

Information Systems and the Problem of Work: Protocol for a Systematic Review

Full Paper

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Abstract

There is a sense in America that there is a growing crisis regarding the availability or quality of rewarding, satisfying work. A variety of competing framings of and reasons for this are offered, including some claims that information technologies and systems have contributed to the decline in work satisfaction. A number of streams of research in diverse disciplines have sought to understand what constitutes “good”, “positive”, “meaningful”, or “decent” work, how we can achieve it, and what happens when it is lacking, yet we know little about what contributions the information systems discipline has made, or could make, to solving this challenge of our times. In this paper we chart the conceptual landscape of the problem of work as it is framed by reference disciplines, and develop a protocol for a systematic literature review of contributions from IS research to creating good work or making work better.

Keywords (Required)

work, jobs, meaningful work, automation, human impacts of IT, systematic literature review

Introduction

There is a sense in America that there is a growing crisis regarding the quality of long terms careers and work. Work is vital to our lives as human beings and has an enormous impact on our happiness, both as individuals and as societies—as Voltaire put it, “Work saves us from three great evils: boredom, vice, and need.” In recent years and even decades, though, Americans have been increasingly concerned that rewarding, satisfying work is becoming more and more rare. Politicians and philosophers offered a jumble of lamentations: that the availability and rewards of work have been driven down by the cold economics of offshoring and automation; that polarization between blue-collar and white-collar work is creating harmful income inequality; that society and the younger generation have developed dysfunctional attitudes toward work; or that perhaps the cubicle jobs of the knowledge economy are really in some fundamental way harmful to our souls. However we define the problem of work, solving it seems to be a great challenge for our time.

Researchers in diverse fields begun to take notice that work and workers are suffering—in an unsystematic search we have identified recent, relevant scholarship in psychology (Blustein et al. 2016; Duffy et al. 2016), organizational behavior (Rosso et al. 2010), philosophy (Beadle & Knight 2012; Bowie 1998; Ciulla 2000; Tablan 2014), economics (Burchel et al. 2014), law (MacNaughton & Frey 2011), and public health (Benach et al. 2014)—and a great deal of very insightful commentary has been produced by non-academics and escaped academics who are actively shaping the world of work (e.g. Crawford 2009; M. Rowe 2008). We feel that the time is ripe to identify and review the contributions that the information systems (IS) discipline can make (or has already made) to describing, explaining, and ultimately solving the problems of work. We believe that this is an important step to take now for a few key reasons:

- Information systems and information technology (IT) have been ready scapegoats for rising unemployment, offshoring, and the degradation of autonomy and meaning at work, not without cause (Garson 1989; Lanier 2013). It is important to know whether and how, i.e. based on what unexamined assumptions, our field may be contributing to the crisis, and just as important to shine a spotlight on those areas of contemporary IS research that are transforming work for the better.
- The rise of mobile technologies has contributed to work overload and “burnout” According to a study by Workplace Trends (2015), “65% of employees say that their manager expects them to be reachable outside of the office, 9% by email 23% by phone and 33% by email and phone From the HR perspective, 64% expect their employees to be reachable outside of the office on their personal time, 18% by email, 3% by phone and 26% by both email and phone.” They found that many employees work an extra 20 hours per week on their personal time.
- We suspect that, as a broad-ranging discipline that incorporates a number of relevant topics such as knowledge management, new modes of working and organizational structures, and sociotechnical systems, the IS discipline probably has a number of valuable contributions to offer if only they were made known to those who are studying the problems of work. This is not yet the case, though; a systematic review of IS research from 2003-2013 identified no category for such research, and even the broad category “societal issues” was ranked an unimpressive 33rd among IS research topics (Palvia et al. 2015). Only a few such works explicitly identify “work” as their topic (e.g., Brynjolfsson & McAfee 2014).
- IS is differentiated from other business disciplines in part by taking a “systems” view of the world (Alter 2003) and by its design theory paradigm (Gregor 2006; Hevner et al. 2004; Walls et al. 1992), and as such there are contributions IS researchers could make that others would not. Moreover, as the discipline most directly concerned with the relationships between people and technology at work (El Sawy 2003), we as IS scholars should be at the forefront of trying to create a better world of work. This challenge could be a fruitful one for us, inspiring new research questions based on a new set of outcome variables.
- The positive organizational scholarship (POS) movement has inspired researchers to study the mechanisms and dynamics that can lead to vitality, growth, and excellence in individual lives and business performance (Cameron & Caza, 2004). As work is so widely held to be critically important to a good life, the relationship between IS/IT and work ought to be a fruitful area for research. Mapping the contributions of our field in this area may provide a model for other researchers attempting to bring POS to the study of information systems.

In this article, we develop a protocol for a systematic review of IS literature that explores the changing nature of, work. A systematic literature review is one that follows an explicit plan (or protocol) guiding the search for, screening of, and analysis of articles, so that it may be thorough and reproducible. Following Okoli’s (2015) guidelines for a systematic literature review, the protocol itself should be carefully developed and externally validated before conducting the review. The contribution of this paper is to develop our understanding of the problem of work, by drawing on definitions and theories from reference disciplines and the popular press, and to present an eight-step literature review protocol (following Okoli 2015).

The specific objective of the proposed literature review is to identify the diverse sub-fields of IS research that may relate to the problem of work—whether descriptive, explanatory, or prescriptive—and to connect and make these contributions visible. We aim to conduct a standalone review that achieves an integrated understanding rather than explaining or test a particular theory (F. Rowe 2014). This work, we believe, will reveal relevant knowledge that may be hiding in scholarly niches undiscovered by the broader community. It will enable us to point to knowledge gaps in the literature and direct researchers to important unanswered questions. Our longer-term agenda is to make this study a springboard for theory development and prescriptive design science, so that we and other information systems scholars may help our nations and communities with this vital challenge.

Problematizations of Work in Reference Literatures

What exactly is the “problem of work”? Different academic disciplines focus on different facets of work and analyze it at different levels (Burchell et al, 2014). Both the quantity of jobs and the qualities of employment are problematized.

Quantitatively, the issue of work disappearing is real. The US economy has experienced a rapid reorganization in the last few decades exacerbated by the use of information technologies in business operations and concomitant organizational structures (Howell & Wolff 1991). Outsourcing and automation have underpinned a transformation from a goods producing economy to a service economy, and advances in robotics have replaced many jobs in what some might define as meaningful work: manufacturing (Lehmacher, 2016; Sirkin, Zinzer, & Rose 2015).

The qualities of good, positive work are discussed in numerous reference literatures and we probably cannot avoid stepping clumsily through the terminological minefield of many labels and definitions found in these literatures, which are not all used consistently. Nonetheless, we have identified a long history of research on job design, intrinsic motivation, and job satisfaction, as well as lively current research streams keyed to the terms “meaningful work” and “decent work”.

Pink (2009) provides a succinct history of theories about motivation from the industrial revolution to now-mainstream ideas of intrinsic motivation, such as the Job Characteristics Theory (Oldham & Hackman 2010). In short, characteristics of the job such as autonomy, mastery, and purpose (Pink 2009) enhance the subjective experience of work, and motivate greater productivity. Job satisfaction has been defined as a situation where employees get pleasure from their work and is often related to social belonging, self-esteem and self-actualization (Kianto 2016). When organizations provide people with true autonomy, they feel empowered to use their talents, explore new knowledge, take responsibility for their actions and thus, gain a greater sense of resulting job satisfaction. Organizations that proactively facilitate and encourage a learning environment contribute to employee knowledge acquisition and career satisfaction (Jong 2016; Joo & Ready 2012; Scheers & Botha 2014).

The term *meaningful work* is used differently in various disciplines. In organizational research, a psychological view is predominant: in this literature *meaning* is defined as the (type of) sense or interpretation an individual forms about his work, and *meaningfulness* is the (quantity of) significance that work holds for the individual (Rosso et al. 2010). By contrast, in the philosophy of business ethics we find a rejection of the idea that meaningful work is whatever an employee feels it is, because that would make it difficult to argue that management has a moral obligation to provide any such thing, or to say practically how that could be done. An objective-normative definition of meaningful work may be rooted in Kantian moral philosophy (Bowie 1998) or Aristotelian virtue ethics (Beadle & Knight, 2012), to cite two examples. Ciulla’s (2000) influential monograph accepts that meaningful work has both subjective and objective definitions. A way to harmonize the objective and subjective views is found in Catholic social teaching; there “subjective” means not that that each individual decides for himself whether his work is meaningful, but that man is the subject of work, and that no “objective” qualities of a job can make up for harms to the essential dignity of the worker (John Paul II 1981; Leo XII 1891; Tablan 2014).

Along those lines, the Universal Declaration of Human Rights specifies several rights pertaining to workers (United Nations 1948) and the International Labour Organization (ILO), a specialized agency of the U.N., has in recent years promoted an agenda around *decent work* (ILO 2017). That term has inspired its own distinct stream of research extending into psychology and other domains, less concerned with subjective “meaning” and more concerned with the effects on workers when they do not enjoy the fulfillment of their essential rights (Benach et al. 2014; Duffy et al. 2016; Ribeiro et al. 2016), as well as a rich debate about how to define and operationalize the construct of decent work itself (Blustein et al. 2016; Burchell et al. 2014; MacNaughton & Frey 2011). Typically these definitions include elements like the right to work, fair wages, social security, and the right to social dialogue about work (Ghai 2003).

In addition to the interconnected stream of research on decent work and the multiple streams of research on meaningful work, we find that many other thinkers have enriched the discussion on their own. Csikszentmihalyi in his studies of human happiness described the “optimal experience” or “flow” state in which “a person’s body or mind is stretched to its limits in a voluntary effort to accomplish something difficult and worthwhile” (Csikszentmihalyi 1990, p. 3), and one of his findings was that his American research subjects experienced “flow” more often at work than in leisure, but interestingly, they reported that they would prefer not to be working. Ciulla (2000) discusses, among other things, on the pernicious effects of ever-changing management fads, arguing that “work often promises to contribute more to our lives than it can deliver” (p.xi). Crawford’s (2009) treatise on craftsmanship and the value of work highlights how Taylorism has degraded both blue-collar and white-collar by “separating thinking from doing” and makes the case for reuniting the two.

The quality movement and Lean manufacturing movement have provided some influential texts that argue for “pride of workmanship” as an essential component of business success, hence they advocate for the design of work systems that respect the autonomy and skill of production workers (Deming 1986; Liker 2004). Deming (1986, pp.1–2) wrote that “Quality to the production worker means that his performance satisfies him, provides to him pride of workmanship. Improvement of quality transfers waste of man-hours and of machine-time into the manufacture of good product and better service. The result is a chain reaction—lower costs, better competitive position, happier people on the job, jobs, and more jobs”.

We also find ideas from a number of political and social thinkers, such as the Marxists who are concerned with alienation of workers from the products of their work (e.g., Shantz et al. 2015), and a certain tireless advocate for doers of “dirty jobs” who has argued that a social stigma against blue-collar work is preventing job seekers from finding the work that could make them happy (M. Rowe 2008).

Finally, there is also a sense that the crisis of work is a particularly American problem. Perhaps more than other peoples, Americans are wired for work. President Coolidge channeled a deeply-held tenet of American culture when he stated that “the chief business of the American people is business. They are profoundly concerned with producing, buying, selling, investing and prospering in the world.” He expressed the cultural belief that “Wealth is the product of industry, ambition, character and untiring effort. In all experience, the accumulation of wealth means the multiplication of schools, the increase of knowledge, the dissemination of intelligence, the encouragement of science, the broadening of outlook, the expansion of liberties, the widening of culture.” (Coolidge 1925). The industrious and work-honoring culture of the United States has been recognized by others, such as de Tocqueville (2003), as a vital quality of the nation. If this quality is as important to America’s prosperity as many believe, then the availability and quality of work take on special importance as problems for research.

The Problem of Work Defined

The worker, community, and nation are imperiled when work is unavailable, or when the work that is available does not satisfy the worker’s basic economic needs or essential dignity. Work that meets those needs but goes no further represents a missed opportunity for economic goods such as quality and productivity, and moral goods such as pride of workmanship and development of knowledge.

The objective for our literature review is to identify and understand what the information systems discipline has to say about these issues: the quantity and quality of work, the problems and the opportunities. In line with the positive organizational scholarship movement, which calls for “study of that which is positive, flourishing, and life-giving in organizations” (Cameron & Caza 2004) we do not take a purely optimistic or pessimistic view, but hope to identify the ways that information, technology, and systems are able to make bad work good and good work plentiful.

A Framework for Classifying the Literature

A conceptual framework can be a valuable map of the territory for a literature review, supporting both quantitative analysis (i.e., counting the papers) and qualitative synthesis of the material (F. Rowe 2014). Given the numerous and diverse streams of literature in the reference disciplines, we have had to think creatively about how to group these ideas with parsimony into a seemingly unified model of positive work. We have settled on two important dimensions that we have found insightful helpful in both grouping and distinguishing the literature: subjectivity-objectivity and needs-aspirations.

Subjectivity-Objectivity

By saying that a research question or a study is *subjective* we mean that it is focused on the worker as the subject of work, rather than on the extrinsic benefits of the work to the worker or to others. In this we are following Tablan (2014) and *not* adopting the psychological perspective that limits itself to worker's perceptions (cf. Rosso et al. 2010), which if necessary we'll call *individualistic*. (We do, however, leave space in our framework for individual differences. See Figure 1.) Subjective perspectives run the gamut from the fundamental dignity of the worker—moral and ethical issues like agency, autonomy, and trust—to ideas about how jobs may be enriched such that workers may experience new heights of creativity, growth, and “flow”. It is also in the subjective dimension that we may find important outcomes that have

been insufficiently researched, such as pride of workmanship (Dee 1950), and where much of the optimism about new phenomena like the “maker movement” is directed (Dougherty & Conrad 2016).

At the same time the *objective* dimensions of work, which include extrinsic rewards for workers as well as the benefits of work for employers, the economy, and others in society, are critically important even if subordinate to the subjective (Tablan 2014). These dimensions in fact set up the necessary conditions for improvement of subjective matters—a living wage is necessary before a worker can worry about pride of workmanship, for example, and certain technologies are helpful in supporting autonomy, creativity, and the like. We find that much of the “decent work” literature focuses on objective necessities such as safe working conditions, reasonable hours, and social security (Ghai 2003), and highlights material barriers to these fundamentals, such as social marginalization (Duffy et al. 2016). On an optimistic note, the objective dimension bounds such factors as productivity, quality, and the benefit of one’s work to society.

Needs-Aspirations

Virtually every piece of research about work, working, or workers, can be classified as pessimistic or as optimistic; that is, it either discusses a problem to be solved, or an opportunity to be pursued. More precisely, there is a literature about the basic *needs* or necessities of workers, which spans both the subjective and objective areas, and an assortment of literature with a very different tone that addresses our *aspirations* toward greater happiness and prosperity. Within the “needs” literature we find that business ethics (e.g., Beadle & Knight 2012) and moral teaching (John Paul II 1981) prioritize the subjective aspects of workers’ dignity, virtue, and well-being, but they do not overlook the importance of the objective factors that make those possible. The “decent work” literature following the lead of the UN and ILO prioritizes objective matters like fair compensation, stable employment, and social security (Ghai 2003), but is paying increasing attention psychological and social issues (Duffy et al. 2016; Ribeiro et al. 2016). Thus even though these may form distinct clusters, they are united by a common perspective and similar research questions about how to guarantee workers’ basic needs, and what happens when these needs are not met.

What we call the aspirational literature is all of the work that distinguishes between what is merely “good enough” and what could be possible in terms of creativity, growth, impactfulness, and excellence. In this category we would place Csikszentmihalyi’s (1990) studies of how workers can attain that optimal experience that leads to happiness, as well as those works dealing with the development of creativity (Kelley & Kelley 2013) and with new ways of working (Dougherty & Conrad 2016). Here also we identify the idea of “meaningful” in the sense of work motivated by a “purpose” to do more than just make a living; such as the achievement of personal career and life goals, or the intention of creating a social benefit that transcends the self (Rosso et al. 2010).

A Picture of the Conceptual Landscape

Our conceptual framework identifies four positive aspects of work, and their opposites (four negative conceptions of work) at the intersections of the two dimensions just discussed. Thus we find a place for each of the main streams of research we’ve seen in the reference disciplines, without ruling any of them out. Additionally, we put forth general categories of antecedents and outcome variables which we expect to find in the studies that we review. See Figure 1.

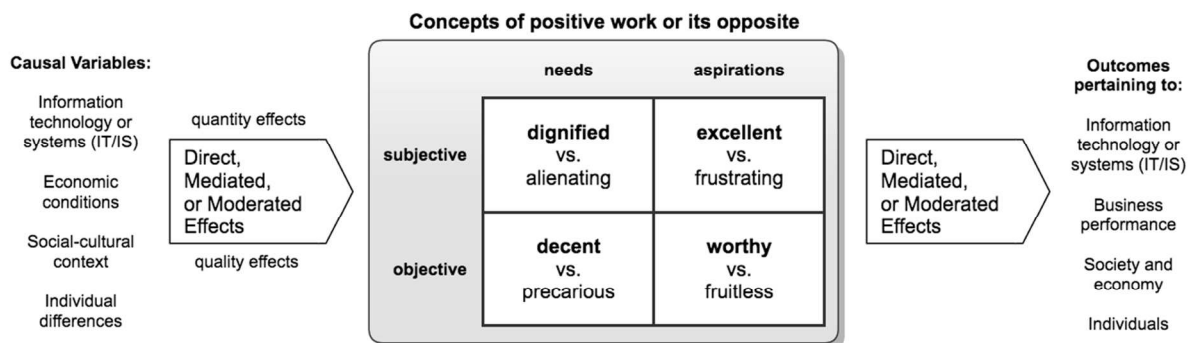


Figure 1. Conceptual framework for classifying research about the problems of work

The four terms we've selected to categorize definitions of good work are:

- **Decent work**, work that meets the basic objective needs of workers, such as the availability of employment, stability of employment, adequate pay, safe working conditions, and sufficient time off. We borrow the term from the ILO, not to imply that “decent work” researchers have limited themselves to this quadrant, but because no other term is so frequently used to focus on satisfying the material needs of workers. The opposite of decent work is **precarious work**; a usage also commonly seen in that stream of literature. The study of precarious work is particularly important in developing countries (e.g., Ribeiro et al. 2016), but many areas of the USA have also recently experienced devastating precarity of work leading to “regional depression” (Thompson 2015).
- **Dignified work**, work that meets the subjective moral and spiritual needs of workers that follow from their human nature and dignity. These needs include respect and trust from managers, positive social interactions with coworkers, a sense of agency and the ability to see one's work having value (John Paul II 1981). Work that lacks these qualities we may call **alienating work**. The problem of alienation that began in the factories with the industrial revolution has more recently spread to white-collar work, as “knowledge workers” have seen their jobs automated and degraded too (Crawford 2009; Garson 1989).
- **Worthy work**, work that has the objective qualities that make possible the achievement of personal goals or tangible impacts outside of the self, for the worker's family or society. The term is associated by Tablan (2014) with the idea that objective factors are necessary but not sufficient for subjective “meaningfulness” at work. Worthy work is work that is extrinsically rewarding or impactful. Its opposite is **fruitless work**, work that does not seem to matter, perhaps expressed best for our times by data analytics guru Jeff Hammerbacher, who once said “The best minds of my generation are thinking about how to make people click ads. That sucks.” (Vance 2011).
- **Excellent work**, work that enables individuals to reach new heights of creativity, challenge, learning, self-actualization, or flow. This work is good because of its intrinsic rewards or because it fits the individual's talents or “calling”, helping the individual grow and excel as a worker. The absence of these subjective qualities might be called **frustrating work**. This ill may be the root cause of the phenomenal success of *Dilbert* and of the frequent finding in Gallup polls that huge majorities are “disengaged” at work (Rigoni & Nelson 2016).

We believe that most literature on the topic of work may be classified as addressing one of these four goods, or one of the four opposites representing dysfunctions or problems of work. Literature may also be classified by the kinds of antecedents or effects that it considers in relation to one or more aspects of quality work. Therefore this framework of four types of work issues, four categories of antecedents, and four categories of effects, is rich enough to allow us to report on the diversity of relevant IS literature, but parsimonious enough to be made sense of.

Relationship to IT and Information Systems

Figure 1 also includes a reminder of what we are looking for: theoretical and empirical links connecting IT and IS to the problems and opportunities of work. We expect to find research that links IT and IS variables to the quantity of good work—that is, the creation and destruction of good jobs in an economy—and to the quality of work—that is, the degradation or enrichment of work, making good work worse or bad work better. We are looking for direct effects, mediated effects, or moderated effects (including models where IT/IS provide the moderating variables). In addition we have considered the possibility that some research may demonstrate causal relationships of positive or negative work on IT/IS, and we will design our literature review in such a way that it may not overlook these theory or findings.

Development of Method

We intend to conduct a standalone systematic literature review following (Okoli, 2015). The eight steps of Okoli's method are:

1. Identify the purpose
2. Draft protocol and train the team

3. Apply practical screen
4. Search for literature
5. Extract data
6. Appraise quality
7. Synthesize studies
8. Write the review

Step #2, the development of a protocol, requires explicit specification of how steps #3-6 will be conducted. This makes the literature review reproducible and allows its limitations to be assessed. Our protocol, which follows, may change during the progress of the study, but following Okoli's advice, we have chosen to state it in advance and bring it to the community to allow for external validation.

Statement of Purpose

By systematically reviewing published information systems research, to identify and analyze studies that describe, explain, predict, or make prescriptions about, any conception of "positive work" or its opposite, or the antecedents or effects of the same.

The Practical Screen

The practical screen is a method for filtering out those articles found in the initial search which will not be read by reviewers. We propose a two-step screening process:

1. We will first look at titles, abstracts, and keywords. If any construct or variable is named that pertains to work, workers, jobs, job design, motivation, or any of the qualities or problems of work identified above (meaningfulness, job satisfaction, pride of workmanship, alienation, etc.), the paper will be kept in the review set. We stipulate that mere mentions of "users" or consumers will not trigger inclusion, even if those users are workers (because, who isn't?).
2. For the papers screened out by step 1, we will scan the concluding sections for any "implications" that pertain to work, workers, jobs, job design, motivation, or any of the qualities or problems of work. Papers that offer such implications will also be included in the set to review.

The Search

A selection of journals and a time span will be selected to balance the imperative for comprehensive coverage with a manageable volume of work. We propose to search the contents of four impactful journals from the Senior Scholars' Basket of Journals: *MIS Quarterly*, *Information Systems Research*, the *Journal of the AIS*, and the *European Journal of Information Systems*. We feel that these are some of the leading outlets for IS research and represent substantial editorial diversity. In addition, we will search the journal *Information Technology and People*, which is described as "dedicated to understanding the implications of information technology as a tool, resource and format for people in their daily work in organizations" and is a natural outlet for the kinds of research we are seeking.

Our search will span from January 1, 2007 through the date of the search in 2017, so we can report on ten full years (2007 through 2016) which is something of a standard timespan for a literature review (F. Rowe 2014). If influential works from earlier years are identified, we will read them and mention their important contributions in our final report, but they will not be part of the systematic search.

We will search for the following words and phrases in the article titles, abstracts, keywords, and full text: work, worker(s), job(s), labo(u)r, employee(s), (un)employment, job security, job satisfaction, job design, motivation, meaningful work, decent work, fulfillment, dignity, pride, workmanship, craftsmanship, job crafting, alienation, degrading, degradation, precarious work, fruitless(ness), frustration. All "hits" from the specified journals and time frame will then go through the practical screen.

Extract Data

We will read all the articles that pass the practical screen and extract data. To ensure consistent and complete data, a worksheet will be developed for the review team to use. For each article, we will identify

the type of research (theory development, mathematical model, empirical study, qualitative study, design science), the year of publication, the journal, and the authors. We will note which definition(s) of good or bad work are used in the article—decent, dignified, worthy, excellent, or their opposites—and/or whether the variables of interest are motivation, job satisfaction, or employment in general. Antecedents and effect variables will be noted. We will classify how the IT/IS artifact is conceptualized in the article, using the five categories of Orlikowski and Iacono (2001): tool, proxy, ensemble, computational, and nominal. It will be noted whether IT or IS artifacts serve as direct causes, moderated causes, mediators, direct effects or moderated effects, and of which variables. For empirical studies it will be noted which proposed causal relationships were supported or unsupported. Specific definitions of constructs will be identified. Reference theories will be noted by name, if specified.

The data collection plan will be tested on a set of 20 papers and then assessed for inter-coder reliability; differences in judgment will be discussed and coders will agree on how to improve reliability before coding the remaining papers. The data collected on these worksheets will be entered into digital files by graduate students for analysis.

Appraising Quality

After reading the papers, we will divide them into three groups. Those which do not pertain to the purpose of the study, or which prove inaccessible due to technical or library problems, will be set aside. Those which incorporate *quantitative* variables of (un)employment or job satisfaction only but do not define or theorize about any characteristic or *quality* of work will be included in a bibliometric analysis but not a theory-based synthesis of the literature. Those articles that use such definitions or do contribute to such theory will be carefully studied and included in our analysis and synthesis.

Analysis and Synthesis of Data

We will first analyze and report on the bibliometric data, in particular providing frequency counts of research grouped and pivoted by year of publication, by journal, by variables of interest, by reference theory, by author, by causal structure and by research method, to name a few key dimensions. Our conceptual framework (see Figure 1) will be used to categorize and to identify gaps in research coverage.

A slower and more thoughtful synthesis will combine a review of our data with the themes and trends we will have uncovered in reading the literature. We will seek to share an understanding of what research has been done and to provoke new research questions based on real knowledge gaps and empirical gaps. A good literature review “is not an unsurprising overview of the literature” but should critically and constructively surface new ideas and avenues for how to see the body of work and its future possibilities.

Discussion and Conclusion

As the first steps in preparing to conduct a systematic literature review on information systems research that pertains to our understanding of the problems and opportunities of work, we have searched far and wide for influential ideas and definitions from reference disciplines, formulated a model of the conceptual landscape that can be used in categorizing and comparing research, and specified an initial literature review protocol suitable to undergo peer review and external validation.

As Eisenhower reportedly said, “plans are useless but planning is indispensable”. Undoubtedly our research protocol will change in response to practical discoveries during the conduct of the systematic review; it will be updated accordingly in the final report of that research. The key limitation of this work is that it has not yet faced that trial. Nevertheless, we feel that the background research and conceptual organizing we present here is a valuable contribution to knowledge in its own right. We have drawn attention to an important problem for research and armed our readers with a number of pointers to important lines of thinking in the reference disciplines. We conclude that this has been a “worthy work”.

Looking ahead, we intend that this study will enable, and hope that it will inspire, a new agenda for positive research that turns information systems scholars toward solving one of the great challenges of this era. In our extensive reading of scholarly and popular opinions we have found both naïve optimism and hopeless pessimism—either we’re on the cusp of a renaissance or we’re doomed as a result of automation, globalization, or some similar unstoppable movement. What is common to both views is that

we can't or don't have to *do* anything, just wait for the inevitable. We find both views unsatisfying. We trust that something positive *can* be done about the problems (and opportunities) of work, and that theory and empirical research can be a guide. Thus we approach the IS literature with an open mind and neither a pessimistic nor optimistic bias, in order to identify those dynamics that can make a positive difference. We hope that other colleagues will be inspired to join us in studying how we may improve the world of work.

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