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Work–Life Conflict of Globally Distributed Software Development Personnel: An Empirical Investigation Using Border Theory

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Abstract. While a key motivation for globally distributed software development (GDSD) is to harness appropriate human capital, ironically, scant attention has been paid to addressing the human resource management issues faced by information technology (IT) professionals involved in this context. One particularly challenging human resource issue is that of work–life conflict (WLC) of the IT professionals involved in GDSD, who routinely experience overlaps and conflicts between their work and personal life domains. While WLC concerns are relevant in almost any contemporary environment, the GDSD context adds several layers of challenges arising from issues such as time differences, requirements instability, and the use of certain systems development methodologies. Recent research indicates that WLC issues go beyond individual concerns and are of strategic importance for talent retention. To develop a deeper understanding of these recognized challenges, we utilize Border Theory as a metatheoretical framework to develop and empirically test a model of organization-related and GDSD-related antecedents of WLC. In addition, we examine the impacts of WLC on job-related outcomes. Our study adopts a mixed-methods design, where an exploratory case along with a review of the literature is used to develop the research model. The model is then tested using a survey of 1,000 GDSD workers in three countries. We believe that our findings are not only of theoretical interest for the information systems discipline but also potentially helpful in improving the working conditions of the GDSD workforce.

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Introduction

To be productive in today's dynamic and globally networked environment, knowledge workers need to not only possess appropriate skills but also maintain a healthy balance between their work and life domains (Beauregard and Henry 2009). Because of demands and norms of work, personal and professional compulsions, and constant connectivity through Internet-connected technologies (ICTs), members of the workforce are increasingly finding that boundaries between their work and personal lives are blurred (Sarker et al. 2012), leading to work–life conflict (WLC), or a lack of work–life balance (WLB).[1]

WLB is a state wherein employees experience a harmonious relationship between "the demands of work" and the demands of "their lives beyond the workplace" (Nord et al. 2002, p. 223). Individuals who do not have adequate WLB, and thus perceive WLC, "experience strain" (Allen et al. 2000, Frone 2003) and "job dissatisfaction" (Kossek and Ozeki 1998) that can lead to turnover, loss of productivity, and significant negative effects on workers' health and general psychological well-being (e.g., Felstead et al. 2002). The magnitude of the problem experienced in many organizations is such that there have been calls to make employees' WLC a matter of *strategic importance* for contemporary organizations (e.g., Kumari and Devi 2013).

WLB/WLC and its associated issues are seen to be particularly critical in the context of labor markets that rely heavily on "knowledge work and client service for creating value" (Poelmans et al. 2009, p. 207). These include globally distributed software development (GDSD) contexts, where employees work with colleagues across time and space on the intense knowledge-related work of software development (Carmel and Espinosa 2011). Scholarios and Marks (2004) argue that the work and nonwork aspects of life are not separate for these information technology (IT) professionals, and this is likely to frequently result in "spillovers" from the work to the life sphere (Lambert 1990). Despite the

acknowledged relevance of this issue in GDSD in scholarly as well as practitioner literature, there has been limited research effort in this direction. This is surprising given that: (a) WLB or WLC is not a new topic and has been studied by scholars for decades, and (b) globally distributed teamwork and GDSD have been topics of investigation for some years now.

A review of the *broader WLB/WLC literature* (summarized in Online Appendices A1 and A2a) highlights the contributions of this body of work to our understanding of WLB/WLC, and its antecedents and consequences. Two notable gaps become evident. (1) Studies in general have not focused on WLB/WLC issues related to the IT profession; thus, it may be argued that current research falls well short of contributing to an understanding of the specific factors pertinent to WLB/WLC in GDSD settings. (2) These studies have dwelled on a rather limited (and somewhat isolated) subset of possible variables, notably on demographics such as gender (which, typically, are beyond the control of projects or organizations) and job-specific characteristics such as role overload, workload, and schedule flexibility. A holistic model is clearly missing.

Furthermore, a review of the studies in the information systems (IS) literature on topics related to WLB/WLC reveals a limited examination of the phenomenon of interest (see Online Appendix A2b). Specifically, studies have either focused on just work-related issues, such as the quality of work life or work exhaustion, or if focused on work–life conflict, examined WLB/WLC within the realm of general IT work, and have provided only a generic set of organization-related antecedents. Furthermore, existing studies have focused primarily on turnover intentions and organizational commitment with work life–related factors being one of the many antecedents. Conspicuous by its absence in this literature is any empirical examination on a core set of antecedents of WLB/WLC of personnel involved in GDSD.

We again emphasize that the domain of GDSD poses many challenges for the participants, given the time–space separation, long working hours, complex work of software design and development with the possibility of fluctuations and scope creep within the project and the system requirements, and complexities related to the methodology being followed for the software design and development. In fact, recent studies (e.g., Carmel and Espinosa 2011, Sarker et al. 2010) have highlighted that the extent of distribution among team members within a distributed software development project itself can impact the WLB of the team members. Johns (2006, p. 389) argues that "context is likely responsible for one of the most vexing problems in the field: study-to-study variation in research findings." In fact, we believe that the context of GDSD holds potential to transform our understanding of WLB, by changing causal directions or reversing the nature of effect between variables, highlighting nonlinear effects, or even showing new/different relationships (Johns 2006). Indeed, a generic understanding of WLC cannot satisfactorily be used to comprehend how WLC manifests itself in GDSD (Sarker 2016). Consequently, we believe that an empirical investigation on this topic, especially focusing on the key factors that contribute to WLC for employees working in GDSD projects, needs separate investigation. Thus, our primary research objective is *to identify the key organization-related and distributed software development–related factors that affect the WLC of IT workers involved in GDSD*.

Furthermore, research shows that two important implications of high WLC are possible turnover (Joseph et al. 2007) and a loss of productivity (e.g., Poelmans et al. 2009). High turnover rates of IT workers have ranged between 15% and 33% in the United States since the 1970s (Hecker 2004). This is especially true for IT workers involved in GDSD, with calls for managers and researchers to "share the objective of high retention of the most qualified workers" (Lacity et al. 2008, p. 226). While not referring specifically to a GDSD context, Hurley (2001, p. 244) has argued that "there is most certainly a set of predictors and prescriptive actions that can minimise the likelihood of losing [these] high-calibre people." To summarize, it is also important to understand whether WLC has any effect on outcomes such as turnover and job performance in the context of GDSD workers (a relationship that has been highlighted in the context of general employees). Thus, our secondary research objective is to empirically validate the impacts of WLC on GDSD workers' job-related outcomes.

Harrington and Ladge (2009, pp. 2–3) suggest that there are several perspectives on work–life balance, and that the variables of choice in this context should be guided by the perspective adopted. In this study, we adopt a combination of the "health and wellness perspective," where the focus of the organization is on "extending their employee health and wellness," and the talent management perspective, where the organization's interest is on work–life balance programs to ensure that they are able to retain top talent. Furthermore, drawing on extant research, we see WLC as a type of interrole conflict (Netemeyer et al. 1996), with the other form of interrole conflict being family–work conflict (FWC). Scholars define work–family conflict (WFC) as a type of interrole conflict where demands and strains of work cause problems in fulfilling the family and other life roles, while FWC refers to an interrole conflict where the demands of family interfere with performing work responsibilities. Given our organizational context, we focus on WFC, and consequently on the work-related issues affecting conflict.

We attempt to achieve the above objectives by drawing on the metatheoretical lens of "Border Theory" introduced by Clark (2000), who was inspired by Kurt Lewin's ideas related to borders separating regions. At the core, this perspective holds that individuals cross borders within their "lifespace" daily. That is, they move between their "work region" to their "family and life region." Attainment of WLB to the appropriate level can only happen when we understand what enables the smooth transition between the two domains or across the borders. Border theory thus provides concepts to represent the domains of work and life. It points to a set of categories of variables that can potentially affect the transition between the borders of work and life, and suggests whether they lead to balance or conflict between these two domains. We utilized a multiphase, multimethod study to empirically examine the above issues. Venkatesh et al. (2016) highlight that such designs are appropriate when extant research on a topic is either fragmented or missing, as in the case of WLC in the context of GDSD. As part of this design, in phase I, we used an exploratory case study to elicit key factors to be included in our research models (Sarker et al. 2014), noting that comprehensiveness of the model needed to be balanced with considerations of parsimony. In phase II, we tested the model using a survey of GDSD professionals from three countries—the United States, the United Kingdom, and India.

The remainder of the manuscript is organized as follows. In the next section, we provide an overview of Border Theory. We then highlight relevant variables identified through a review of WLB/WLC literature and interviews conducted as part of a case study of GDSD. Thereafter, we develop our hypotheses leading to the research model and present an overview of the quantitative study. Finally, we conclude with a discussion of our results, implications, and future directions.

Theory Building and Foundational Literature

As mentioned above, we sought to address our research objectives by using "Border Theory" as the metatheoretical lens for this study. We also drew on the general and IS-specific literature on WLB for identifying WLB-related constructs, since Border Theory suggests broad categories of constructs rather than constructs specifically applicable to a given context (here, GDSD). Furthermore, we drew on an exploratory case study to unearth key factors related to GDSD—i.e., *Information Systems Development* (*ISD*) *and the globally distributed contexts*—that would help particularize the general framework to the phenomenon of interest. In drawing on the data of the case study, we relied on the work of Gable (1994, p. 114), who has advocated the use of a case study as a precursor to a survey study. His rationale is that survey research is often "inflexible to discoveries" and tends to be used primarily for verification. Gable notes that once a survey is "underway," one can do very little if the researcher then realizes that a crucial item related to the phenomenon was missing or that a critical relationship cannot be tested. Such a danger, he argues, is higher in contexts when relatively little is known about a phenomenon, as in the case of WLB in GDSD (revealed in Online Appendix B). He thus recommends that a survey study involve a case study in the front end, to enable researchers to first "discover" the nuances. We believe, that in the absence of a significant body of knowledge on the antecedents of WLB/WLC in the GDSD setting, it is not only appropriate but also necessary for us to incorporate elements unearthed through the exploratory case study or interviews from the field into the model, prior to empirically testing it through a survey. Thus, we utilize a layered approach in the development of our theoretical model:

- First, we use Border Theory as a metatheoretical lens for identifying and organizing the broad categories of variables that help explain WLC, and to articulate the definitions of those categories.
- Second, we draw on the general WLC/WLB literature to identify certain key constructs, pertaining to the different broad categories of variables suggested by Border Theory.
- Next, we use interviews as part of an exploratory case study to interpretively discern the key context-related constructs within each category defined by Border Theory. In this level, we attempted to closely match the definition of a construct from Border Theory with the definition of the variables that we elicited from our interviews.
- Finally, we use microlevel theories to justify the linkages discerned and to develop hypotheses related to the factors identified through the earlier steps.

Next, we discuss Border Theory, followed by the literature on WLB/WLC, and then offer a brief overview of the qualitative study and the findings that emerged.

An Overview of Border Theory

Border Theory and its derivatives have been used in a number of disciplines. Our initial search of the literature revealed that a majority of the articles utilizing this theory exists within the domain of political science and international relations. Brunet-Jailly (2006) initially presented this theory to explain the underlying complications that are faced by borderland cities, including the impact that local environments and multiple levels of the government have on these cities. Since this work was published, Border Theory has been used to understand complexities related to national borders, exchanges of information, and political clout

across borders in political science (Navarrete et al. 2009). Within the domain of political science and governmental studies, Border Theory highlights that the two important components contributing to the complications are (1) the agency, referring to individuals and their beliefs, values, motivations, etc., and (2) the structures, referring to institutional and social forces that shape the individual actions and beliefs (e.g., Navarrete et al. 2009).

What makes Border Theory particularly relevant to studying WLC in GDSD? While "(t)here is not, and never will be, a best theory . . . [and noting that] theory is our chronically inadequate attempt to come to terms with the infinite complexity of the real world" (Walsham 1997, p. 478), the notions of "border" and "border crossing" and the challenges "border crossers" face, in Border Theory, appear well suited to examining our phenomenon of interest, wherein individuals have to constantly negotiate the borders related to work and life domains as well as place and time (e.g., Sarker et al. 2012). Indeed, we found that a small number of articles have used this theory to examine issues related to organizational employees and their well-being (please see Online Appendix A1 for a review of this literature). As noted earlier, this body of work was inspired by and developed from "Lewin's (1966) conception of regions divided by boundaries within the employee's lifespace" (Lambert et al. 2006, p. 67).

While relatively new, the theoretical perspective is gaining in popularity among WLB researchers. Similar to the way Border Theory is used in political science, in the context of organizational employees, the theory holds that work and life are two different "domains" (much like two different countries). The domains, like countries, also differ in "purpose and culture" (Clark 2000, p. 751)—in how tasks are accomplished, and in acceptable codes of conduct. It should be noted that, in the context of our study, not only do individuals have separate domains of work and life but also their work domains may consist of two or more subdomains, that of their own location and those of their remote colleagues with whom they need to interact and collaborate on a regular basis. The focus of Border Theory is to understand how the individuals make the transition between/among their different domains. For some individuals, the "transition is slight," much as in a transition between two neighboring or culturally similar countries (Clark 2000, p. 751). For many others, and arguably the ones in the GDSD context, the transitions are larger, and therefore more difficult. Border Theory provides us with the lens to understand how individuals tailor their domains and build "bridges" between the domains in an effort to achieve balance (Clark 2000, p. 751). Given the similarities between national border crossing and work–life border crossing, Border Theory points to a number of categories of variables that are not self-evident and need to be deliberately considered to gain a holistic understanding of the phenomenon of interest. To elaborate, we map the concepts in Border Theory to work–life balance issues (Clark 2002). First is the concept of the *border* itself, which are "lines of demarcation between domains" (Clark 2000, p. 756) and which highlight where one domain ends and the other starts. Borders can primarily be physical and temporal, and sometimes borders can end up being fuzzy (e.g., Bennett et al. 2006). *Physical borders* are similar to walls that create a distinction between one domain and the other. For example, in the case of a distributed team member, there are physical borders between her *work* and *home* locations, and between her and remote colleagues. *Temporal borders* are time-related distinctions from one domain to another. For example, in the context of distributed teams, the temporal border includes the *time-zone differences* between the individual and remote colleagues.

A second core construct of Border Theory is the *border crosser*—that is, the focal individual who transitions between the work and life domains. According to border theorists (e.g., Lambert et al. 2006, Clark 2000), personal attributes (e.g., gender) and extent of domain responsibilities (e.g., family, dependents) can play an important role in influencing a border crosser's WLB (e.g., Donald and Linington 2008, Clark 2002).

Clark also discusses two *border-related characteristics* that play key roles: the *permeability* of the border and the *flexibility* of the border. Permeability may be defined as "the degree to which elements from other domains may enter" (Hall and Richter 1988; Piotrkowski 1979; Clark 2000, p. 756). More specifically, it may be seen as the "degree to which each domain allows the psychological concerns of one domain to enter the physical location of others [the other domain]" (Cowan and Hoffman 2007, p. 38). While work and life domains tend to be fairly distinct, sometimes there are specific factors within the work domain that may cause spillovers to the life domain, and vice versa. Flexibility of the border may be defined as the extent to which a border may contract or expand, "depending on the demands of one domain or the other" (Clark 2000, p. 757). In other words, it refers to the malleability of the borders between the two domains and whether they can be stretched as necessary. Flexible work schedules are seen as the components of the flexibility of the border (e.g., Cowan and Hoffman 2007, Lambert et al. 2006). It has been further argued that both high permeability and flexibility of borders result in "blending," thereby creating a "borderland" that does not belong to either domain. Borderlands have been found to result in negative consequences since it is a space where the border crossers (discussed below) find themselves caught between conflicting demands.

Clark (2000, p. 753) also brings attention to the concept of the domain that is viewed as the "worlds" in which the border crosser exists and which largely defines the "rules" and "patterns" of operation, and guides their "behavior." Given our focus on work–life conflict, the larger domain here is the "work" world of the members. Border Theory further suggests that the *domain members* play important roles (e.g., Lambert et al. 2006, Clark 2000). Among the work domain members are *border keepers*, who not only define the domains but also manage them—these include supervisors as well as the organizational policies dealing with the work–family domain (e.g., Greeff 2000). Clark (2002) argued that border keepers usually have power over the border crosser. Furthermore, the work world of members in our study involves a distributed environment, and the border crosser may be reliant on or connected to the other distributed domain members. Finally, the characteristics of the domain itself have been found to be relevant (Clark 2000). In the context of this study, the domain is that of software development, which has its own rules and patterns, and is therefore likely to impact the work–life balance of the members.

As the review of the existing studies on Border Theory within organizational domain highlights (see Online Appendix A1), Border Theory has been used very broadly in the past, with authors basing their model development or theoretical arguments on the basic premise that organizational employees are border crossers transitioning between the work and family countries on a daily basis, and that the characteristics of these domains, the flexibility of these borders, and the border crossers own characteristics have an effect. While Clark (2000) provides some specific instantiations, for the most part, Border Theory provides only broader categories of the variables. Another notable point from our review is that, in general, studies that have drawn on Border Theory have been primarily theoretical in nature, and in cases where the studies have included any empirical analysis, the studies have involved surveys of general employees with a generic set of variables, which does little to inform readers about the GDSD context in affecting work–life balance (Sarker 2016). For example, while permeability may be viewed as important, it is difficult to understand how permeability might be relevant in the context of GDSD. As we mentioned earlier, the characteristics of the domain itself was found to be important by border theorists (Clark 2000). Thus, in an effort to understand some of the constructs specific to our context, and also to investigate the impact of WLB/WLC on outcomes (that is, our second research objective), we turned to the WLB/WLC literature—first outside and then within IS.

General Literature on WLB/WLC

Our review of the general literature on WLB/WLC shows that a good proportion of the studies have focused on the effect of the border crosser's characteristics or the border keeper's characteristics (see Online Appendix A2a). Thus, specific characteristics of the border crosser—such as gender, family situation, or marital status, their perceptions about their work and their family life such as control over work, and role-related stresses, among others—have often been examined (e.g., Higgins and Duxbury 1992, Aryee 1992, Duxbury et al. 1994, Parasuraman et al. 1996, Kinnunen and Mauno 1998, Parasuraman and Simmers 2001, Hill et al. 2001, Aryee et al. 2005, Ilies et al. 2007, Valcour 2007). In terms of the border keeper's characteristics, variables such as organizational family-friendly policies (FFPs) (Premeaux et al. 2007), family support (e.g., Aryee et al. 2005, Thomas and Ganster 1995), and supervisory support (e.g., Thomas and Ganster 1995) have been examined. A few of the studies also examined the effect of the flexibility of the border (e.g., Parasuraman and Simmers 2001; Hill et al. 2001, 2010). Only two of the studies within our review highlight the importance of the permeability of the border by specifically examining the interrole conflicts and spillovers (e.g., Aryee et al. 1999, Tompson and Werner 1997). In summary, our review revealed that the general literature has tended to focus mostly on the border crosser's characteristics, with limited examination of the border keeper's role, and with even less (or no) emphasis on the effect of the border itself such as the temporality, physical border, flexibility, and permeability. Furthermore, domain characteristics, variables related to an important category of Border Theory, appear to have been ignored in past studies. In this way, Border Theory has helped focus our attention to potentially relevant but missing sets of antecedents of WLB/WLC. In short, through the lens of Border Theory and the extant literature on WLB/WLC, we found a conceptual model emerging that provides necessary organizational and GDSD-specific category of variables that affect WLC.

This review of the IS literature on topics related to WLB/WLC revealed a limited examination of the phenomenon of interest (see Online Appendix A2b). One of the earliest studies on the issue of work life was by Igbaria et al. (1994), which examined the role of several demographic and task-specific characteristics (in other words, the focus was on the border crosser's characteristics) on job involvement, and the quality of work life. The authors captured quality of work life as job satisfaction, organizational commitment, and career satisfaction. The focus of this study, however, was not on the conflict that may arise between one's work and life spheres but simply on the domain of work. In a similar light, Moore (2000) examined

IT workers' turnover intentions as caused by work-related exhaustion and the antecedents of that exhaustion, without much reference to WLB issues. Scholarios and Marks (2004) examined the conflict between work and life spheres of software workers in the United Kingdom and the impact of factors such as supervisory support on trust in organizations and affective commitment. While work–life conflict played a role in this study, the focus was not to inform readers about the antecedents of work–life conflict. Quesenberry and Trauth (2010) have, through case studies, provided some interesting insights into how ubiquitous technology can help women in IT deal with work–life challenges, though the study is relatively silent about the sources or antecedents of work–life balance/conflict. Messersmith (2007) offered a conceptual understanding of some of the time and strain-based conflicts that may arise in the context of IT professionals, and discussed some tactics to reduce them. Armstrong et al. (2007) examined how women in IT perceived work–life conflict and found that work-related stress, family responsibilities, job-related characteristics, and a flexible schedule affect their turnover intentions. More recently, the study by Ahuja et al. (2007) examined the role of work–family conflict on work-related exhaustion and turnover intentions in the context of IT road warriors (individuals who work in the client site away from home). While valuable, this study primarily focuses on work-related exhaustion and turnover intentions, and highlighted only two possible antecedents of work–family conflict: work overload and autonomy.

To summarize, among the limited set of antecedents studied within the IS discipline, the focus has been primarily on the border crosser or the border keeper, leaving the other categories of variables suggested by Border Theory, that were clearly relevant, unexamined. Furthermore, the domain of GDSD was not examined, leaving a gap in the understanding of the nuances of the context (domain characteristics) of GDSD.

To develop a credible model of WLC for GDSD, it was evident that we needed to draw on practice to elicit the GDSD-specific factors affecting WLC. We therefore turned to a qualitative study that had, in fact, been conducted prior to our awareness of Border Theory. This study served as phase I of our mixed-methods design, wherein we looked for patterns and evidence of the key domain characteristics that could affect WLC in this context. Below, we briefly discuss the mixed-method design and some of the domain characteristics that emerged from the qualitative study.

The Mixed-Methods Design

In this study, we adopt a mixed-methods design in examining our phenomenon of interest. As Tashakkori and Teddlie (1998, p. 5) argue, such methods "contain elements of both the quantitative and qualitative approaches." Venkatesh et al. (2013) have observed that, despite frequent calls for methodological pluralism within the IS discipline, mixed-methods design, which unmistakably embodies the spirit of pluralism, has not been embraced by IS researchers. Consequently, they urge IS researchers to engage in mixed-methods design, and we attempt to respond to their call.

Venkatesh et al. (2016) provide a set of guidelines for conducting mixed-methods designs, which ranges from defining the purpose of the design, the epistemological assumptions, and data collection and analysis strategies to ensuring the quality of inferences drawn from the different phases of the design. In terms of the purpose of our study, we see it as falling under the category of "developmental" (Venkatesh et al. 2013, Tashakkori and Teddlie 1998, Creswell et al. 2008). In such contexts, "questions for one strand emerge from the inferences of a previous one . . . or one strand provides hypotheses to be tested in the next one" (Venkatesh et al. 2013, p. 26). Our methodology can be classified as "mixed-methods multistrand" (Venkatesh et al. 2016, p. 443), following a "sequential exploratory design" (Creswell et al. 2008, p. 68), where we discern some constructs and suggested relationships through a qualitative study, which are then tested in a quantitative study (namely, using data gathered through a survey). Our study also falls within the realm of "dominant-less dominant design" where "one paradigm is dominant, while a small component of the overall study is drawn from alternative paradigm" (Tashakkori and Teddlie 1998, p. 44). We adopted multiple paradigms as our epistemological strand. Specifically, in the qualitative phase, we drew on an interpretive perspective and then used a positivist perspective to deductively test the developed research model in the quantitative phase (in line with the dialectic stance) (Venkatesh et al. 2016). We also used a sequential sampling strategy, with parallel samples, and data analysis was also done sequentially, to help build the research model for the quantitative study from the results of the qualitative study (Venkatesh et al. 2016).

In Table 1, we show how we followed established guidelines (Venkatesh et al. 2013).

Phase I: The Qualitative Study

Our qualitative empirical material was drawn from an exploratory, interpretive case study[2] (Walsham 2006, Sarker and Sarker 2009) of GLOBCOM (a pseudonym), a leading global company headquartered in the United States. The division studied was responsible for designing/developing systems that the company uses to manage its relationships with some of its significant business partners. The division initiated its offshoring efforts around 2002 and has been making a conscious effort not only to manage its costs and productivity

Table 1. Mixed-Methods Approach and Guidelines Utilized

Overall study		
Purpose and nature	Characteristics	Additional comments
Purpose of using mixed methods	Developmental	The qualitative study informed the identification of appropriate variables and the development of hypotheses.
Nature of the mixed-method study	Sequential less-dominant qualitative followed by dominant quantitative investigation	The scope and objectives of the qualitative investigation using an exploratory case study is very limited; it is primarily to support the quantitative investigation.
Quality aspect	Quality criteria	How the study addressed the guidelines of Venkatesh et al. (2013)
Design quality	Design suitability/ appropriateness	The study used qualitative empirical material drawn from an exploratory, interpretive case study of GLOBCOM (Sarker and Sarker 2009), along with limited documentary analysis and participant observation and followed by a quantitative survey. This strategy of reanalyzing and reexamining "raw" data from the phenomenon as a "prelude" to the larger quantitative study ensured that the research model tested using the quantitative study was relevant to the phenomenon of interest (Yin 1994). In doing so, it sought to combine the advantages of the two approaches, achieving depth and insight into the phenomenon as well as breadth.
	Design adequacy	Qualitative (a) *Selecting suitable organizations to study intensively*: The organizational data reanalyzed was found suitable because: (a) the top management in the organization was concerned about WLB issues related to its GDSD teams; and (b) the organization was widely acknowledged as a leading organization in development and use of IS, and the division has been engaged in GDSD for some time (since 2002). (b) *Entering the field with credibility*: Official email from senior personnel introducing the research goals and researchers to relevant division members, and setting up initial interview. (c) *Conduct of interviews*: Being sensitive to the principles of flexibility, nondirection, specificity, and range (Flick 1998). Quantitative (a) Theory-driven, exploratory, case study–informed research model developed for empirical testing. (b) A large proportion of constructs measured using well-established scales, some validated by pilots. (c) Appropriate sampling frame and sample size chosen.
	Analytic adequacy	Qualitative (a) Partial transcribed data of very relevant and fruitful interviews (Walsham 2006), the use interview outline (though evolving and customized for different participants), and other documents formed part of a case study database. (b) Relevant factors identified by two of the coauthors through systematic reading and rereading of the interviews, and labeling and relabeling of the relevant concepts (Walsham 2006). The process was iterative, and roughly resembled a *constant comparative analysis*, ending when *theoretical saturation* occurred (Glaser and Strauss 1967). (c) While no notion of interrater reliability was used, the identification and selection of the concepts represented a consensus between the two researchers involved in data collection and analysis, implying some form of convergence and/or reliability. (d) Triangulation of data from the many interviews; comparison of responses, especially across locations and levels. (e) Illustration of the themes/factors using quotations may further enhance *plausibility*. (f) Given the exploratory nature of the study, which are geared toward discovery by engaging with "raw" data, and the limited scope of the case study for this paper, the notion of *theoretical validity* is not applicable here. Quantitative (a) Justification of the choice of analysis technique (PLS) (b) Sample size of 1,000, to ensure reasonable power. (c) Professionally collected data, ensuring that bias in sampling of subjects is avoided or at least minimized.

Table 1. (Continued)

Overall study		
Purpose and nature	Characteristics	Additional comments
Explanation quality	Qualitative inferences	The constructs identified through the qualitative study were not only plausible, but most of them were also seen to be relevant in a three-country survey of 1,000 GDSD professionals.
	Quantitative inferences	*Internal validity* concerns were addressed by developing a model that was theoretically robust, by using control variables, reliability of the data collection process and measurements, and appropriate statistical tests. *Statistical conclusion validity*, considered to be a "special case of internal validity," was ascertained by ensuring construct validity, appropriate level of significance for tests, and testing for CMV appropriately. *External validity* was ascertained to some degree by the United States, the United Kingdom, and India representing a significant proportion of GDSD workers. Potential bias in sampling is minimized by having a market research firm having a pool of appropriate subjects in the three countries to collect data. It is worth noting that, consistent with the "convergence perspective" on the international context, the differences between the three countries were fairly minimal.
	Integrative inference/ metainference	Much of the originality in the study in terms of *specific antecedents of WLC in the GDSD* can be attributed to the exploratory case study that was conducted as a prelude but offered the researchers an experience-near view of the phenomenon. Indeed, all except one of the antecedents (i.e., technical diversity) were found to be significant in the large-scale study. With the R^2 of over 21% in explaining WLC using the chosen constructs, we submit that we have been able to achieve a reasonable degree of balance between comprehensiveness and parsimony in the model, and hence *integrative efficacy*. The synergy between the case study of a global IT company with 20 or so selected GDSD participants based in the United States and India, followed by a survey of 1,000 GDSD workers based in the United States, the United Kingdom, and India from various companies (the results of which could be understood in light of our understanding of the case organization) indicates a satisfactory level of *integrative efficiency* and *integrative efficacy*.

Notes. Table adapted from Venkatesh et al. (2013). It also draws from Sarker and Sarker (2009).

but also to minimize the WLC of its employees, whom the organization's management views as the most critical resource. The division's offshore employees were located primarily in India, with a few individuals in China as well. We interviewed over 20 relevant employees between 2006 and 2009 including managers, system developers, technical architects, and designers, drawn from locations in the United States and India, and also the Director and the Head of the Division, both of whom were based in the United States. In many cases, we interviewed the same individual more than once. Many of the interviewees highlighted the significant impacts of WLC and also suggested antecedents that they felt were particularly relevant. On revisiting and reanalyzing our qualitative data with our newly gained theoretical sensitivity (that of Border Theory), we found much of the data to be consistent with some of the broad categories of Border Theory.

In Table 2, we provide sample quotes highlighting a number of key variables pertaining to WLB in GDSD contexts. Some of the quotes reiterate those found to be salient in the general WLB literature and also suggested by Border Theory. Other quotes indicate the salience of more nuanced factors pertaining to the GDSD context. The findings presented above, in conjunction with Border Theory, lead us to a number of relevant categories and factors under those categories that play a role in determining the level of WLC in the domain of GDSD. These include *nature of supervisory support* and *organizational FFPs* (that is, border keeper's support), *the spatially distributed nature of the team* (that is, physical borders), *time differences among team members* (or temporal borders), *the nature of the requirements* and *the functional and technological diversity that the members dealt with* (that is, domain characteristics), *flexibility of work schedules* (or flexibility of the border), *the nature of systems methodology used* (that is, the permeability of the border), and *the level of task dependency* (that is, reliance on other domain members). In terms of the systems development methodology, our interviewees highlighted the important role of the use of agile methodologies (see Table 2). As we investigated the use of agile methodologies further, we realized that this was an instantiation of the *permeability of the border*, since the use of agile methods tends to systemically (and frequently) spill over work time into one's life. Even though our study was not focused on *border crosser's characteristics*, a number of variables emerged for this category, which included *the role* of the individual in the project and *past experience*

Table 2. Variables that Emerged from the Exploratory Case Study and Sample Supporting Quotes

Variable suggested	Category of the variable suggested by border theory	Sample quote
Time difference	Extent of temporal border	[The] . . . biggest WLB challenge is the [lack of] time zone overlap . . . Sometimes [there were meetings] early morning and late night . . . Team 1 in the morning, and Team 2 in the evening, right. It kills people . . . It kills people on both ends, it's not just a [U.S. city] problem, it is an India problem too.
Agile methodologies	Permeability of the border	Obviously, one of the things with SCRUM [an agile methodology] is . . . the interaction among your team-members . . . With a distributed team, one of the things I have seen done is to have SCRUM meetings in the morning and the evening. Again, this impacts work–life balance. . . . "resistance" to SCRUM among GDSD developers, and a "preconceived notion that SCRUM was evil" perhaps due to being "always under pressure," the need to meet at odd times frequently, and because "the week before the end of the sprint . . . people were working 90-hour weeks just to catch up."
Supervisory support	Border keeper's support characteristics	I think [the manager] being more open with communication helps to keep the motivation and morale up . . . [Saying that] 'I know you guys had to work the weekend . . . and I know that sucks . . . [but] there is a light at the end of the tunnel, and I really do appreciate the work the team is doing . . . I think that would improve morale a lot if I have to take a 7 A.M. call and a 9 P.M. call . . . my manager's right there with me backing me up . . .
Family-friendly policies	Border keeper's support characteristics	We are all having an afternoon at the park. We are inviting families and so some of those things are planned for to help keep that morale up . . . We do morale outings from time to time, especially if we have occasions where [some members of] two or more of those specific geographic teams get together . . . be [it] a restaurant or some other fun miniature golf event.
Task dependency	Reliance of border crosser on other domain members	. . . [for] anything and everything . . . they [located in India] have to ask me [located in the U.S.] a question, I can only do so much in a day. I can only work 16/17 hours in a day. . . . So I become the bottleneck . . . Everything [offshore] was dependent on me.
Changing nature of requirements	Domain characteristics	The coordination required to pull [everyone] together and really achieve all these code changes on a short timeline was incredible . . . .
Heterogeneity of technical platforms	Domain characteristics	You need to make sure that the 7 components are working together and integrates well . . . Even today, we have bandwidth issues from India . . . We have a policy that all source code will be [here in the U.S.] because of security . . . because we have backup systems here [Because of the different infrastructures at the different locations] . . . merging and making sure that the final end product [has] the right integrativity . . . is the biggest issue.
Turnover	N/A (implied outcomes)	. . . one of the frustrations for me is that there is such a high turnover . . . we've seen challenges in hiring quality people and then retaining those people . . .
Productivity	N/A (implied outcomes)	. . . you know . . . if all you are doing is by forcing the cohort on the other side of the planet to be up your hours . . . between [your] 8 P.M.–5 A.M., you've lower[ed] his productivity . . .

in GDSD environments. Furthermore, our exploratory study also suggested the role of WLC on turnover and productivity, something that has been alluded to in the general literature on WLB/WLC though never confirmed in the GDSD setting.

We provide the definitions of the categories of our key variables, suggested by Border Theory, and as instantiated in this study, in Table 3.

Research Model and Hypotheses Development

Border Theory, the metatheoretical framework, in conjunction with the findings of the case study helped identify the GDSD-specific factors affecting WLC, and the effect of WLC on important outcome variables. We then incorporated microtheories and prior research in the areas of distributed work, WLB/WLC, software development, and employee–organization relationships to develop the hypotheses. Specifically, for understanding the impacts of the *physical and temporal distances* (or the physical and temporal borders) on WLC, we utilized *proximity theory*. Similarly, to understand the role of *flexibility*, we used *flexibility enactment theory* in the literature. To examining the effect of *agile methodologies*, and the *requirements uncertainty*, we drew on the noted work on these topics, since no one strong theoretical perspective was available to explain their effect. For the role of the *border keepers*, we drew on the existing research in WLB/WLC, where much has been written about the role of the supervisor, and organizational policies. *Task interdependency theory* was used to predict the effect of *task reliance on other distributed*

Table 3. Definition of the Constructs

Variable identified from border theory	Definition as suggested by border theory	Instantiation of variable in the context of GDSD	Definition of variable in the context of GDSD
Extent of physical border	Extent of walls or lines of separation differentiating one domain from another	*Locational dispersion*	The extent of physical distribution (as in number of sites) of the GDSD team members
Extent of temporal border	Time-related distinctions between domains	*Temporal dispersion*	The extent of time differences that GDSD members have with their remote team members
Flexibility of border	How easily the border may be expanded or contracted	*Flexibility of work schedules*	The extent of flexibility that GDSD members have in their ability to schedule their work times
Permeability of border	Extent to which the stresses, concerns, and other elements of one domain enters the other domain	The *use of agile methodologies*	The extent of use of agile methodologies by GDSD members
Border keeper's support	Individuals or collectives who define the domains and also manage the domains and transitions between the domains	• *Supervisory support* • *Organizational policies*	The extent of support that GDSD members receive from their supervisor with respect to WLC, and the extent of family-friendly policies (FFPs) that their respective organizations offer to enable their well-being
Reliance on other domain members	Extent to which the border crosser relies on other entities for seamless transition across borders	*Task dependency*	The extent of task dependency that GDSD members have on (and with) remote team members
Differences within the domain characteristics	The nuances and characteristics of the domain itself	For the GDSD worker, their software development work domain has several nuances: • *Requirements uncertainty and diversity* • *The diversity of the technological platforms*	• The extent of uncertainty and diversity in the software requirements that GDSD members work with • The extent of diversity in the technical platforms used by GDSD members and their remote members
Extent of seamless transition across borders	Individuals' movement through the work and family spheres resulting in the attainment (or not attainment) of balance	*Lack of work–life balance* (*that is, WLC*)	Work–life conflict that GDSD members experience
Outcomes of WLC	The effect of a lack of seamless transition between the domains	• *Turnover intention* • *Performance*	1. GDSD members' intention to turnover (or leave their organization) 2. GDSD members' performance in their project

members on WLC, while *social exchange theory* was used to predict the effect of WLC on outcome variables (please see Online Appendix B).

Physical and Temporal Distances and WLC

As discussed earlier, Border Theory posits that physical borders (the physical lines of demarcation within which domain-related responsibilities are undertaken) play a key role in influencing the WLC of an individual. Specifically, researchers note that the degree of geographical dispersion can affect the level of difficulty for the border crosser in seamlessly transitioning between the borders (Clark 2000). A number of researchers have examined virtual teams and networks on the basis of physical proximity or propinquity (Jablin and Putnam 2000, Johnson 1992, Corman 1990). Extending this line of work on proximity of teams, O'Leary and Cummings (2007) argue that the high levels of physical dispersion lead to higher complexity in coordination, communication, and other forms of interaction. Such intense work-related coordination and communication demands pose additional strains on employees and force employees to compromise on their personal lives and family. Dealing with these competing demands entail juggling different priorities, creating friction among the work and family domains. Therefore, we suggest that a higher level of geographical dispersion (in the form of a higher number of locations of team members) will lead to more work–life conflict for the ISD workers. Thus:

Hypothesis 1 (H1). *IT workers involved in GDSD teams distributed across a larger number of sites will experience higher WLC.*

Border Theory addresses the role of temporal borders, often manifested as time overlaps between the domains (Clark 2000). In distributed teams, temporal separation among domains occurs when the teams are separated by time-zone differences (Carmel and Espinosa 2011). While today's communication technologies enable ISD and other types of work to be conducted across time and place, it "often results in people working longer and at a faster pace" (Gambles et al. 2006, pp. 47–48). This is often viewed as an advantage of global development as round-the-clock development can occur. The difference in time zone leads to coordination challenges (Balaji and Ahuja 2005), which means that at least one part of the global team has to compromise on their sleep time (Espinosa et al. 2003). This, in turn, leads to a reduction in work–life balance and can eventually lead to turnover in the long run.

Underscoring this issue, O'Leary and Cummings (2007) use proximity theory to argue that a lack of time zone overlaps results in significant coordination and communication challenges. Individuals experience "unproductive waits for other side to respond with clarifications/feedback" and "unsympathetic/suspicious interpretations of time lapses (e.g., silence, missing deadlines)" (Sarker and Sahay 2004, p. 9) when they attempt to communicate asynchronously. This can lead to less efficient task accomplishment, rework, and consequently, work beyond regular hours. Often, in such contexts, the alternative to working asynchronously (which is not always possible or effective, especially in the GDSD context) is to schedule meetings and conference calls during nonwork times that are very inconvenient, at least for some team members, wherein they experience "mismatches in the physiological and social rhythms" and work spillovers into personal or leisure time (Sarker and Sahay 2004, p. 9). Over time, such spillovers can act as a detriment to the well-being of the workers, leading them to experience greater work–life conflict. Thus:

Hypothesis 2 (H2). *IT workers involved in GDSD who have less time overlap with remote colleagues will experience higher WLC.*

Flexibility and WLC

As discussed earlier, Border Theory argues that the flexibility of the border has a bearing on the extent to which border crossing occurs smoothly. The notion of flexibility of the border is related to the idea of workplace flexibility as discussed within the flexibility enactment theory (Kossek et al. 2004) and is informed by past scholarship on WLC. Kossek et al. (2004) refer to this type of flexibility as "personal job flexibility autonomy," and as the availability of flextime and autonomy over one's schedule. Others have defined it as "the ability of workers to make choices influencing when, where, and for how long they engage in work-related tasks" (Hill et al. 2008, p. 152). Richman et al. (2008, p. 186) argue that flexibility improves the fit between the domains of work and life by enhancing their "ability to meet demands of roles in each domain." In fact, flexibility enactment theory holds that this type of flexibility is the "single best predictor of the outcomes of lower work–family conflict" (Richman et al. 2008, p. 186). Thus:

Hypothesis 3 (H3). *IT workers involved in GDSD who have flexible work schedules will experience lower WLC.*

Similar to flexibility, permeability also causes spillovers from work domain to life (Clark 2000). When work-related activities spill over to family time, it can cause blurring of the boundaries (Clark 2000). In the context of this study, this is likely to happen when the individuals working in GDSD use agile methodologies such as SCRUM, which necessitates the need to hold daily SCRUM meetings. Such meetings in a distributed environment, owing to the time differences, are likely to be held at times that repeatedly cause spillovers into the family domain. Indeed, in a few of the published papers (e.g., Erickson et al. 2005, Sarker and Sarker 2009), as well as in our exploratory study interviews, it was suggested that daily meetings with team members and clients, using burn-down charts that track project progress on a daily basis, overwork at the end of sprints, and constant communication with clients can be burdensome for many GDSD participants, potentially increasing their WLC. Thus:

Hypothesis 4 (H4). *IT workers involved in GDSD projects using agile methodologies will experience higher WLC.*

The Role of the Border Keepers: Supervisory Support, Organizational Policies, and WLC

Supervisors and the organizational policies/procedures regarding employee well-being are considered to be the primary border keepers within the work domain that play a significant role in managing WLC. Clark (2000) argues that frequent engagement with supportive border keepers help border crossers deal with the imbalance. Consistent with this argument, a number of studies suggest that the existence of a supportive supervisor can help reduce one's WLC (e.g., Allen 2001). Similarly, FFPs (Felstead et al. 2002) implemented by organizations have been found to reduce WLC. Such policies may include features such as on-site day care, on-site elder care, and help with access to care. Both a supportive supervisor and FFPs signify that the organization "is sensitive to employees' family needs and doesn't demand the prioritization of work over family" (Jang 2009, p. 94). Thus:

Hypothesis 5 (H5). *IT workers involved in GDSD who have supportive supervisors will experience lower WLC.*

Hypothesis 6 (H6). *IT workers involved in GDSD who work in organizations with FFPs will experience lower WLC.*

Border Crossers' Reliance on Members Across Borders: Task Dependency and WLC

The level of reliance that a border crosser has on other domain members has been seen to play a role on WLB (Clark 2000). Our qualitative study suggests that, in the context of distributed ISD, this level of reliance can arise from the nature of task interdependency. Indeed, we found that individuals who felt that they were being depended on for a task to be completed at another distributed location felt stretched and always under pressure to get work done on time so as to not cause project delays. Task interdependency may be defined as the "degree to which group members must rely on one another to perform their tasks effectively" (Saavedra et al. 1993, p. 61). Task interdependence may be pooled, where members contribute without much interaction, or sequential, where one member finishes a task before another member starts, reciprocal, where one member's output becomes the other member's input or vice versa, or interdependent, where members jointly work on the task at hand with high levels of collaboration, often problem solving together (Thompson 1967). "Pooled" is the lowest form of task interdependence while "interdependent" represents the highest (e.g., Saavedra et al. 1993). The task interdependency theory suggests that as the level of interdependence rises, complexity increases, and so does the need for coordination and communication (e.g., Saavedra et al. 1993). Scholars argue that the level of dependency employees have on her other domain members can cause strains related to work-load balancing, inability to plan work time, and uncertainty regarding task outcomes—which can all lead to WLC. For example, Dierdoff and Ellington (2008) argue that increased dependence results in frequent "boundary-spanning" activities for the individual. Such boundary-spanning activities significantly increase stress at work and tend to raise the level of WLC (Greenhaus and Beutell 1985). We believe that this is particularly true when the boundary spanning occurs in a distributed environment. Thus:

Hypothesis 7 (H7). *IT workers involved in GDSD teams where there is greater task interdependence across distributed locations will experience higher WLC.*

Effect of the Domain Characteristics: Nature of the Software Requirements, Technology Platforms, and WLC

Our case study also suggested the importance of the nature of requirements in influencing the level of WLC. One of the core ISD project characteristics that often influences project stakeholders' stress and performance is *uncertainty of the requirements* (e.g., Nidumolu 1995). Given that "requirements analysis is the most important stage in the development process," a great deal of time and effort is expended on it (Nidumolu 1995, p. 195). Research suggests that the primary aspects of requirements uncertainty are requirements instability, defined as the "the extent of changes in user requirements," and requirements diversity, which is defined as the "the extent to which users differ among themselves in their requirements" (Nidumolu 1996, p. 136). In fact, many GDSD project managers and developers, with remote clients (sometimes distributed across multiple locations), find themselves being heavily involved in understanding the requirements, which are often fluid and unclear, given the variety of perspectives held by different stakeholders embedded in distributed contexts (e.g., Sarker and Sarker 2009). Uncertainty in the requirements can lead to higher conflict among the users and the analysts (Nidumolu 1995), and GDSD team members are likely to find themselves spending additional time in the sense making of the requirements and coordinating across the GDSD locations to ensure that all relevant team members get on the same page, thereby raising their WLC levels. Thus, we argue:

Hypothesis 8 (H8). *IT workers involved in GDSD projects with unstable requirements will experience higher WLC.*

Hypothesis 9 (H9). *IT workers involved in GDSD projects with diverse requirements will experience higher WLC.*

Finally, consistent with the difficulties described by some of our interviewees, Xia and Lee (2005) indicate that coordination need increases with the multiplicity and interdependence of a project's technology platforms and software environments. In addition, Lee et al. (2006) highlight the significant challenges that arise within GDSD teams when members are not working on a similar technological platform. Also, in distributed projects, a greater diversity of data formats for exporting data to, and importing data from, other software systems exists, increasing the likelihood of errors in the code (Schmidt et al. 2001). Such problems result in much more strain and greater involvement on the part of the IT workers to ensure that things work smoothly (Oshri et al. 2009), potentially raising their WLC. Thus:

Hypothesis 10 (H10). *IT workers involved in GDSD projects working across a greater variety of technological platforms/infrastructures will experience higher WLC.*

Effect of WLC on Outcome Variables

As discussed earlier, Border Theory offers a theoretical lens to explain the effect of the border crossing on outcome variables. The specific impact of WLC on outcomes can be understood through the lens of social exchange theory. Social exchange theorists have typically used this perspective to understand employee behaviors such as "perceived organizational support,"

general attitudes towards their work and their organization, turnover intentions, and even job performance (e.g., Scholarios and Marks 2004, Bishop et al. 2000, Meyer and Allen 1997, Eisenberger et al. 1986). The exchange can be either transactional or relational. Transactional exchanges are typically short term with a fixed monetary amount decided on (Poelmans et al. 2009). On the other hand, relational exchanges are more long term, more subjective, and also returned by relational favors. Much of the WLB/WLC literature focuses on *relational exchanges*. The idea behind this perspective is that when an employee views "the employer as supportive," she "is likely to return the gesture" (Cropanzano and Mitchell 2005, p. 883).

Drawing on social exchange theory, it can be argued that low WLC will prompt employees (out of obligation, or eagerness to reciprocate) to enact more positive attitudes toward the organization, in the form of lower turnover intention (e.g., Cropanzano and Mitchell 2005). On the other hand, feelings of an inequitable exchange between the employee and the organization, in the form of work practices/policies that lead to high WLC, can lead to employees adjusting their attitudes toward the organization (e.g., Premeaux et al. 2007), perceiving "their organizations as unsupportive" and attempting to leave the organization (Aryee et al. 2005, p. 135). In a study of IT workers, Ahuja et al. (2007) found that work overload and work–family conflict affected turnover intentions. A metaanalytical model of IT turnover highlights a multitude of theories that have been proposed to explain turnover intentions (Joseph et al. 2007). In the context of GDSD, our case study also suggests that turnover intentions can be heavily dependent on WLC issues. Thus:

Hypothesis 11 (H11). *Higher WLC of IT workers involved in GDSD will lead to higher turnover intentions of these individuals.*

The negative effect of WLC on the productivity of employees has been suggested in the literature (e.g., Netemeyer et al. 2004, Felstead et al. 2002). Employees who experience WLC are likely to be continuously stressed because of their inability to balance the demands of their family and their work. The degree of work stress is often related to the task and the amount of control over workload (Pugliesi 1999), which, in turn, affects work productivity (Pugliesi 1999, Radmacher and Sheridan 1995). Furthermore, perceptions of WLC can lead employees to feel that they are not being supported by the organization, and from the social exchange perspective, this can lead them to underperform, perhaps even deliberately. In the case of IT professionals, these effects can be even more heightened. The demands of the IT profession are such that stress and perceptions of WLC is likely to reduce one's motivation, resulting in lower performance. Furthermore, a need to constantly deal with factors such as changing requirements, travel, and disorientation due to collaboration across space and time add to the WLC in the GDSD environment, which can then reduce overall performance. Thus:

Hypothesis 12 (H12). *Higher WLC of IT workers involved in GDSD will lead them to perform at a lower level.*

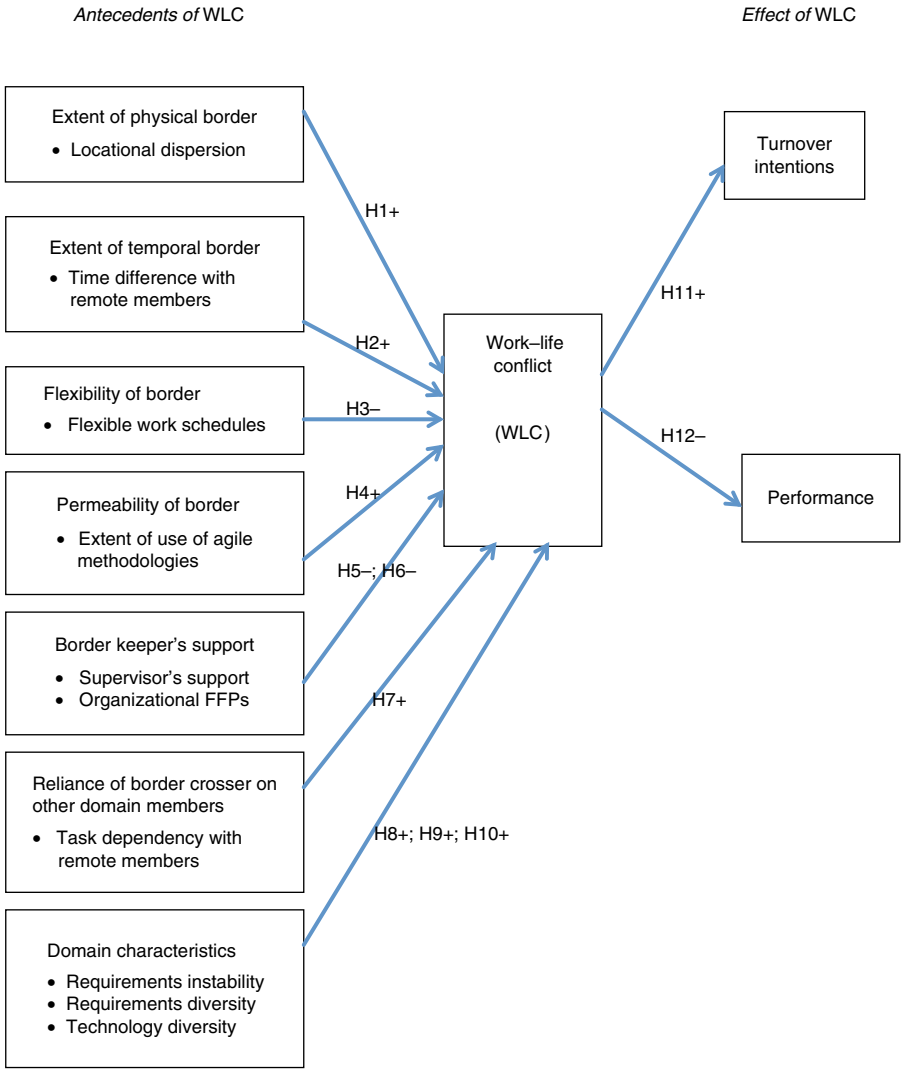
We summarize the research model in Figure 1.

Phase II: The Survey

In testing our model, we employed a survey of IT professionals involved in GDSD in the United States, the United Kingdom, and India. The United States was chosen because it is the main country of interest for the researchers and engages in the highest amount of distributed software development with other countries. The United Kingdom serves as the IT hub for distributed software development in Europe, and India provides a significant proportion of IT workers for GDSD projects (Robinson and Kalakota 2004). Furthermore, given our "convergence" perspective (Stohl 2001), which argues for the absence of across-country differences in the global, professionalized knowledge-based economy, our primary motive for surveying subjects from three different countries was to ensure that we did not inadvertently introduce bias potentially associated with perspectives from one country only.

Sample. The survey was administered by an external organization based on the east coast of the United States that was contracted by the authors, using funds received from a National Science Foundation grant. The organization specializes in conducting large-scale surveys for organizations and research institutions. The primary level of analysis in this study is that of an individual. Thus, the organization was responsible for identifying individual subjects for the survey given the specifications provided (i.e., sampling criteria) by the authors, ensuring that completed surveys are returned, and then paying the compensation to each survey participant. Our sample may be considered "purposive random sampling" (Venkatesh et al. 2016, p. 446), where a random sample of subjects were chosen from a larger group following a particular criteria (that is, GDSD members from three countries). The criteria provided included ensuring that participants worked in a GDSD environment in some capacity related to software development projects and were located in the United States, the United Kingdom, or India. The organization was paid for the sample, the software, the participant compensation, and their overall services. The final sample consisted of 1,000 GDSD participants.

Figure 1. (Color online) The Research Model



Measures. We used established scales, wherever possible, for measuring our core constructs. Our primary construct, *WLC*, was measured using eight items adapted from Kopelman et al. (1983). Drawing on Dubinsky and Mattson (1979), *performance* was measured using two self-reported items, where the individual was asked to report (a) how their company has rated their performance on distributed ISD projects in the past 12 months and (b) the past quarter. Both of these questions captured their overall performance in their jobs and not performance on any specific aspect. The construct *turnover intentions* was assessed using four items adapted from Mitchell et al. (2001). *Supervisory support* was assessed using an adapted version of Thomas and Ganster's (1995) nine items plus two additional items that had been validated in a prior study involving a sample of IT professionals from India (Sarker et al. 2010). Nine items adapted from prior research—namely, the Perceived Organizational Family Support (POFS) scale that captures perceptions of tangible and intangible support provided by an organization (Thompson et al. 2004, Jahn et al. 2003)—were used for assessing the role of *organizational FFPs*. *Flexible work arrangements* was measured using four items adapted from Greenhaus et al. (1989).

Nidumolu's (1995, 1996) items were used for measuring aspects of *requirements uncertainty*. Specifically, four items for measuring requirements instability and three items for measuring requirements diversity in their projects were used. The use of *agile methodologies* in the project was assessed by the following two items: On a scale of 1 (Always) to 7 (Rarely), indicate (1) the extent to which agile methodologies (such as SCRUM) were used in their globally distributed projects, and (2) the extent to which agile development principles was used in their distributed projects. We would like to note that the questions related to agile methodologies or requirements uncertainty tapped into participants'

general GDSD project experience and not their experience on a specific project, since we did not assess individual project-level information.

Respondents were asked to provide the largest *time difference* they had with their remote colleagues. From this information, a categorical variable was created that captured the time difference with remote colleagues (e.g., 9–12 hours was coded as 3, time difference of 4–8 hours was coded as 2, and a time difference of 3 or less hours was coded as 1). *Technology diversity* was assessed using an item that asked the number of different technical platforms that the team members work on. *Extent of physical borders* (*or locational dispersion*) was measured using one item that asked respondents to specify, on average, the number of countries in which their team members are located. Finally, *task interdependence* was measured using three items on a scale of 1 (disagree) to 7 (agree): (1) tasks your distributed team members performed were related to tasks that you performed, (2) you could accomplish your tasks without information or materials from your distributed team members, and (3) your distributed team members depend on you for information or materials to complete their work.

Although we utilized adapted versions of the previously validated scales in most cases, many of our adapted measures (except for task interdependency and the item measuring technology diversity) were validated in prior pilot studies of IT professionals working in a GDSD environment in India and Europe. These pilot studies were conducted within a period of approximately two years before the main study and were used to support the National Science Foundation grant application. Furthermore, prior to administration of the survey among the respondents of the current study, the face validity of items was again assessed by selected GDSD experts.

Control Variables

As mentioned earlier, our sample consisted of members of GDSD participants from the United States, the United Kingdom, and India. While the countries have differences that could provide an interesting comparison, drawing on more recent literature on culture, we opted to use *country* as a control variable as opposed to an independent or moderating variable. Schwartz (2006, 2014), a leading intercultural scholar, has specifically argued for use of country as a control. He puts forth the argument that, with globalization of work practices (as in the case of GDSD), this is a more appropriate approach for individual-level data collection. He suggests that while cultural value orientations are appropriate for comparing societal groups to one another, they are not appropriate for characterizing the values of individual people and studying the relationships surrounding individual values and differences. Furthermore, in this study, we adopted a "convergence" perspective to culture—this perspective argues that, for those involved in knowledge work and in the globalized economy, we seldom witness significant cross-cultural differences (Stohl 2001). This is particularly the case where workers are professionalized as part of a global workforce, as in the case of GDSD. Consequently, we chose to use the country as a control variable. We believe that the use of country as a control variable not only responded to recent suggestions by scholars such as Schwartz (2009) but also helped remove bias in our data. In an effort to remain open to possible differences with respect to WLC across countries that could exist, GDSD personnel from different countries were included in the study. Finally, while the respondents' perceptions may not be very different based on "culture," individuals in these three locations could have had different specializations and roles in GDSD. Thus, choice of country as a control variable helped to address this possible bias as well. We coded respondents as 1, 2, or 3 depending on whether they came from India, the United Kingdom, or the United States.

We would like to reiterate that while our study focused on the role of *organizational* and *domain-specific characteristics* on WLC, the traditional literature on WLC has highlighted the role of several individual-related characteristics that tend to play a role on WLC, notable among which is *the effect of gender* and *family structure*, the latter often concerned with dependents (e.g., Greenhaus and Beutell 1985, Poelmans et al. 2009). We must note that the traditional WLB/WLC literature strongly suggests that gender affects work–life conflict, with women experiencing more conflict than men (e.g., Duxbury and Higgins 1994, Gutek et al. 1991, Lyonette et al. 2007). An alternative set of studies, however, holds that men experience more conflict than women. Some scholars have argued that "women have been socialized over the generations to the nurturing role of the family. No matter how achievement orientated the woman is" (Gambles et al. 2006, p. 77), she is able to balance these two domains more easily and thus experiences similar levels of conflict as men. We believe professionalization of the GDSD workforce and self-selection to this line of work could contribute to the lack of WLC differences among men and women.

In testing our model, we controlled for both *gender* and whether *individuals take care of dependents*. Given that both of these variables cannot be "manipulated" by the organization, at least in the short-term, such variables are often chosen to be control variables (e.g., Lambert et al. 2004, Dierdoff and Ellington 2008). We measured each of these with single items.

Furthermore, since prior experience in working in distributed software development can be drawn on in addressing the challenges of distribution, we also sought to control for participants' *prior experience in*

GDSD. Indeed, from our interviews, it appeared that employees with experience in the distributed environment had organized their life accepting and accommodating the incursions of work, while setting aside times for personal and family life. We measured the variable (prior experience in GDSD) by using a single item that asked them to specify the number of years they had worked in distributed IS development.

Finally, we controlled for the *role* they played in GDSD. Prior research on work–life balance suggests that the introduction of new forms of work and new "communication technologies enabling constant contact with employees and the need for businesses to cut lead times . . . have led to increased time pressures and intrusion of work into non-work times for managers" (Lyness and Judiesch 2008, p. 789). This can potentially be more pronounced for those who work in GDSD environments and are in charge of managing the projects across locations and clients. We asked respondents to specify their roles from a given set of options, which we coded as having a primarily technical or a project management/relationship management role.

Among our sample of 1,000 GDSD participants, 500 were from the United States, 251 were from the United Kingdom, and 249 were from India. Seven hundred sixty-seven were males and 233 were females. Three hundred forty-five played a project management–related role, while 655 were in more technical roles. Their average experience in distributed software development was 6.59 years, with a median experience of 5 years. Four hundred ninety-eight of the respondents indicated that they needed to take care of dependents, while 502 indicated that they did not.

Results

We used SmartPLS 2.0 M3 to analyze our survey data. Our selection of the analysis technique is in line with recent methodological thinking within the IS discipline on the use of partial least squares (PLS) versus other analysis techniques such as regression or SEM (e.g., Gefen et al. 2001, Ringle et al. 2012). Specifically, it has been argued that PLS is more suitable when (1) the study is "data-rich" (Gefen et al. 2011), as in our case, and also (2) uses a number of single-item constructs (given that PLS allows for "unrestricted use of single item constructs"; Ringle et al. 2012, p. vii). Furthermore, Goodhue et al. (2012) argue that PLS is better suited over CB-SEM when the focus is on understanding the nature of the relationships as opposed to the magnitude of those relationships, as in early investigations of a particular phenomenon. We believe this is consistent with the goals of our study. Also, Goodhue et al. (2012) found that PLS was equivalent to other techniques in terms of power and identifying false positives.

Consistent with prior research using PLS models, we analyzed our model in two stages (e.g., Gefen and Straub 2005, Bhattacharya and Premkumar 2004, Hulland 1999, Chin 1998): the first stage involved "the assessment of the reliability and the validity of the measurement model," and the second stage involved "the assessment of the structural model" (Hulland 1999, p. 198).

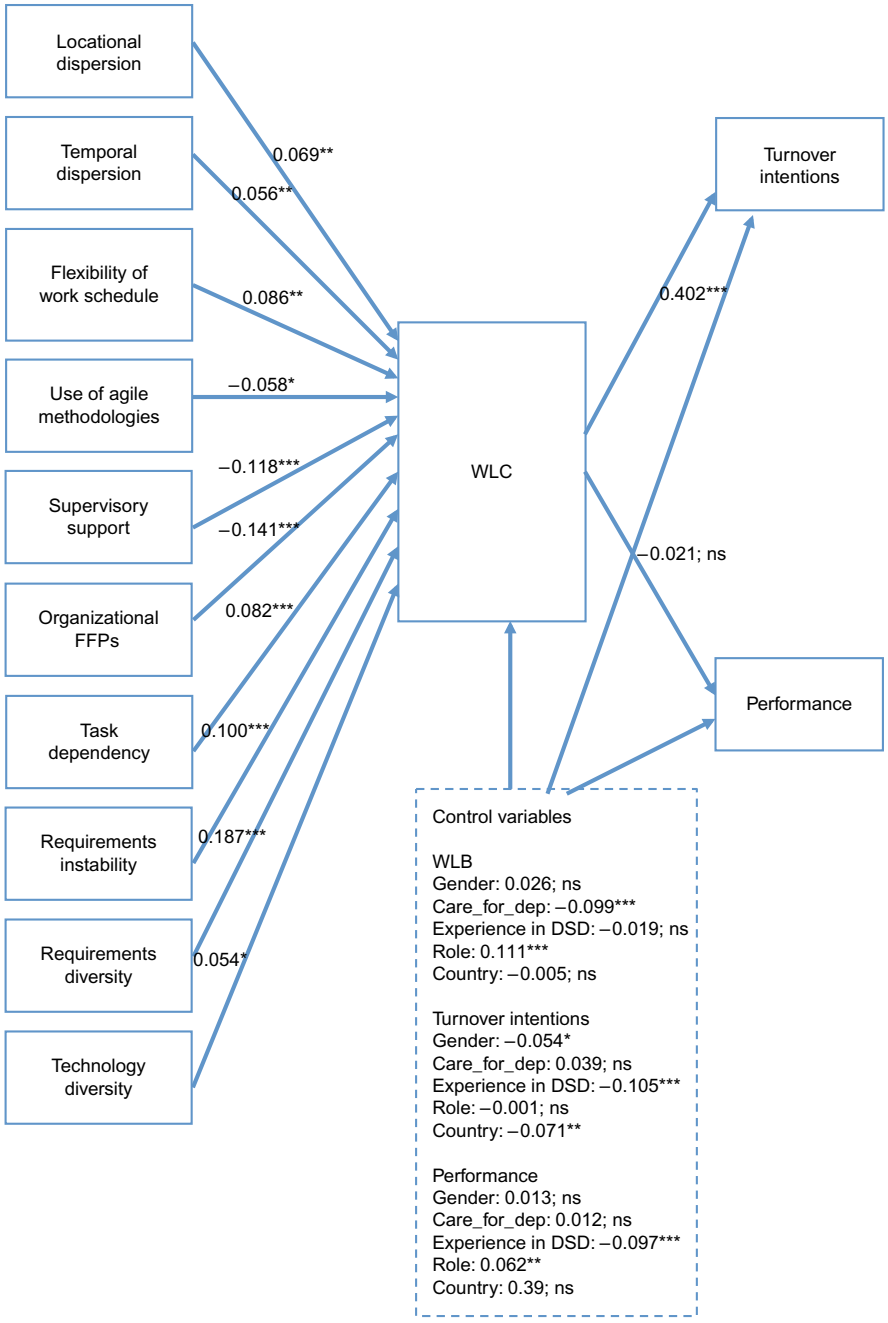
Assessment of the Measurement Model. We ensured the quality of our results and the inferences made from the quantitative study by paying close attention to validities (Venkatesh et al. 2016). Convergent validity was established by satisfying the following three criteria (e.g., Gefen and Straub 2005, Bhattacharya and Premkumar 2004, Hulland 1999). First, each item loaded significantly on their respective constructs, and none of the items loaded on their construct below the cutoff value of 0.50[3] (see Online Appendix C1). Second, the composite reliabilities of all constructs were over 0.70. Discriminant validity was established by the Fornell–Larcker test—that is, by ensuring that for each construct, the square root of its AVE exceeded all correlations between that factor and any other construct (Gefen and Straub 2005, Bhattacharya and Premkumar 2004, Fornell and Larcker 1981) (see Online Appendix C2, where the square root of the AVEs of the constructs are reported in the diagonals). Thus, overall, our measures demonstrated good psychometric properties.

Assessment of the Hypothesized Relationships. In the analysis, we controlled for gender, care for dependents, experience in distributed software development, role, and country while assessing the models. As suggested in prior research (e.g., Kock 2011), in PLS, control variables are included as independent variables as part of the study without hypothesizing for its effect. We controlled for these variables for both the effect of other antecedents on WLC and the effect of WLC on turnover intentions and performance.

Our results indicated that the hypotheses were mostly supported. The role of flexibility was significant but in a direction opposite to that what was hypothesized. The role of usage of agile methods and technology diversity on work–life conflict were weakly supported, and the effect of work–life conflict on performance was not significant. Among the control variables, care for dependents and role had a significant effect on work–life conflict, with individuals who need to take care of dependents experiencing more conflict. The effects of the control variables on turnover intentions and performance were more mixed. The results are summarized in Figure 2 and Table 4.

We utilized multiple methods to assess common method variance (CMV), which may be considered a concern given that the independent and dependent variables were measured in one survey. First, to ensure that our model does not suffer from CMV, we applied

Figure 2. (Color online) The Research Model with Results



$^{*}p < 0.10$; $^{**}p < 0.05$; $^{***}p < 0.01$. ns, not supported.

the recommendation of Podsakoff et al. (2003). This included assuring respondents of anonymity. Furthermore, using Harman's single-factor test (Podsakoff et al. 2003), we found that 13 factors emerged with an eigenvalue greater than one, and there was no general factor apparent in the un-rotated factor solution, indicating that common method variance was not a problem. Next, we employed the marker variable approach proposed by Lindell and Whitney (2003), specifically following the guidelines suggested by Ronkko and Ylitalo (2011) for PLS. We used a variable that may be considered to be unrelated directly to WLC—namely, *the industry* to which the respondents' organization belonged. Using this as the marker variable, we tested our model, and the results indicated no change in the significance of our hypothesized paths.

To enhance confidence in PLS results, Gefen et al. (2011, p. viii) recommend comparing the theoretical model with the hypothesized paths with the saturated model, which includes all possible paths. They

Table 4. Results of Hypothesis Testing

Hypothesis	Independent variable	Dependent variable	Nature of result (β; significance level)
N/A	*Gender* (control variable)	*WLC*	0.026; not supported
N/A	*Family Structure* (control variable)		−0.099; $p < 0.01$
N/A	*Experience in GDSD* (control variable)		−0.019; not supported
N/A	*Role* (control variable)		0.111; $p < 0.01$
N/A	*Country* (control variable)		−0.005; not supported
H1	*Locational Dispersion*		0.069; $p < 0.05$; supported
H2	*Temporal Dispersion*		0.056; $p < 0.05$; supported
H3	*Flex_Schedule*		0.086; $p < 0.05$; significant but in opposite direction; not supported
H4	*Agile_Methods_Use*		−0.058; $p < 0.10$; marginally supported
H5	*Supervisory_Support*		−0.118; $p < 0.01$; supported
H6	*Organizational FFPs*		−0.141; $p < 0.01$; supported
H7	*Task_Dependency*		0.082; $p < 0.01$; supported
H8	*Requirements Instability*		0.101; $p < 0.01$; supported
H9	*Requirements_Diversity*		0.187; $p < 0.01$; supported
H10	*Technology_Diversity*		0.054; $p < 0.10$; marginally supported
N/A	*Gender* (control variable)	*Turnover Intentions*	−0.054; $p < 0.10$
N/A		*Performance*	0.013; not supported
N/A	*Family Structure* (control variable)	*Turnover Intentions*	0.039; not supported
N/A		*Performance*	0.012; not supported
N/A	*Experience in GDSD* (control variable)	*Turnover Intentions*	−0.105; $p < 0.01$
N/A		*Performance*	0.097; $p < 0.01$
N/A	*Role* (control variable)	*Turnover Intentions*	−0.001; not supported
N/A		*Performance*	0.062; $p < 0.10$
N/A	*Country* (control variable)	*Turnover Intentions*	−0.071, $p < 0.05$
N/A		*Performance*	0.390; not supported
H11	*WLC*	*Turnover Intentions*	0.395; $p < 0.01$; supported
H12		*Performance*	−0.023; $p > 0.10$; not supported

Note. R^2 on *WLC* = 0.212; R^2 on *Turnover Intentions* = 0.181; R^2 on *Performance* = 0.020.

suggest verifying that: (1) the significant paths in the theoretical model remain significant in the saturated model, and (2) the addition of all possible paths do not increase the R^2s significantly. In line with this recommendation, we compared our theoretical model with the saturated model. Our analysis indicated no change in the significance of our hypothesized paths, and the R^2 was fairly consistent in the context of WLC, and with some changes on turnover intention and performance owing to the addition of over 10 other paths to each of these variables in the saturated model (as compared to a path just from work–life balance and the control variables in the theoretical model). This confirmed only small effects through the added paths (Gefen et al. 2011). We also conducted the Stone–Geisser test of predictive relevance. The Q^2 of the model for the DVs was greater than zero (0.137 for *WLC*, 0.132 for *Turnover Intentions*, and 0.012 for *Performance*, respectively), suggesting that the set of exogenous constructs have predictive relevance for the endogenous construct (Duarte and Raposo 2010, p. 468; Hair et al. 2011, p. 145).

Discussion

As indicated above, with the exception of the hypotheses related to the effect of flexibility on work–life conflict, and work–life conflict to performance, all hypotheses found strong or at least marginal support.

We had hypothesized (drawing on the traditional theories) that higher flexibility of schedules will lead to lower WLC. Our results, however, did not support this assertion. While the effect was significant, it was in a direction opposite to that hypothesized, indicating that high flexibility leads to higher WLC. While this may contradict traditional theories, it is actually consistent with Border Theory. Clark (2000) suggests that high flexibility of borders make them weak, creating expansive *borderlands*, where employees find it difficult to juggle the different demands from the two sides of the border. Extending this idea to the notion of flextime and flexibility of work schedules, Clark (2000, p. 758) specifically argues that flextime often leaves employees more frustrated since they find it difficult to negotiate with *both* family and employers in terms of where "work and home responsibilities are carried out." A similar assertion was made more recently by Beauregard and Henry (2009), who argued that the effect of flexibility on WLC is contextual and is meaningful where individuals have high demands for dependent care or prefer segmentation of work and life. In the context of GDSD, where work tends to be carried out around the clock, a flexible schedule often means that employees

need to be available for questions/clarifications and for dealing with urgent situations around the clock (e.g., Sarker and Sahay 2004), which would understandably lead to higher rather than lower WLC.

We had hypothesized that when IT personnel work with distributed members using different sets of technology platforms, it can lead to high work–life conflict for them, owing to the constant adjustments in which they will need to engage. Our results supported this hypothesis only marginally. One of the reasons for this could be the fact that the current GDSD worker, just like other individuals around the world, is used to the multiplicity of technologies and devices in their daily lives, and thus shifting between platforms may not be a cause of concern anymore. Another reason could be that in the software industry, there is generally a push toward uniformity as well as interoperability of platforms. For example, Meyer and Seliger (1998) suggest that companies such as Microsoft have moved towards creation of robust platforms over which a myriad of software applications can be developed.

The effect of the use of agile methods and principles, which is an important facet of understanding ISD (Tripp et al. 2016), also received marginal support. The lack of strong support could probably be understood by considering: (1) while agile methods were being used by many of our GDSD survey participants (about 350/1,000 survey respondents indicated using agile principles "Always" to "Often"), the fact that it was not used by a large proportion could have affected the results; and (2) an intriguing study by Desrochers et al. (2005) in which it was argued that when it comes to work–life conflict, it is the permeability of the "home" border that has more of an effect than the permeability of the "work" border. In our study, in examining the impact of agile approaches, our focus has been on the *work border*, and the weak effect of permeability on work–life conflict could have resulted from this focus. Given that this study is the first known empirical test of the permeability of a border in the context of GDSD workers, it represents an important first step, but more studies need to be conducted, distinguishing between home border and work border, before the effect of the permeability in this context can be understood with greater certainty.

With respect to the outcomes, the results indicate that while high levels of work–life conflict can affect turnover intentions of workers involved in GDSD, it does not have an impact on their performance. This is an interesting finding that suggests that when IT workers engaged in GDSD find their life out of balance, they begin to think about changing jobs but do not let their work related to the current project suffer. It appears that GDSD workers enact their professional values even when they face WLC challenges, buckling down and doing what needs to be done for their employer and project team, while possibly (re)considering alternate future employment options. Emphasizing the role of supervision and use of management techniques, Bloom et al. (2009, p. 35) concluded from their study that the "association of WLB [or WLC] with productivity is spurious," and that productivity often depends on "good management." Specifically, they note that, in the presence of good management, WLC may lead to dissatisfaction, but not lower productivity. Future research on this topic, focusing on the relative effects of professional values and supervision, may be worthwhile.

We controlled for five variables in our analysis: gender, care for dependents, experience in distributed software development, country, and the type of role played by the respondent in the distributed software development projects. We observed that care for dependents had a significant effect on work–life conflict. This result makes sense in light of Clark's (2000) Border Theory. The responsibilities related to taking care of dependents (be it children or aging parents) can often spillover to the work times, creating those "borderlands" where employees find themselves constantly juggling between activities in different domains, experiencing more conflict. Similarly, role, a characteristic that is *assigned* by the organization to the border crosser, also had a significant effect, with those playing more of a project management/relationship management role (rather than a predominantly technical role) having high work–life conflict. Such individuals are likely to be engaged in coordination across the different sites, spanning the boundaries frequently, and thus, the result is not surprising. In summary, we find that the metaphors of *border*, *border crosser*, *border keeper*, and *border characteristics* provide interesting and potentially valuable "devices of the mind" for grasping the essence of WLC phenomenon in GDSD contexts.

Conclusion

Contributions to Research

This study sought to theoretically develop and empirically test a model related to the WLC of employees working in GDSD environments. Our first objective was to understand the key antecedents and consequences of WLC within GDSD settings, where the existing literature offers limited guidance. We contribute to this literature by examining antecedents of WLC in the context of employees working in GDSD projects.

GDSD has its own unique challenges, and yet, much of the coverage on WLC in this context tends to be atheoretical and anecdotal. By drawing on the traditional literature in allied fields that have long been concerned with WLC issues, by including variables unearthed from an exploratory case study to gain insights about the GDSD context, and by using Border Theory as a scaffolding for theorizing, our study offers

a holistic model pertaining to GDSD that includes key antecedents and impacts of WLC, thereby satisfying our original objectives.

Our second contribution is to the body of literature on Border Theory. This theoretical perspective, though proposed over a decade ago by Clark (2000), is yet to be subjected to rigorous empirical testing in a variety of contexts (we are aware of only one other study that has attempted to do so). Our study not only provides a validation of Border Theory but also illustrates how this theory may be adapted and empirically tested. Furthermore, in line with Johns (2006), who argues for the importance of context in theorizing about such phenomena, we believe that our study succeeds in presenting a context-specific model of WLC inspired by Border Theory that, we believe, is of particular relevance to the IS discipline. While we do not claim that this is the "best" model, it takes a step in the right direction by focusing on variables that can be managed in organizations and by highlighting variables that are unique to distributed work and ISD.

More broadly, we believe that our study provides the foundation to help assess, understand, and improve the "working conditions" of employees who work in distributed settings such as GDSD or are involved in other forms of distributed work. For example, our study highlights the negative implications of the lack of time-zone overlaps between distributed members, which calls into question some of the beliefs within the distributed literature about the alleged benefits of "follow the sun" approaches to work (e.g., Conchúir et al. 2009, Carmel et al. 2010). While such an approach may increase efficiency at times, it comes at a "human" cost, which can eventually lead to a lack of efficiency and productivity. This is particularly the case if tasks across locations are interdependent.

The study makes a significant contribution to the WLC research by going beyond describing obstacles to WLC, and examining the cause and effects in an important context. Here, we have developed an integrated model of variables that act as "causes and consequences" (Guest 2002, p. 259) of WLC and provided empirical validation/invalidation for the model. In doing so, we attempt to "explain, predict and help solve problems the individuals face when balancing home and work responsibilities" (Clark 2000, p. 749).

The work in this paper can also be tied to recent literature that has argued for work–life enrichment along with WLB (e.g., Poelmans et al. 2009). Work–life enrichment, we believe, may be particularly relevant in the GDSD context because of the unique factors associated with this context (time differences, coordination across multiple locations across the globe, unavoidable requirements instability, and use of agile approaches, which all contribute to the blurring of boundaries between work and personal life). Perhaps the only viable option is to provide workers with tactics that help in managing the blurring of the boundaries in a manner that enriches her overall life experience. This is consistent with recent work that discusses strategies to WLC management such as separation, compensation, harmonization, and protection, but notes that for professionals who see their work and life domains as inseparable, work–life integration may be the right approach (Sarker et al. 2012). Such a work–life integration might involve providing employees with all possible "life" amenities (e.g., gym on site, kitchen area, ability to bring their dog to work), thereby enabling them to "seamlessly move between work and personal life domains" (Sarker et al. 2012, p. 150). A work–life integration approach might help organizations to transform their thinking when it comes to work–life balance and make it a part of their culture as opposed to simply offering programs and assistance (Polach 2003).

Practical Implications

The results of this study help us to understand the specific nature of these challenges and move us toward unveiling best practices and programs that organizations can implement—beyond implementing the FFPs and flexible schedules that have been touted for many years with mixed results—to help employees manage their WLC. It also shows that it is imperative to help employees manage their WLC, to ensure retention of employees. While WLC is an issue in most organizations, irrespective of the nature of tasks undertaken by employees, the GDSD context adds layers of challenges arising from the time and space distances and the unique characteristics of ISD, and addresses issues that are relevant for IS scholars and practitioners. This suggests that a certain level of WLC in this context is unavoidable. Nevertheless, firms engaged in distributed work need to look for creative ways of managing the WLC of their employees. Variables pertaining to distributed work (e.g., number of locations, time difference) that were validated in this study provide a starting point for such initiatives. WLC can also be managed by keeping in mind the nature of the ISD project being undertaken. For instance, projects with low levels of requirements instability and diversity (e.g., a maintenance project) may have a lower need for active management of WLC, in comparison to one that has high levels of requirements instability and diversity. Similarly, managers must be cautious about mandating the use of agile approaches in GDSD projects without careful consideration regarding the impact of employee WLC.

Limitations and Future Directions

Like all studies, our study has limitations, and some of them open up opportunities for future work. First, it is worth noting that, in this study, we have chosen to

take a broader view of the phenomenon of work–life balance within GDSD settings, and primarily studied *direct effects* of antecedents on WLC. Future research needs to dig deeper by studying the effect of interactions among the key antecedents on WLC. Second, we did not collect project-level data or measure any project-related characteristics, which are undoubtedly important aspects of ISD. Our intent in this study was to examine the antecedents (organization related and distributed software development specific) on WLC, and given the nascent state of this research stream within the IS discipline, we believed that it was first important to understand a broad set of antecedents from the work domain and then in the future add depth and detail by including project-level analyses. However, we would like to note that within our set of antecedents, we have included variables such as the type of methodology used and the nature of the requirements, which we believe can help provide some insights on ISD-related considerations in GDSD. We welcome future studies that attempt to develop a more in-depth understanding of the effects of project characteristics on WLB in the GDSD context.

Many of our GDSD-specific factors were developed from a single case of GLOBCOM, which could have added to the bias. With respect to the choice of our case, we note that the stature of GLOBCOM as a globally reputed IT company that has engaged in globally distributed ISD for a number of years, and its recognition of WLC as a major issue that it needed to manage, prompted us to consider it as a "critical case" for studying the phenomenon of interest (Yin 1994). While no case is "generalizable" to all settings, we believe that GLOBCOM, being a critical case, did provide a setting to observe and capture some of the human experiences that would provide an insight into the key antecedents and consequences of WLC in a GDSD context.

Yet another issue pertains to factors other than those included in our model that might be relevant in explaining WLC. For example, the nature of the work that the participants performed (that is, whether they represented the clients or the vendors, and also the nature of the outsourcing such as whether far-shoring or nearshoring) would likely affect work–life conflict. However, given the very nascent state of the understanding of WLC in distributed work, we believed that the first step was to examine some of the key variables suggested by the literature and our qualitative study, and investigate the role of these other important variables in future investigations.

We acknowledge that some of the factors (e.g., technology diversity, locational borders) in the study were measured through single items, and that could be viewed as a limitation of our study. We would like to note, however, that researchers (e.g., Robins et al. 2001, p. 152) have often argued that sometimes "single-item measures can provide an acceptable balance between practical needs and psychometric concerns" and are appropriate in large-scale surveys such as ours. Similarly, Burisch (1984) has repeatedly highlighted that single-item measures do not have any less convergent and divergent validity than multiitem measures. Finally, in recent times, from a metaanalysis of 16 widely used single-item measures, Postmes et al. (2013) concluded that they are high in validity.

We must also acknowledge possible social desirability bias associated with self-reported performance measures. However, the nonsignificant relationship between WLC and performance ratings suggest that this was not an issue.

While our findings suggest that, overall, the convergence perspective to culture holds, the effect of culture needs to be examined more deeply in future studies. We call on researchers to examine these cultural differences in greater depth so that strategies for managing WLC tailored to various countries can be developed. We hope that our study will inspire other researchers to conduct similar studies in other parts of the world, where the same or similar issues may be of relevance.

Finally, while we believe that Border Theory provided us with a rich framing for our study, and suggested categories of variables, it does not specify which variables to include or not include in the model—this is a perennial problem faced by all researchers in trying to decide which variables to include or not include in a given model. Here, we have tried to balance the tension of comprehensiveness with parsimony and have used our exploratory study (representing realism and relevance) to guide us in the decision to include specific variables. Still, we must acknowledge that other variables such as economic factors, supervisory management factors, personality factors, work culture, uncertainty avoidance, task variability, and control over an employee's time can have an influence on WLC. We believe that future research should consider additional candidate variables, especially those related to the border crosser or to the domain itself, to construct a more refined and potentially valuable picture of this phenomenon.

In conclusion, we believe that there is much to learn on this phenomenon of WLC being discussed across the globe. We have only scratched the surface of the myriad of issues being faced by workers engaged in GDSD and other types of global work as they navigate geographical, functional, and cultural borders. We offer this work as an important step toward building the foundation for future research and practice in this arena.

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Endnotes

[1] In this study, consistent with the literature, we use the term "work–life conflict" (or "WLC") as synonymous with the lack of "work–life balance" (or "WLB").

[2] A number of interviews touched on multiple themes including agility, distributed work, and WLC, and thus some of the material was reused in multiple studies.

[3] One item measuring flexibility of schedule had a loading lower than 0.4 and was thus removed from the analysis.

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