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THE INFLUENCE OF USEFULNESS OF AN IT PROJECT MANAGEMENT METHODOLOGY ON ITS ACCEPTANCE AND APPLICATION BY INDIVIDUALS – MODERATING EFFECTS OF NEEDS, GENDER, AND AGE: A NEEDS EXPECTANCY

Kunal Mohan

EBS Business School, kunal1710@gmail.com

Frederik Ahlemann

EBS Business School, frederik.ahlemann@ebs.edu

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THE INFLUENCE OF USEFULNESS OF AN IT PROJECT MANAGEMENT METHODOLOGY ON ITS ACCEPTANCE AND APPLICATION BY INDIVIDUALS – MODERATING EFFECTS OF NEEDS, GENDER, AND AGE: A NEEDS-EXPECTANCY APPROACH

Research-in-Progress

Kunal Mohan

EBS Business School
Söhnleinstraße 8D, 65201 Wiesbaden
kunal.mohan@ebs.edu

Frederik Ahlemann

EBS Business School
Söhnleinstraße 8D, 65201 Wiesbaden
frederik.ahlemann@ebs.edu

Abstract

Despite the overwhelming advantages of using an IT project management methodology, organizations are rarely able to motivate their staff to use them. While empirical research states that the usefulness of a methodology is the single most important determinant of its acceptance and use by actual users, studies have not examined which aspects of usefulness are more important for which type of people in which situations. Our study is a step toward filling the gap in methodology evaluation, development, and adoption literature, which to date has not developed a theoretically and practically complete as well as relevant typology of the usefulness of a methodology and has also not studied the effect of personal traits such as needs. Based on needs and expectancy theories, we develop a conceptual model that holds that individual needs and contextual factors such as gender and age determine which aspect of the usefulness of a methodology has a bigger effect on individuals' intentions to actually use the methodology.

Keywords: Methodology, Behavioral science, User behavior, User expectations, Needs

Introduction

In their search for ways to achieve predictable results, organizations either adopt or customize project management methodologies (Eslerod & Riis, 2009; Munns & Bjeirmi, 1996). These consist of tested bodies of methods, rules, and assumptions tailored to the organization's specific needs. Research states that the most important reason for using project management methodologies (PMM) is the belief that one can systematically and predictably arrive at replicable, pragmatic, cost-effective, and timely solutions to real-world problems (Andersen & Vaagaasar, 2009; Cicmil, Đorđević, & Zivanovic, 2009; Eslerod & Riis, 2009; Lorraine S. Lee & R. M. Anderson, 2006; Munns & Bjeirmi, 1996; Winter et al., 2006). Despite the overwhelming advantages of using a methodology, only about 50% of organizations can actually motivate their staff to use such methodologies (Glass, 1999). Cicmil et. al. (Cicmil, Đorđević, & Zivanovic, 2009) also find that resistance to project management methodologies is high because users do not trust a concept, fear a loss of power, or lack adequate training and upper management support. In the context of software development, a project survey conducted by Russo et al. (N. L. Russo, Hightower, & Pearson, 1996) showed that only 6% of organizations claim that their methodologies are always used as specified. In their survey of 152 organizations, Eva and Guilford (Eva & Guilford, 1996) found that only 17% of the respondents claimed to use a methodology in its entirety. Fitzgerald (B. Fitzgerald, 1996) also found that the majority (58%) of those respondents who reportedly used methodologies did not follow them rigorously, implying that only 17% of all respondents reported rigorous methodology use. Despite substantial investments in the development of project management methodologies and the pressure exerted to use them, the practical usefulness of PMMs therefore remains controversial (Winter, Smith, P. Morris, & Cicmil, 2006). The roots of these problems, which Our research addresses, are – among other factors – in the failure to understand actual methodology users' attitudes. This lack of understanding ultimately leads to the development and implementation of a PMM which might not fulfill user needs. Consequently, such a PMM is rejected (de Bony, 2010; Kerzner, 2003; Munns & Bjeirmi, 1996; Winter, Smith, P. Morris, & Cicmil, 2006). While empirical research states that a methodology's usefulness is the single most important determinant of methodology acceptance and use (B.C. Hardgrave & R. Johnson, 2003; Bill C. Hardgrave, F. D. Davis, & Riemenschneider, 2003; Riemenschneider, Bill C. Hardgrave, & F. D. Davis, 2002), studies have not examined which aspects of usefulness (e.g., higher productivity, promotion, social acceptance, respect, power, etc.) are more important for which type of people in which situations. Neglecting the impact of such complex relationships might lead to results which are not always valid (Henseler & Fassott, 2010). In view of the time and effort usually invested in developing and implementing a PMM, this has become one of the most critical areas of IS concern (Bill C. Hardgrave, F. D. Davis, & Riemenschneider, 2003). Fundamental questions regarding the impact of a methodology's usefulness on an individual's intention to use it are therefore: a) What aspects of an IT PMM's usefulness affect an individual's decision to use it?; and b) How do individuals' basic needs and other contextual factors such as age and gender influence the predictive power of these different aspects of an IT PMM's usefulness?

In the past, research attempted to analyze only a few of the above-mentioned problems. Researchers concentrated on increasing a methodology's usefulness by using abstract criteria to improve the techniques or tools (Betts & Lansley, 1995; Westrup, 1993), by summarizing their own checklists of an IS development (ISD) methodology's requirements (Keng Siau & Xin Tan, 2005), and by improving strategic alignment (Crawford, Pollack, & England, 2006). Nor has Focusing on cognitive user decision-making in narrow and specific organizational contexts provided any concrete answers (Wynekoop & Nancy L. Russo, 1995). Furthermore, past studies were conducted almost exclusively in the field of software development (e.g., agile and object-oriented software development methodologies), neglecting project management methodologies (e.g., PRINCE2, PMI). Both types of methodologies consist of goal-oriented, problem-solving methods/techniques and a multi-step procedure that prescribes what to do and how to do this (Checkland, 1999; Avison & G. Fitzgerald, 2003). Nevertheless, software development methodologies (SDM) usually tend to address tasks and processes from an engineering perspective (Vickers, 1999). PPMs go beyond mere development of IS and are "...concerned with exploring and understanding information technology as a corporate resource that determines both the strategic and operational capabilities of the firm in designing and developing products and services for maximum customer satisfaction, corporate productivity, profitability and competitiveness" (Badawy, 1998).

Our study is a step toward filling the gap in the IT PMM evaluation, development, and adoption literature, which has not as yet developed a theoretically and practically complete and relevant typology of a methodology's usefulness. Nor has this literature studied the effect of personal traits such as needs. We have not only identified needs theories, but also expectancy theories to provide a comprehensive theoretical basis for analyzing the above research questions. The needs theories – for example, Maslow's hierarchy of needs theory (Maslow, 1954), Alderfer's ERG model (Alderfer, 1972), Murray's theory of psychogenic needs (Murray, 1938) – help us understand how, when, and

which needs are more important to people, while the expectancy theories – for example, Vroom (Vroom, 1964) – emphasize self-interest in aligning rewards with employee wants.

The remainder of the paper is organized as follows: Section 2 defines the research scope and methodology, which aids the reader's understanding of the context of our research, the methods we use, and why we use them. Section 3 explains the basic theoretical concepts that provide the framework for our conceptual model. We also discuss prior research on the topic in order to clarify what has been done and what needs to be done. In Section 4, we present our research model and hypotheses, pointing out highly validated survey instruments that might be used to operationalize our constructs. In section 5, we outline the research design to describe future steps. In Section 6, we discuss the implications and contributions of this study.

Research Scope and Methodology

We focus on examining the behavior of *individual users* rather than an organization as a whole: although an organization develops and implements a particular IT PMM, the actual methodology users usually decide the extent of its use (Riemenschneider, Bill C. Hardgrave, & F. D. Davis, 2002; Khalifa & Verner, 2000). We only focus on the use of *methodologies* instead of on methods/techniques (e.g., stakeholder analysis, earned value analysis, etc.) and tools (e.g., CASE tools, Word/Excel templates, project management software, etc.). Tools, techniques, and methods can be used in the absence of a formal methodology, and the use of a methodology represents a radical change (Bill C. Hardgrave, F. D. Davis, & Riemenschneider, 2003). The adoption and use of new IT PMMs' might differ from and be much more challenging than the adoption of specific methods and tools. The reason for this lies partly in the tacit organizational and individual problems that the introduction of new methodologies causes. For example, the stress associated with the learning of a new methodology, fear, organizational restructuring or re-engineering's associated impact on self-esteem and identity, and the emotional costs of role conflict, ambiguity, and/or workplace transformation might be serious inhibitors of IT PMM acceptance and usage (Vickers, 1999).

We conducted an extensive review of the existing literature, as recommended by Webster and Watson (Webster & Watson, 2002) (please contact the authors for a detailed discussion and write-up of the literature review). Our aim was a) to distinguish between what has been done and what needs to be done, b) to identify important variables relevant to the topic, and c) to synthesize and gain a new perspective (Hart, 1998). Using keywords and search strings, we searched eight online databases, which resulted in 22,291 search results. The initial filtering of the search results was conducted by examining the title and the abstract, which brought to light 58 papers. The full text of each research paper was then reviewed to eliminate those not related to individuals' IS methodology usage behavior. This reduced the pool of articles to 17. To conclude the data-gathering phase, we "went backward" (Webster & Watson, 2002) and reviewed the citations of these 17 articles. This helped us to identify 2 further papers, thus bringing the final pool of papers to 19. We subjected the final pool of 19 papers to a rigorous classification according to our analysis framework to systematically categorize and describe the selected literature. The analysis framework was constructed after examining the classification scheme of similar studies (e.g., (Stone, 1981), (Palvia et al., 2003), (Palvia et al., 2004)) and adapting it by adding further categories and items to cover all important aspects of our research's objectives. This systematic search ensured a thorough review of the relevant literature, although we realize and agree with Webster and Watson (Webster & Watson, 2002) that we must have missed some articles due to our limited information processing capability and resources.

In addition to the literature review, an exploratory investigation was conducted between May and December 2009 to investigate practitioner perceptions towards methodology acceptance and usage. We accompanied a large multinational professional service firm (140,000+ employees) in its endeavor to develop three IS methodologies for a) IT project management, b) IT benefits management, and c) enterprise architecture management. Multiple data collection methods were applied: a) archival sources, b) unstructured interviews (lasting 30-60 minutes each) with individuals involved in the management of the organization's IS/IT, and c) protocols, document reviews, and field notes of multiple workshops (each lasting five to eight hours) involving upper management representatives, corporate controlling (CC), IT project managers, and the project management office (PMO). This exploratory investigation involving diverse users, developers, and supporters provided us with a holistic understanding of the development of individuals' beliefs, attitudes, and usage behaviors. In particular, the interactive workshops provided us with a deep understanding of the interplay between the different organizational members/departments. Field notes and protocols gathered in the workshops and team meetings, during which individuals shared their thoughts and emerging ideas, provide clues about relationships, anecdotes, and informal observations (Eisenhardt, 1989a). To strengthen our research's internal validity and generalizability, existing literature and theories – especially the

planned behavior framework theory – were used to form a priori constructs, to develop the interview guide and to structure field notes/protocols (Eisenhardt, 1989a). We conducted six semi structured interviews with project managers and took part in 13 methodology development workshops.

Background

Over the past few decades, various categories of motivational theories have been developed to understand and predict human behavior. Among these, *content theories* (Alderfer, 1972) such as needs theories – for example, Maslow’s well-known hierarchy of needs (Maslow, 1954) and Alderfer’s ERG model (Alderfer, 1972) – have become widely accepted in research studies, as they are considered the best way of understanding an individual’s motivation to act in a particular way (Arnolds & Boshoff, 2000). According to needs theories, individuals are motivated to use a particular methodology by their individual desire to satisfy certain needs. On the other hand, *mechanical theories*, like the expectancy theories – for example, Vroom (Vroom, 1964) –, seek to explain motivated behavior (Alderfer, 1977a). These theories hold that individuals are motivated to use a specific methodology due to the expectation of certain pleasurable (or pain-reducing) outcomes (Alderfer, 1977a; Vroom, 1964). Although both these motivation theory streams are concerned with conceptually distinct phenomena, scholars regard them as complementary because they investigate pragmatically related concepts and come to similar conclusions (Alderfer, 1977a). As pointed out by Alderfer (Alderfer, 1977a), a number of studies, for example, (Hackman & Lawler III, 1971; Hackman & Oldham, 1976; Porter, 1968), have also applied these two bodies of theories complementarily to analyze motivational problems. Figure 1 provides an overview of the conceptual interaction between needs and expectancy theory.

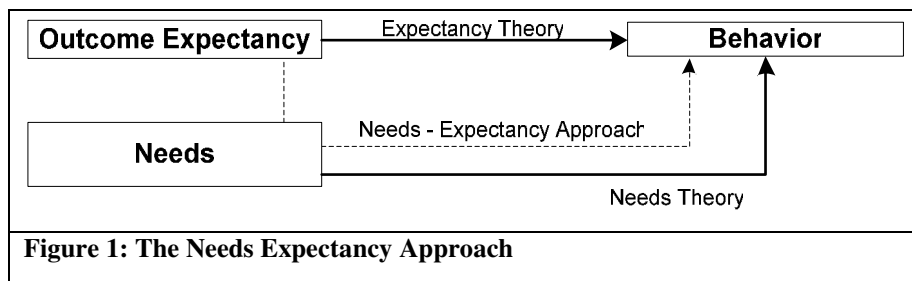


Figure 1: The Needs Expectancy Approach

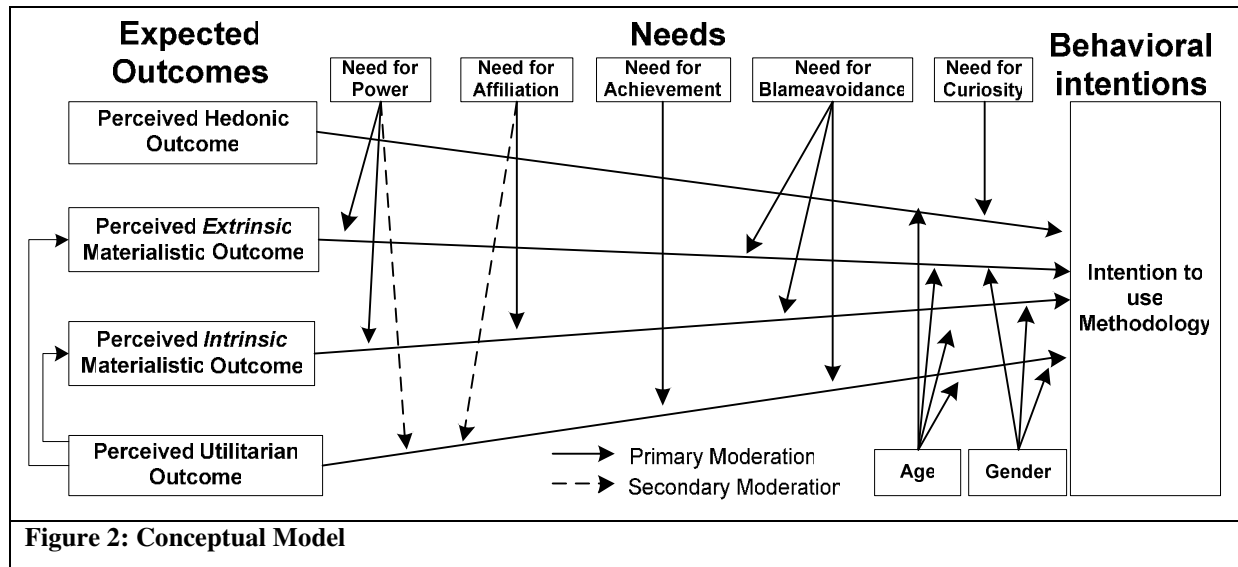
Many definitions of basic needs have been proposed, of which the one by Ryan and Deci (Ryan & Deci, 2000) is most consistent with the scope of this study. They indicate that “a basic need, whether it be a physiological need or a psychological need, is an energizing state that, if satisfied, conduces toward health and well-being but, if not satisfied, contributes to pathology and ill-being” (Ryan & Deci, 2000). This implies that if an IT PMM fails to satisfy an individual’s basic needs, this might result in serious discomfort. This dissatisfaction might be visible in the individual’s rejection of the particular methodology. Maslow’s hierarchy of needs theory (Maslow, 1943) is one of the most fundamental and influential needs theories. It suggests that there is a hierarchy of needs and that certain lower needs have to be satisfied in order for higher needs to be recognized as unfulfilled. However, in our study, we consider Alderfer’s ERG theory (Alderfer, 1972) to be a more appropriate needs theory because a) there is hardly any evidence of the existence of a definite needs hierarchy or that fundamental human needs are non-hierarchical, and b) there is little evidence to suggest that people satisfy only one motivating need at a time, except in situations where needs are in conflict (i.e. are mutually exclusive) (Wahba & Bridwell, 1976). On the other hand, ERG theory, a consistent needs-based model that aligns Maslow’s motivation theory more accurately with empirical research, addresses criticism of Maslow’s theory by a) suggesting that more than one need may motivate at any one time, and b) that different people value the different needs differently.

Similar to needs theories, expectancy theories also propose that individuals have different sets of goals that determine their actions. While needs theories emphasize deep-rooted basic human needs as motivators of behavior, expectancy theories suggest that individual behavior is motivated by a behavior’s outcome; that is, the belief that performing a specific behavior will result in a desirable reward or outcome that will fulfill their superficial goals or wants (Vroom, 1964). A behavior’s expected favorable outcome or usefulness has emerged as a core construct in the field of MIS. This suggestion has been largely driven by the use of the theory of planned behavior (attitude) (Ajzen, 1991), the technology acceptance model (TAM) (perceived usefulness) (F. D. Davis, 1989), and the unified theory of acceptance and use of technology (UTAUT) (Venkatesh et al., 2003), which examine an individual’s beliefs regarding a behavior. The UTAUT model has specifically gone a step further and incorporated contextual factors’

effects, such as experience, age, and gender, to develop a more complete understanding of human behavior. A plethora of empirical research in various fields has confirmed that a behavior's favorable outcome or usefulness is the most important aspect in predicting it. Hardgrave et al. (Bill C. Hardgrave, F. D. Davis, & Riemenschneider, 2003) state that "...usefulness generally has a beta (path coefficient) of around 0.60 in TAM studies." In the context of methodology adoption, Khalifa and Verner (Khalifa & Verner, 2000) find that better process and product quality have a substantial effect on a software developer's decision to use waterfall and prototyping methodologies. Riemenschneider et al. (Riemenschneider, Bill C. Hardgrave, & F. D. Davis, 2002) apply five theoretical models and conclude that "...if a methodology is not regarded as useful by developers, its prospects of successful deployment may be seriously undermined." Based upon their research, Hardgrave and Johnson (B.C. Hardgrave & R. Johnson, 2003) conclude that "...software developers do not view their personal benefits separately from organizational benefits" (B.C. Hardgrave & R. Johnson, 2003) and that a methodology's personal usefulness (PU) might therefore not affect their decision to use it. These authors (B.C. Hardgrave & R. Johnson, 2003) come to this conclusion because they could not psychometrically separate their PU construct from their organizational usefulness (OU) construct. We suggest differentiating between OU and PU on other grounds and seek to provide a solution in our conceptual model. Considering the significant impact that a methodology's outcome expectations have on individuals' decision to use it, it is crucial to understand a) what type of outcomes, b) under which circumstances, and c) with which effects contribute to predicting actual users' decision to use a methodology.

Conceptual Framework and Hypotheses

From the perspective of needs theory and expectancy theory's complementary use in humanistic psychology, individuals are expected to use an IT PMM due to their perceptions that using the methodology will a) lead to certain favorable outcomes, and b) that these outcomes will lead to the fulfillment of their specific needs. An individual's needs are thus expected to play a moderating role (as depicted in our research model in Figure 2) and influence the different outcomes' explanatory power regarding the individual's intention to use a methodology. We specifically focus on moderating effects because – besides the examination of direct effects – scholars increasingly seek to understand complex relationships (Henseler & Fassott, 2010). While the literature has repeatedly emphasized the importance of taking moderation effects into consideration (Chin, Marcolin, & Newsted, 2003a), their neglect has led to a lack of relevance as "...relationships that hold true independently of context factors are often trivial" (Henseler & Fassott, 2010). In the remainder of this section, we define each of the determinants, specify the role of key moderators (needs, gender, and age), and provide theoretical justification for our hypotheses.



Expected Outcomes: An IT PMM's favorable expected outcome is reflected in the usefulness of the methodology, which originates in an individual's mind through cognitive mechanisms related to goal attainment (Venkatesh, M. G. Morris, G. B. Davis, & F. D. Davis, 2003). Past research has focused primarily on the task-related *utilitarian outcome* (Andersen & Vaagaasar, 2009), which seeks to provide the user with instrumental value, such as increasing task performance, encouraging efficiency, and increasing productivity (van der Heijden, 2004). However, research

in the field of consumer behavior suggests that there are other sources of usefulness. These sources are not only related to one's personal goals (a *hedonic outcome*) (Babin, Darden, & Griffin, 1994), which are more subjective and personal than a utilitarian outcome (van der Heijden, 2004), but also to a *materialistic outcome* (Belk, 1985), which focuses on the acquisition of worldly, tangible and intangible possessions. A hedonic outcome is generated by pleasurable experiences produced by sensations generated in multiple sensory channels when an individual uses a specific methodology (van der Heijden, 2004). Consequently, a hedonic outcome may be defined as the extent to which the activity of using a methodology is perceived as enjoyable in its own right, besides any performance consequences that may be anticipated (F. D. Davis, Bagozzi, & Warshaw, 1992). Even though individuals may not expect the use of methodologies in organizational settings to generate high levels of fun, we argue – like Venkatesh (Venkatesh, 2000) – that methodology enjoyment is still a relevant expected outcome of methodology use because “...enjoyment not only includes the desire for fun but also involves among others, exploration, discovery, challenge, and curiosity.” On the other hand, a materialistic outcome is based on an orientation that views material goods and money as important for personal happiness and social progress. According to Belk (Belk, 1985), “...at the highest levels of materialism, such possessions assume a central place in a person's life and are believed to provide the greatest sources of satisfaction and dissatisfaction.” In the context of our study, materialism not only refers to monetary advantages (or an *extrinsic materialistic outcome*), but also involves intrinsic rewards (or an *intrinsic materialistic outcome*) such as respect from and acceptance by peers and seniors (Arnolds & Boshoff, 2000).

Although the four proposed methodology outcomes are distinct and abstract, on the basis of previous research, we also consider these outcomes interrelated in that one type of outcome might cause another. In our study, we propose that, as a result of methodology use, utilitarian outcomes (e.g., an employee's increased efficiency and productivity) will lead to either intrinsic materialistic outcomes (such as respect and praise from peers or seniors), or extrinsic materialistic outcomes (such as higher pay, gifts, or a promotion), or both. Such causal relationships are explained by extensive empirical research (based on the principal agent theory (Eisenhardt, 1989b)) into organizational incentive systems (e.g., (Banker, Seok-Young Lee, & Potter, 1996; Chakraborty, Sheikh, & Subramanian, 2009; Clegg et al., 1997; Deci, 1971; Kahn & Sherer, 1990; Lazear, 1996; Paarsch & Shearer, 2000)) and according to which organizations reward their employees for high performance. In summary, our proposed study of a methodology's usefulness according to four distinct dimensions captures more details about outcome expectations. Furthermore, this might be a suitable approach to resolve the psychometric problem faced by Hardgrave and Johnson (B.C. Hardgrave & R. Johnson, 2003). While utilitarian outcome is largely a manifestation of organizational usefulness, hedonic and materialistic outcomes typically reflect personal usefulness.

The Moderating Influence of Needs, Gender, and Age: For the purpose of our study, we employ Murray's theory of psychogenic needs (Murray, 1938), and Reiss's theory of 16 basic desires (Reiss, 2004) as they are considered the most fundamental and comprehensive list of underlying psychological human needs and motivational processes.

Need for Power (nPow) is an urge to impact other people, to control, or to be in a position of influence (Murray, 1938). Individuals with a high need for power are believed to be most highly motivated to use a methodology if they can attain power symbols and status, such as promotion, higher salary, and respect (representative of primary moderation). In addition, since utilitarian outcomes are expected to lead to materialistic outcomes, *nPow* is also expected to have a moderating effect on utilitarian value (representative of secondary moderation), as individuals might want performance improvements to indirectly attain materialistic outcomes.

Need for Affiliation (nAffi) is the desire to achieve acceptance from one's social surroundings. In a work environment, a number of studies have found that materialistic status symbols like promotion, higher salary, gifts, and praise from seniors are conveyors of and adequate substitute for positive interpersonal relationships and feelings of acceptance (Belk, 1985). Based on the same reasoning as the above, *nAffi* is also expected to have a moderating effect on utilitarian value.

Need for Achievement (nAch) refers to an individual's desire to do things better, accomplish difficult tasks, overcome obstacles, become an expert, achieve high performance standards, and/or a need for significant task-related accomplishment (Murray, 1938). Such individuals focus primarily on internal motivation rather than on external rewards. As such, those high in *nAch* are more likely to value personal achievement of a task above recognition and praise, and therefore seek utilitarian outcomes.

Need for Blameavoidance (nBla) refers to an individual's desire to strictly follow rules and procedures to avoid being blamed for missed goals and objectives (Murray, 1938). According to Westrup (Westrup, 1993),

methodologies are often used as an insurance in case projects fail. By adhering strictly to the methodology, individuals can deny responsibility for the failed project and simply blame the methodology. In such a scenario, a methodology is not used for utilitarian outcomes, but because it provides materialistic value, as the user can avoid negative career or monetary consequences as a result of failed projects.

Need for curiosity (nCur) is the desire for knowledge (Reiss, 2004), as well as the need to explore and discover. Studies have shown that such needs are highly context specific; Arnolds and Boshoff (Arnolds & Boshoff, 2000), for example, find that the desire to explore is stronger in upper management than in frontline employees.

Empirical research has shown that the above-mentioned needs are largely uncorrelated (Reiss, 2004; Sun, 2009). Although the list of needs in the literature is extensive, we consider these five needs as representative of the most fundamental high-level primary needs in the context of methodology use, in the sense of being innate or “hard-wired” (Sun, 2009). Other secondary needs can be derived from these high-level primary needs. For example, Murray’s *need for play* may be attributed to the *nCur*, while the *need for contrariance* and the *need for acquisition* may be derived from the *nAch*. The *need for family* – as proposed by Reiss (Reiss, 2004) – and the *need for social recognition* may be attributed to the *nAffi*, while the *need to compete or win* can also be derived from the *nAch* (Sun, 2009). Another reason for studying fewer needs (rather than more) is related to a parsimonious approach: as the list of needs increases, the utility of the approach diminishes. A long, unwieldy list of needs is precisely the reason why earlier needs-related theories fell out of favor (Deci, 2000).

Research on gender differences – especially gender schema theory (GST) and social role theory (Eagly, 1987) – indicates that men tend to be more task oriented (Minton & Schneider, 1980). *Utilitarian outcomes* are therefore more salient for them. Research on job-related attitudes, for example, Hall and Mansfield (Hall & Mansfield, 1975), suggests that younger workers may regard utilitarian outcomes as important, since high efficiency and productivity are considered critical for career advancement during the early stages of their professional life.

In an organizational environment, men are expected to have a stronger desire for higher pay, status, visible artifacts of superiority, and similar *extrinsic materialistic outcomes* that display power and dominance. GST suggests that such differences stem from gender roles and socialization processes reinforced from birth (Venkatesh, M. G. Morris, G. B. Davis, & F. D. Davis, 2003). The study of gender and language in sociolinguistics and gender studies holds that, in seeking status, men will avoid intangibles that may be challenged and prefer “solid” visible artifacts (Tannen, 2001). Dinovitzer et. al. (Dinovitzer, Reichman, & Sterling, 2009) state that women show low interest in high compensation, rather opting for “mother-friendly” work environments that afford them flexible hours and have few travel demands, or offer on-site daycare. As noted, earlier research, for example, Myers (Myers, 2000), indicated that younger workers find such extrinsic rewards attractive due to their desire to show early professional success. Another research stream holds that younger workers have stronger pro-debt attitudes as well as higher levels of debt (Lea, Webley, & Walker, 1995). These findings suggest that younger workers might be more inclined to pursue financial rewards to support their overspending behavior (Shirley Lee & Mysyk, 2004).

Theory suggests that women tend to be more sensitive and responsive to others’ opinions (Venkatesh, M. G. Morris, G. B. Davis, & F. D. Davis, 2003) and have a stronger need for positive interpersonal relationships and feelings of acceptance. As noted, the study of gender and language in sociolinguistics and gender studies also states that women have a deeper urge to seek social connection, whilst men have a deeper urge to seek status (Tannen, 2001). It is therefore expected that *intrinsic materialistic outcomes* such as respect from peers and superiors are more significant for women when they form an intention to use a new methodology. Based on Rhodes’s (Rhodes, 1983) meta-analytic review of age effects, which suggests that need for approval, acceptance, and respect from others increases with age, we propose that older workers are more likely to place increased importance on intrinsic materialistic outcomes.

Research in the field of work needs suggests that, with increasing age, individuals place more importance on feelings of self-actualization and self-fulfillment (Wild, 1973). Thumin et. al. (Thumin et al., 1995) also conclude that, as individuals advance and reach the peak of their careers (and gain financial security), they tend to become more altruistic, more philanthropic, and more concerned with ethical behavior. The related research hypotheses are summarized in Table 1, which also provides an overview of some studies that have used highly validated instruments to operationalize our research model’s constructs.

| Table 1: Research hypotheses and the prior operationalization of the respective constructs |
|---|
| H1: <i>Perceived utilitarian outcome</i> ^a (PUO) is positively associated with the <i>intention to use a methodology</i> ¹ (IUM). |
| H2: <i>Perceived extrinsic materialistic outcome</i> ^b (PEMO) will be positively associated with IUM. |
| H3: <i>Perceived intrinsic materialistic outcome</i> ^c (PIMO) will be positively associated with IUM. |
| H4: <i>Perceived hedonic outcome</i> ^d (PHO) will be positively associated with IUM. |
| H5: The influence of PUO on IUM will be moderated by <i>nPow</i> ^e , <i>nAffi</i> ^f , <i>nAch</i> ^g , <i>nBla</i> , age, and gender so that the effect will be stronger for individuals with the specific needs and for men – particularly younger men. |
| H6: The influence of PEMO on IUM will be moderated by <i>nPow</i> , <i>nBla</i> , age, and gender so that the effect will be stronger for individuals with specific needs and for men – particularly younger men. |
| H7: The influence of PIMO on IUM will be moderated by <i>nPow</i> , <i>nAffi</i> , <i>nBla</i> , age, and gender so that the effect will be stronger for individuals with specific needs and for women – particularly older women. |
| H8 The influence of PHO on IUM will be moderated by <i>nCur</i> ^h and age so that the effect will be stronger for individuals with specific need and for older workers. |

^a (F. D. Davis, 1989; van der Heijden, 2004; Venkatesh, 2000; Venkatesh, M. G. Morris, G. B. Davis, & F. D. Davis, 2003); ^{b,c} (Belk, 1984, 1985); ^d (Babin, Darden, & Griffin, 1994; F. D. Davis, Bagozzi, & Warshaw, 1992; van der Heijden, 2004; Lesser & Madabhushi, 2001); ^{e, f, g} (Edwards, 1959; Frs & Knox, 1972); ^h (Zuckerman, S. Eysenck, & H. J. Eysenck, 1978); ¹ (Venkatesh & F. D. Davis, 2000; Venkatesh, M. G. Morris, G. B. Davis, & F. D. Davis, 2003).

Next Steps

In developing the initial set of items, we will follow Straub’s advice (Straub, 1989) and employ a rigorous step-by-step iterative process, as well as utilize the existing literature (see Table 1 for an overview of the prior operationalization of constructs). Purely reflective measures, using a 7-point Likert type scale anchored by strongly disagree (1) and strongly agree (7), will be used for each construct. After obtaining the initial battery of items, two researchers will conduct expert interviews with six subject matter experts (three academics and three practitioners) to obtain specific information on whether the initial items are comprehensible, valid, and complete (Straub, 1989). In order to further improve the content and construct validity, we will subsequently conduct two rounds of Q-sorting (J. C. Anderson & Gerbing, 1991) and item ranking (F. D. Davis, 1989). In the final step, the questionnaire will be subject to a pre-test based on a convenience sample with individuals representing the target population. Throughout the entire instrument development process, three researchers will discuss all the issues and formulate improvements and additions. This triangulation of researchers and methods (Denzin 2006) provides stronger substantiation of a valid and reliable instrument (Eisenhardt 1989).

The final survey instrument will be administered web-based to a diverse population of IT PMM users to collect the quantitative data needed to test the model and hypotheses. We will consequently utilize various databases of professionals (e.g., LinkedIn, XING, CompetenceSite) and undertake a keyword search, such as IT project manager, IT portfolio manager, etc. This will allow for a wide representation by industry and firm size. The keywords will be compared to entries in the members’ profiles, for example, fields labeled “interests” or “competencies I offer”. After the identification of possible study participants, we will then send a personalized URL of the online survey to every identified individual. Participants, who do not complete the survey four weeks after the original invitation, will receive a reminder email.

This use of Internet resources in data collections is gaining widespread interest among IS researchers (Allen et al. 2006). Whereas some researchers are interested in general and background information (Bolton et al. 2004), others intend to analyze data collected from sites (Snir et al. 2003). However, such access often has inherent legal issues, such as trespass or copyright violation (Allen et al. 2006). Manual access to Web communities to collect information about participants minimizes such legal issues, as the members can control how much information (e.g., email addresses) can be accessed. In addition, members in both communities have the possibility to deactivate the function to receive messages sent from the Web community.

In order to understand the cultural influences, data will be collected from the USA, Germany, Austria, Switzerland, and India. We will attempt to include more countries, especially developing and Asian nations such as Japan, China, and African nations. Research based on Hofstede’s cultural dimensions (Hofstede, 2003) has shown that individuals from these nations are governed by different attitudes, preferences, and norms than those in Western nations. Subsequently, partial least squares (SmartPLS 2.0.M3) will be used to test the model fit and to assess the research hypotheses, following guidelines specified by Chin et al. (Chin, Marcolin, & Newsted, 2003b). Frequently used in

IS research, PLS is perceived to be particularly useful because it is robust regarding relatively lean sample sizes and non-normal distribution of the data (Ahuja et al. 2005; Hsieh et al. 2008; Igbaria et al. 1994). The scales will be assessed regarding their construct validity (including discriminant, convergent, nomological) and reliability, using commonly accepted techniques such as factor analysis and Cronbach's alpha. Common method bias will be evaluated by Harman's one-factor test exploratory method (P. M. Podsakoff & Organ, 1986) and Podsakoff et al.'s proposed confirmatory method (P. M. Podsakoff et al., 2003) as explained by Huigang Liang et al. (Huigang Liang et al., 2007). A significance test and power analysis will be conducted, while effect size will be determined to evaluate the proposed hypotheses' theoretical and practical significance.

Conclusions

Our work seeks to further the research on individual acceptance and use of IT PMMs by unifying the theoretical perspectives on the *needs of individuals* and *outcome expectations* within a single model. Based on several highly validated theories, we develop a conceptual model that holds that individuals' personal traits – especially their needs and contextual factors such as gender and age – determine which aspect of a methodology's usefulness has a greater effect on the individual's intention to actually use it. The proposed multidimensionality of the *usefulness* construct represents a departure from traditional operationalization (which is solely based on task-oriented advantages) and might reveal more complex and to date unknown interaction effects on human behavior, especially with regard to the use of new methodologies. Furthermore, the proposed study of the interactions between needs, gender, and age from a temporal point of view is a new – and, in our view, innovative – approach. While needs endure, age changes gradually and gender is permanent. Our findings might not only have major implications for the MIS research community, but also for related fields. They might be able to explain a) how men and women's needs change over time with age, and b) how these changes determine which aspects of a behavior's usefulness becomes more important over time. Human needs have always played a key role in organizational development, and the proposed study is an attempt to “humanize” organizational methodologies (Alderfer, 1977b); that is, to enable organizations to be more responsive to human concerns when developing and implementing new methodologies. However, our study of intention to use might be a particular limitation of this research because even though intentions play a major role in determining actual use, they might not always lead to actual use. As such, future research could build on our findings and study actual documented use.

Our research also has significant implications for practitioners. Each of the proposed constructs reveals a different aspect of human behavior and personality, and each can serve as a point of attack for organizations in their attempts to steer them in the desired direction (Ajzen, 1991). Our findings could help organizations manage the selection, development, introduction, adoption, and use of new methodologies. We propose that future research should study the determinants of the constructs identified in this study, as well as the interrelationships between them. Another very promising field of focus is how culture influences human behavior. Although the understanding of cultural influences has been repeatedly emphasized by top journal editors, for example, Straub (Straub, 2009), it is seldom incorporated into research due to the difficulty with data collection. If we can collect sufficient data from a wide range of *different types* of cultures – as categorized by Hofstede (Hofstede, 2003) – for statistical analysis, this will further improve the generalizability of our findings. This could also reveal new avenues and “blue ocean ideas” (Straub, 2009) for future research. A better understanding of these determinants would enable us to design organizational interventions that could increase new IT PMM usage, thus improving productivity and quality as well as reducing effort.

In conclusion, user acceptance of IT PMMs remains a complex and elusive, yet extremely important, phenomenon. Past research has made progress in unraveling some of its mysteries. The development and testing of our model seeks to advance theory and research on this crucial matter.

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