the function that the two discourses must carry out in the field of non-discursive practice (within industry) is also different; this divergence signals the possible birth, an extraction of a new original discourse from another discourse – hence a significant theoretical contribution.

3 Steps to Enhance Theoretical Contribution

In the next few subsections, we offer steps for researchers to increase the theoretical contribution of their research and demonstrate the process using the adoption discourse in IS to show how far such a divergence have taken place that merits the label of originality. These steps represent an abbreviated version of the more complete archaeological discourse analysis method that can be found in Foucault (1972), introduced in the previous section. In summary, the proposed steps uncover what is “new” and “original” in the research by first starting the research with a compelling object and discourse to study. The opportunities for originality can be identified by analysing the existing discursive formations of the area of research, and then finding alternative theoretical strategies that take the research beyond the existing discursive formations. Finally, the research is consolidated with the help of new questions, paradigms, and generative elements such as analogies, metaphors, myths, models and frameworks to invent new concepts. All of these steps are elaborated in the following subsections.

3.1 Finding a Compelling Object and Discourse to Study

The start of any research begins with what the researcher plans to study. As Rynes (2002) noted, the probability of enhancing theoretical contribution increases with the importance of the issue being studied. To that end, in the classic guide for doctoral candidates, Writing the Doctoral Dissertation: A Systematic Approach, Davis and Parker (1979) proposed that the prospective doctoral candidate should look at:

(1) problems relating to social welfare, business, economics, education, and government
(2) past dissertations
(3) authorities in the field
(4) suggestions from practitioners
(5) generally accepted but unproven suppositions
(6) unproven or weakly proven assertions by an authority, and
(7) different approaches to testing important results.

What this list does not describe is the compelling object of study\(^1\) that is likely to generate a lot of interesting and impactful results. For example, there are many IS-related objects of study that are associated with problems relating to social welfare, business, economics and other societal institutions. The social media tools that help enable the Arab Spring (Wolfsfeld, Segev and Sheaffer, 2013) is the same tools that were used to meddle in the United States 2016 Presidential Elections (Kang and Frenkel, 2018). Both these events constitute political discourses that include concepts such as the political environment, grievances and dissent. Interestingly, both cases involve some form of grievances that were communicated and amplified by social media. Although they are not the same, one theoretical principle that could be extracted from these cases is that the impact of social media depends on the political environment in which it is embedded. In the case of the Arab Spring, social media help engender political instability by increasing the perception of the gap between the people’s desire for democratic values and the country’s actual level of democracy. In the case of the United States elections, the potential for political instability may be lesser because this gap is less prominent. As we can see from this discourse, the main concepts are those related to political science because political environment, grievances and dissent are political concepts. The question is: In studying a compelling object of study like social media, what new concepts can the IS discourse offer such that it could say it has contributed to the stock of knowledge and to other disciplines like political science?

The case of the discourse of adoption in IS provides an instructive example of how the object of study changes and as a result, the discourse also changes with it. The original TAM study was Fred Davis’ (1986) dissertation titled “A Technology Acceptance Model for Empirically Testing New End-User Information Systems: Theory and Results”. That era was a time when mainframes and “minicomputers” were the primary technology, and implementation decisions were being made from the top down by management. In part because the implementation discourse consisted of many differing influences ranging from the more technical OR/MS discourses to communication, and human relations, there was a need for a more parsimonious model that could account for technology adoption. The popularity of microcomputers in business and the subsequent rise of end-user computing prepared the IS field for what would become the most researched area in IS – the Technology Acceptance Model (TAM). As the computer industry moved slowly from standard enterprise-wide mainframe systems to smaller scale office automation systems in the early 1980s with the invention of the IBM PC, there was a need for more “user acceptance testing” to ensure that the new alternative systems would fulfill user and organizational requirements and would be adopted by users who were being encouraged to use those new systems (F. D. Davis, Bagozzi and Warshaw, 1989). With this move came the need to measure that motivation to use especially if the motivation could be known given a brief demonstration period or “user acceptance testing.”

In other words, TAM originally started out as one of many discourses for implementation, an area in IS that was considered a critical issue worthy of research (Ginzberg, 1981; Markus, 1983; Kwon and Zmud, 1987; Lucas Jr., Walton and Ginzberg, 1988; Lucas, Ginzberg and Schultz, 1990). By the time Davis’ dissertation was published in MIS Quarterly (F. D. Davis, 1989), the discourse moved into a discussion of system quality: “aimed at developing improved measures for assessing systems quality” (p. 318) because that was presumed to be motivation for using the system, and hence, increasing its benefits to the organization. The features of the system in question were theorized to be the major concepts such as the political environment, grievances and dissent. Interestingly, both cases involve some form of grievances that were communicated and amplified by social media. Although they are not the same, one theoretical principle that could be extracted from these cases is that the impact of social media depends on the political environment in which it is embedded. In the case of the Arab Spring, social media help engender political instability by increasing the perception of the gap between the people’s desire for democratic values and the country’s actual level of democracy. In the case of the United States elections, the potential for political instability may be lesser because this gap is less prominent. As we can see from this discourse, the main concepts are those related to political science because political environment, grievances and dissent are political concepts. The question is: In studying a compelling object of study like social media, what new concepts can the IS discourse offer such that it could say it has contributed to the stock of knowledge and to other disciplines like political science?

\(^1\) Not to be confused with the quest in the IS field for the IT artefact.
All of that has changed. By the late 1990s, microcomputers were already a fixture in most homes, the Internet was emerging, and most organizations were outfitted with PCs. The need to increase individual motivation to use computers became a moot point. Although implementation continued to be a critical issue, in particular with regards to success and failure in implementing large enterprise-wide systems (Lucas Jr., Swanson and Zmud, 2007), perceptions concerning technology has changed dramatically from the early days of the mainframe and minicomputers. The IS field at that time, however, was still testing out the TAM model that was developed a decade earlier using tools such as the email client, a text editor, a pen drawing tool and a charting software package used to build bar charts, line charts and pie charts. As time passed, the discourse for individual acceptance of microcomputer systems became less and less relevant, while at the same time, more and more journal space was being used up in the IS field to continue studying such a discourse (Karahanna, Straub and Chervany, 1999; Venkatesh and Davis, 2000; Venkatesh et al., 2003; Venkatesh and Bala, 2008). Finally, many scholars realized that this discourse not only reached a saturation point, it was also crowding out valuable resources and research space (Benbasat and Barki, 2007; Straub and Burton-Jones, 2007).

From the point of view of finding a compelling object of study to increase theoretical contribution, it may be more productive for TAM research to either stay within the discourse of “acceptance testing” or “system quality” within the scope of the systems development life cycle. Research in both testing and system quality is very limited within information systems development (Hassan and Mathiassen, 2017), partly because the software engineering tradition has always focused on software testing as a major part of their body of knowledge. However, experts in software engineering (C. F. Cohen, Birkin, Garfield and Webb, 2004; Weinberg, 2008) emphasize the importance of focusing on the psychological and economic issues related to testing which are ignored by the software engineering body of knowledge. Recent articles published in top IS journals focus on business concerns, such as the length of the testing period and the timing of software releases, providing evidence for the potential of this new body of theory (Onita and Dhaliwal, 2011; Jiang, Sarkar and Jacob, 2012). Focusing on the systems testing discourse, which till this day remains an elusive art (Myers, Sandler and Badgett, 2012), might have provided the necessary direction for TAM research to enhance its theoretical contribution.

3.2 Uncovering Existing Theories in the Discourse

Foucault (1972) describes the process of theorizing as the formation of strategies that leads to the formation of objects, concepts, statements, themes and theories. Because each field of study follows different rules of forming its discourse, and strategizes in different ways, each field builds different theories concerning their phenomenon of interest. Thus, when the IS field borrows from say, economics, to perform its research, or studies the use of computers using rules concerning value, prices, costs, and trade-offs, which are part of the discursive formation of economics, the power of the economic discourse shapes and colours that research. One question that can arise in using this discourse is whether the research is primarily about economics, IS or whether the research is about IS in economics. The choice of applying a specific discursive formation has wide-ranging implications, not just for the direction of a study, but also for the direction of the entire IS field, especially if a similar discursive formation is ubiquitously applied in that field of study. The same object of study—information—can be researched in as many different ways as there are different rules of how claims about information can be construed. That is why when working on enhancing theoretical contribution, it is critically important for researchers to uncover what existing theories are in operation in their proposed study. Once the existing theories are made clear, it is easier for the researcher to decide what kinds of contribution the research will provide and to which theory or discipline. Should it contribute to existing theories that are part of other disciplines? Or should the research be focusing on developing theories with a view of that theory becoming an IS theory?

A discourse analysis of technology adoption enables us to understand how it was overwhelmed by and constructed primarily on two discursive formations and their related theories – those of psychology and communication studies (Venkatesh, Davis and Morris, 2007), even though the tradition of tech-
nology adoption itself has had a long and varied history that included implementation, user involvement, studies of IS failures, innovation, and assimilation (Lucas Jr. et al., 2007). Psychological discourse, specifically the work of Fishbein and Ajzen in social psychology, provided the initial inspiration for TAM to measure the motivation to use new systems. Davis (1986, p. 7) adapted Fishbein’s (1961) theory for his dissertation to “provide a theoretical basis for a practical ‘user acceptance testing’ methodology … prior to implementation.” Fishbein’s theory described the relationship between beliefs about an object (in TAM’s case, the object is the IT system) and the attitude toward that object. Pulling primarily from Fishbein and Ajzen (1975), Davis built the original TAM framework by fitting Fishbein’s theory into the IS context that already prominently featured attitudes toward the system as the primary method for evaluating the motivation to use new systems.

Davis’ adaptation of Fishbein and Ajzen’s theory, however, deviated from its discourse. First, while Fishbein and Ajzen’s key concept and object of study was attitude, the key concept for Davis’ dissertation was user motivation. Among the most striking difference between Fishbein and Ajzen’s discourse on attitude compared to other discourses on attitude was their insistence that belief, attitude and intentions should be kept separate when attempting to predict human behaviour. Separating these three factors that contribute to human behaviour was necessary because belief does not translate necessarily into attitude and attitude does not necessarily translate directly into action (e.g. beliefs concerning racism does not necessarily translate into being a racist, nor do they translate directly into violent racist actions). In order to explain how people behave differently even though they might have the same attitude towards an object, Fishbein and Ajzen inserted an additional construct into their discourse, which they call “behavioural intention.” Davis (1986) omitted this critical construct when constructing the original TAM model. As a result, although TAM researchers derive legitimacy from Fishbein and Ajzen’s discourse on attitude, because the rules of the discourse were modified, TAM’s validity cannot be derived from Fishbein and Ajzen’s discourse. By abandoning the decade of attitude research that built up to Fishbein and Ajzen’s theory, TAM risks invalidating their own stream of research. The rule concerning behavioural intention was not the only rule from the original theory that was changed. Table 1 summarizes a list of rules that TAM modified from Fishbein and Ajzen’s discourse.

<table>
<thead>
<tr>
<th>Fishbein and Ajzen (1975)</th>
<th>Davis (1986)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concerns the relationship between beliefs, attitude and how they affect overt behaviour.</td>
<td>Concerns how user motivation impacts actual use. The discourse is about belief-behaviour.</td>
</tr>
<tr>
<td>The discourse is about attitude-behaviour</td>
<td>Beliefs about objects are not the same as the attitude towards the object.</td>
</tr>
<tr>
<td>Beliefs about objects are not the same as the attitude towards the object</td>
<td>As a person forms a belief about an object, he acquires an attitude about that object. Each belief links the object to some attribute, and the person’s attitude toward that object is a function of his evaluation of these attributes.</td>
</tr>
<tr>
<td></td>
<td>The evaluation of the attributes is omitted.</td>
</tr>
<tr>
<td>Personal factors impact beliefs and intentions</td>
<td>Personal factors are omitted. Only perceived usefulness and perceived ease of use impact beliefs and intentions.</td>
</tr>
<tr>
<td>The totality of factors impacts other factors, not singular factors</td>
<td>One singular factor (ease of use) affects another (usefulness).</td>
</tr>
<tr>
<td>Intention is formed by both individual attitude and social beliefs (subjective norms)</td>
<td>Subjective norms are omitted.</td>
</tr>
<tr>
<td>Behaviour is predicted from intention, while understanding behaviour comes from understanding factors that determine intention</td>
<td>Behaviour is predicted from beliefs (perceptions), so understanding behaviour needs to come from understanding beliefs.</td>
</tr>
</tbody>
</table>

Table 1: Differences between Fishbein and Ajzen’s theory and TAM

It is therefore not surprising that TAM research resulted in mixed results (Straub and Burton-Jones, 2007) and modifications were quickly made to the original TAM model to improve those research results. In TAM2 (Venkatesh and Davis, 2000) added seven variables, including voluntariness, image,
job relevance and demonstrability. These variables were adapted from Moore and Benbasat’s (1991) study that was in turn inspired from Rogers’ (1983) diffusion of innovation model, developed to understand why farmers resisted agricultural innovations. As opposed to Fishbein and Ajzen’s (1975) psychological model, Rogers views diffusion of innovations as a social process in which an innovation is communicated through certain channels over time among members of a social system. Adoption for Rogers is therefore considered a process of social change instead of the perception, belief or attitude of individuals that affect behaviour. The subjective norms component of Fishbein and Ajzen’s (1975) theory extends its psychological dimension into the sociological dimension, which makes this theory part of the field of social psychology instead of mainstream psychology. Although there appears to be some overlap between Fishbein and Ajzen’s theory and Rogers’ diffusion theory, their separate discourses will certainly affect the choice of variables and the results of the regression and equations used to test these models. As noted above, theories are tethered to the discourse and borrowing from these different discourses introduces problems that may reduce the research’s predictive abilities or produce inconsistent results. Uncovering existing theories will highlight strengths that can be leveraged and weaknesses that can be corrected to enhance the study’s theoretical contribution.

3.3 Evaluate alternative theoretical strategies

Theorizing is very similar to strategizing, not unlike witnessing how a good chess player strategizes his or her game. A chess player who follows the rules of the game is not guaranteed a win, but it would be wise for that player to follow the rules if the player seeks to win (Kaplan, 1964). Beyond following the rules of the game—which metaphorically represent how elements of theorizing can be applied to the process within each discipline—the chess player strategizes each move to win the match. Similarly, in the context of discovery, strategizing requires intuitively and imaginatively working with the elements of theorizing. Although there may not be a prescribed set of rules for how that can be accomplished, theorizing can be learned and taught (Swedberg, 2014) in the same way that Rivard’s (2014) “ions of Theory Construction” can be marshalled for crafting new theories. The discursive formation chosen also impacts the concepts that are manipulated in the theorizing process. In the case of TAM and its variants, not only are the antecedents affected, the manner of use determines which antecedents become relevant. Moore and Benbasat (1991) argue how TAM’s “perceived usefulness,” although similar to Rogers’ (1983) “relative advantage,” is open to different kinds of interpretation and can be easily misconstrued. Perceived usefulness is defined as an individual’s perception of how the technology will enhance his or her job performance, whereas relative advantage concerns how the innovation is better than the one that precedes it, whether in terms of economic, social prestige, convenience or satisfaction. The researcher needs to be careful which path and which direction the research should take. Even usage, the dependent variable in TAM, may take different forms such as infusion and routinization (Schwarz and Chin, 2007). These variables are conceptualized in different ways by different discursive formations. Ignoring these differences, TAM2 (Venkatesh and Davis, 2000) includes constructs related to relative advantage to explain perceived usefulness. The concept of adoption itself is extremely broad, and although early TAM research defined it in terms of the initial acceptance of IT system, subsequent research included different stages of adoption including post-adoption (Karahanna et al., 1999) and continuance (Bhattacherjee, 2001), the latter of which is based on a different model of assimilation and contrast, also within social psychology (Oliver, 1977). The development of TAM3 (Venkatesh and Bala, 2008) broadened adoption even further to include issues of implementation and its low success rates, as well as that of the “productivity paradox” of IT, all of which have been historically researched separately from TAM (Brynjolfsson, 1993; Lucas Jr. et al., 2007).

In other words, TAM researchers have a wide assortment of strategies they can select, besides the Fishbein and Ajzen’s model to enhance their theoretical contribution, but they have to remain faithful to the discourse that they have chosen to maintain the integrity and consistency in theorizing. When theories are inspired, borrowed, or adapted from other disciplines, they carry with them the same rules of discourse by which they were constituted. Theories are tethered to the same system of formation.
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(The discursive formation) of their discipline. These rules of discourse are consistent with what Truex et al. (2006) describe as the “underlying notions” and “methodological implications” (p. 798) of those theories, as well as the need to “be inculcated into the internal logic and intellectual tradition associated with the theory” (p. 801). Theories in IS, they argue, cannot simply be uncritically borrowed from other disciplines, and any borrowing and adapting, they advise, must be undertaken in a more “reflexive manner” (p. 799, original emphasis).

3.4 Consolidate the foundations of the research

Once the discourse and associated theories are clear, and certain strategic choices are taken with regard to theoretical elements, the next step is to consolidate the theoretical foundations of the research by asking the right disciplinary questions, leveraging on paradigms related to the study, and bridging the study with practice. Asking the right disciplinary questions or problematizing the object of study encourages reflection and triggers intellectual activity, while providing answers by offering hypotheses or propositions tend to encourage closure and inactivity. The construction of questions helps the researcher venture into new theoretical possibilities and to become more reflective and intellectually productive. The key to problematizing is to focus on the disciplinary question and not just the research question triggered by concepts from other disciplines. Every field of study has its own unique set of questions. Not all research questions can be admitted into a discipline. A disciplinary question addresses an object of study based on the field’s rules of discourse. Thus, when Durkheim (1951) posed the problem of suicide and asked the question of why a definite proportion of people commit suicide in any given period in every society, he was not focusing on the state of mind (e.g., despair, neurosis, depression, or any psychological state of individual members of the society), as one would expect in the case of suicide; rather, he was linking suicide, the object of study, to the newly emerging discipline of sociology. As a result, he developed new theories surrounding the occurrence of suicide.

Paradigms provide concrete problem-solutions that help enhance theoretical foundations of the study. We are not talking about epistemological paradigms as in positivism, interpretivism or other research approaches; instead, paradigms refer to shared exemplars for research that productively impregnate the existing study with useful concepts and novel ideas. For example, when Bijker (1995) theorized his “technological frame, he noted: “The analogy with Kuhn’s ‘paradigm,’ among other concepts, is obvious” (p. 123). Bijker went on to claim that the “technological frame is evidently one of the many children of Kuhn’s (1970) disciplinary matrix” (p. 126). And as Lewin (1951) famously stated, “there’s nothing so practical as a good theory” which brings us to another important theoretical foundation—the close relationship of theory with practice. Foucault (1972) argues that every field of study has both discursive and non-discursive practices. Non-discursive practices are material relations that enunciate the same discursive formation and items of knowledge as their corresponding discursive practices, and both theory and practice define the foundations of the discipline.

Adoption research has shown a reasonable level of problematization, although not to the extent that merits significant theoretical contribution. In part, this modest level of problematization is reflected in the how little TAM-related research leverages paradigms other than the social psychology or attitude paradigm, and even so, as we saw, does so uncritically. What TAM-related research lacks the most is its relationship with practice. Not only are TAM instruments not applied in acceptance testing or information systems development, or implementation, it is not part of any official educational computing syllabus or curriculum (Topi et al., 2017).

3.5 Invent New Concepts

The criterion for significant theoretical contribution is “originality” and the measure by which research can claim to be original is when they start inventing new concepts that describe and predict their phenomena of interest. The success of theorizing is reflected in how it either carves out its own space within existing knowledge or it builds something novel over and above that knowledge. “A theory must somehow fit God’s world, but in an important sense it creates a world of its own” (Kaplan, 1964, pp. 308–309). According to Foucault (1972), for a field of study to qualify as a discipline, the field of
study must be capable of “formulating— and of doing so ad infinitum—fresh propositions” (p. 223). Concepts are the mainstay of progress in fields of knowledge. As Nobel Laureate Sir George Thomson (1961, p. 4) noted:

[S]cience depends on its concepts. These are the ideas that receive names. They determine the questions one asks, and the answer one gets. They are more fundamental than the theories which are stated in terms of them.

Consider the term “organization,” which takes a different meaning in biology than it does in management and organization sciences. The term slices up different aspects of the world depending on the associated discipline. Similarly, when the term is used in IS, its properties may not resemble those of a traditional organization in management (e.g., in the case of social media). Thus, a different interpretation is required; under this interpretation, the theories borrowed from the organization sciences may be invalid when applied in the context of IS. The choice of the concept is therefore crucial to a study’s success because it not only allows the researcher to determine the success of the research enterprise, but also brings the IS field closer to or further from the discipline from which the concept originated. Thus, borrowing concepts from psychology in IS research, without any extensions or expansion in meaning, only serves to limit IS research to the bounds of the discipline of psychology.

Schön (1963) suggests that the invention of new concepts is closely related to understanding how to work with metaphors and analogies. He notes that “the new concept grows out of the making, elaboration, and correction of the metaphor” (p. 53). He calls this process the “displacement of concepts,” in which words undergo transposition (i.e., applying an old concept to a new situation), interpretation (i.e., the assignment of that concept to a specific aspect of the new situation), correction (i.e., an adjustment as a result of adaptation and modification), and spelling out (i.e., resolving commonalities and differences) as a way of addressing problem or improving understanding. The IS field has limited exploration of concepts of its own (Markus and Saunders, 2007). As a result, the development of many of our core concerns and theoretical contribution, such as the IT artefact itself, is hindered (Orlikowski and Iacono, 2001; Weber, 2003; Zhang, Scialdone and Ku, 2011).

In the case of adoption research, it is with concepts that this stream of research is most wanting. With very little exception, the concepts that are applied in adoption research are borrowed, almost wholesale from either social psychology or communication studies. One particular mode of theorizing that is often repeated in the IS field is to combine multiple concepts from different disciplines into the same model, resulting in a morass of ill-fitting concepts that make it difficult to compare research results. For example, the UTAUT model compares eight conceptual models to assess their relative utility for theorizing adoption. Based on this comparison, they suggested a version of TAM incorporating ten constructs consisting of four predictors, four moderators, one mediator, and one dependent variable chosen from eight models from social psychology: the original Fishbein and Ajzen’s behavioural intention model (1975), Ajzen’s (1991) planned behaviour theory, the intrinsic-extrinsic motivation model (Vallerand, 1997), Triandis’ (1971) attitude change model, Rogers’ (1983) innovation diffusion theory model, Bandura’s (1982) social cognitive theory, the gender differences model (Bem, 1981; Helmreich, Spence and Wilhelm, 1981), and the age differences model (Hall and Mansfield, 1975). Unpacking this complex web of models and theories makes it difficult to explain the results from applying the unified model.

4 Discussion

In short, based on the Foucauldian discourse analysis approach proposed above, the trajectory of TAM research could have been much more impactful outside the IS field if TAM researchers had:

1. Remained with the original object of study and discourse that Davis (1986) started with, which was to study “user acceptance testing” (hence the original name of “technology acceptance” in TAM) that revolved around the rules of how the newly developed system satisfied the requirements of the individual user even before the question of volunteer or forced adoption was to be considered. User acceptance testing is part of the implementation phase of the systems develop-
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1. An enhancement to the development life cycle which is only minimally covered as an IS research topic. Remaining within the discourse of user acceptance testing would enhance the value of IS research to other disciplines especially to computer science.

2. Chosen other user acceptance testing theories to explore or invent. Theories that are vastly different from the theories in social psychology (attitude and belief-based theories) and technology diffusion (communication-based theories) applied in user acceptance include the widely researched ETHICS approach by Mumford (1983, 1993, 1995) and classic works from Humphrey (1989, 1995). What’s more relevant to user acceptance testing is the more contemporary agile methods that moves up user acceptance testing to the early stages of the development life cycle (D. Cohen, Lindvall and Costa, 2004; Orr, 2004) instead of leaving to the end. Very little research of this area is theory-based.

3. Consolidated the foundations of the area within clearly-demarcated boundaries. For example, problematizing how user requirements could be

4. Invented new concepts based on the above new strategic choices.

5 Conclusion

This study began with asking what “theoretical contribution” means. Especially for IS research, theoretical contribution implies novelty and originality, a topic that is seldom discussed within IS circles. It introduces the Foucauldian concept of knowledge growth that views originality from the perspective of how different a new discourse is from existing discourses. So, the first step in enhancing theoretical contribution is to find a discourse that is compelling. Signs of such compelling discourses can be found in new objects of study that have attracted much attention but have not been satisfactorily addressed. Once the discourse and objects of study are identified, the hidden assumptions or implicit theories underlying the discourse need to be uncovered in order to evaluate how well those theories describe or explain the phenomena of interest. The case of adoption research in IS suggests that despite thousands of pages of research, and numerous resources expended in this area, the contribution to theory has been modest, and revolves mostly around juggling existing concepts from models and theories outside of the IS field. The approach offered by this study shows that adoption research could have chosen a different theorizing strategy that would have sent this research stream into a different, perhaps more impactful trajectory. Evidence of such modest contribution to theory can be seen in the dearth of new concepts that adoption research offers to the existing stock of knowledge. This study offers researchers a new approach to research that takes them away from the safe and formulaic approach that doctoral students are acquainted with and presents to them a box-breaking mode of research that engenders the creative spirit of discovery.

References

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