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Title	Enterprise personal analytics: A research agenda
Author(s)	Clohessy, Trevor; Acton, Thomas
Publication Date	2018-08-16
Publication Information	Clohessy, T., & Acton, T. (2018). Enterprise personal analytics: A research agenda. Paper presented at the 24th Americas Conference on Information Systems (AMCIS) – Digital Disruption, New Orleans, doi: 10.13025/S88H04
Publisher	NUI Galway
Link to publisher's version	https://doi.org/10.13025/S88H04
Item record	http://hdl.handle.net/10379/7305
DOI	http://dx.doi.org/10.13025/S88H04

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Enterprise Personal Analytics: A Research Agenda

Completed Research

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Abstract

There have been increased calls by academics to investigate the individuation of information systems (IS) which has largely gone unnoticed in the IS research discipline. Thus, we focus on an emergent category of analytics which we refer to as “enterprise personal analytics” which encompasses the concept of organizations enabling their employees to use their individual analytics to manage their digital working lives from descriptive, diagnostic, predictive and prescriptive points of view. This study offers the following theoretical and practical contributions: (1) We present a framework, derived from a detailed review of the personal analytics literature, which consists of various combinations of research stakeholder perspectives and concerns. This framework can be used to guide and coalesce future IS research on enterprise personal analytics. (2) We provide an overview of possible research questions aimed at highlighting how the framework can be used.

Keywords

Business intelligence, individuation of IS, personal analytics, organizational performance, research framework

Introduction

“The data revolution is giving us wonderful ways to understand the past, present and future...this ability seems to carry certain cultural assumptions – that everything that can be measured should be measured.” Brooks (2013)

As our lives “become immersed by powerful digital devices and services, questions of implications for individuals' lives as well as their social interactions and structures arise... this emerging fully digitized and connected environment implies changes to the development, exploitation and management of personal information and technology systems” [Matt et al., 2017]. One promising technological trend in this regard will be the use of personal analytics which first appeared in the innovation trigger category in the Gartner hype cycle for technologies in 2016. According to Ingelbrecht and Herschel [2015] “personal analytics empowers individuals to analyze and exploit their own data to achieve a range of objectives and benefits across their work and personal lives”. Personal data can relate to biometrics, personal finance, social media activities, health status, behaviours, emotional states, mobility, interest areas and so on. In an increasingly data-driven society, the emergence of personal analytics has been catalyzed by the convergence of mobile (new and emerging ambient user experiences), cloud computing, business intelligence and social technological advancements. Organizational interest with regards to personal analytics is also beginning to gain traction. Extant evidence highlights how “top-performing organizations use analytics five times more than lower performers” [Lavelle et al., 2011]. While traditional organizational “intelligence metrics deliver a big picture of structures, processes, and roles, more detailed

and personified analytics provide individuals with a mirror view of their actual versus the desired way of work and the resulting personal productivity” [Dobrinevski, 2013]. In this study, we focus on a concept that we call “enterprise personal analytics” (or EPA, for short), through which industrial organizations enable their workers to use their personal data to manage their digital working lives from descriptive, diagnostic, predictive, and prescriptive points of view. Wearable technologies, for example, are providing capabilities that are completely new to mainstream business practices (e.g., Tobii’s EyeX, SMI eye tracking glasses). Like many information systems (IS) researchers and IT analysts, we believe that the emerging concept of EPA has the potential to become the new frontier of competitive differentiation. EPA may be of interest to a multitude of organizational sectors such as software development, manufacturing, utilities, energy, and aviation.

However, most research pertaining to EPA is fragmented and presented solely from the perspective of the enterprise (e.g. tracking of employee metrics) or the individual (e.g. use of personal data to improve personal lives). It has also been claimed that the IS discipline has largely benighted the individuation of IS [see Baskerville, 2011] and the digitization of the individual concepts. Moreover, there is an increasing reluctance of enterprises and individuals to use personal analytics technologies due to trust, surveillance, security, and privacy literacy concerns. However, we believe that there is significant potential, from both organizational and individual worker perspectives, for the use of EPA, but much research is needed in order for the concept to realize its full potential. While several authors have proposed research frameworks for EPA [Kim et al., 2010; Dobrinevski, 2013; Huang et al., 2015], these are not specifically IS or business intelligence focused, but rather provide guidance on individual activity patterns, personal visualization, personal visual analytics and metrics. While such frameworks are useful for specific contexts, there is a need for a dedicated framework to systematically study this topic. Motivated by this opportunity, we have derived a research framework, following a detailed survey of the literature, which can be used to guide future EPA empirical investigation. The remainder of this paper is organized as follows. Section 2 describes the methodology. In section 3, we present our research framework. Next, we discuss the research framework and delineate theoretical and practical implications in section 4. Finally, section 5 concludes the paper with limitations and a summary of our study.

Methodology

Literature Review Process

The primary objective of our literature review was to analyze the extant empirical research on EPA. We conducted a detailed survey of the literature in order to produce a systematic deductive analysis of the concept of EPA [Heyvaert, et al., 2013]. A detailed overview of how we conducted the literature review can be sourced in Clohessy & Acton, [2017]. Furthermore, our coherent review of the literature was greatly assisted by our coherent conceptual structuring [Webster and Watson, 2002] of the EPA topic. The first step in our analysis of the literature encompassed the sourcing of relevant research resources via scholarly databases and manual searches. To ensure the consistency and reliability of the search process we used a three-stage literature mapping protocol. as prescribed by Kitchenham and Brereton [2013] to search, select, appraise and validate the literature. For the initial *stage 1*, a rigorous search of the academic literature was undertaken in all subject areas across all years (until 1 September 2017) using seven prominent databases to produce a research resource set which was representative of the current status of EPA research: EBSCOhost, JSTOR, ProQuest, Google Scholar, PubMed, Scopus, and Web of Knowledge. This selection of databases was informed by the multidisciplinary nature of personal analytics research. The term ‘enterprise personal analytics’ is novel and not established as a subject or thesaurus term; thus, the phrase ‘personal analytics’ was used as a keyword to determine how papers were filtered, and criteria were established to ensure that the papers included for review met the definition established in this paper. To support the manual search, an automated search based on citation analysis (also referred to as snowballing) was performed. Relevant research sources identified from full research papers were also collated. Next, the researcher applied an identical search and select protocol for the IS literature domain. Given the dearth of extant research pertaining to the EPA concept, grey literature research resources (e.g. conference proceedings, research reports, issue papers, white papers etc.) were also included. All 706 research resources were imported directly into an EndNote database. Using EndNote’s ‘find duplication’ feature seventy duplicates were removed. The remaining 628 research sources were further filtered using *stage 2* and *stage 3* of the mapping protocol. *Stage 2 selection processes* encompassed a decision-making

process to include or exclude relevant research papers from the data extraction process. The “final decision took place when the research sources were read in parallel with data extraction and quality assessment. *Stage 3 search and selection* took place in parallel with data and quality extraction from the research sources identified in *stages 1 and 2* and comprised three main tasks: search process validation, backward snowballing and researcher consultation” [Kitchenham and Brereton, 2013].

With a strong focus on the use of personal analytics within an enterprise setting, *stages 2 and 3* resulted in the removal of: irrelevant research articles (e.g. analytical chemistry, astrophysics, mathematics etc.), further duplicates not picked up by EndNote (e.g. surnames and first names misplaced), materials no longer accessible, questionable sources (e.g. credibility of resource could not be verified) and research sources where personal analytics was only briefly mentioned and not the main theme of the content. In total 563 articles were discarded which resulted in a final total of 76 research resources remaining in the EndNote database for further analysis. We used NVivo 10 software as a means of systematically classifying and revealing academic insights on enterprise personal analytics. While we did not undertake a grounded theory approach, following Ritchie et al. [2003], we used a multistage hierarchical data analysis approach comprising four analytical cycles which incorporated open and axial coding techniques based on the recommendations of Strauss and Corbin [1998]. The coding process continued until the categories were deemed to be theoretically saturated. Peer debriefing enabled us to use external groups as a “sound board for further validating the final set of themes which emerged from our analysis” [Schwandt, et al., 2007]. Consequently, the 76 research resources were reviewed and coded to create an EPA research framework which will be presented in the results section.

Results

Research Framework

Table 1 depicts a two-dimensional research framework which we have developed to advance the EPA concept. The use of personal analytics in an enterprise setting is different from other contexts (e.g. private use). This has implications for which aspects of personal analytics should be researched in an enterprise setting context. Based on our detailed survey of the literature, we identified five specific *concerns* pertaining to the use of personal analytics in an enterprise setting which we discuss in the next section. These concerns are depicted as one dimension of our research framework. As EPA involves multiple stakeholders it is useful to study the concept from different *perspectives*. Our analysis revealed several perspectives namely that of companies, workers and the mode through which companies enable workers to use personal analytics (e.g. modality). These three perspectives represent the second dimension of our research framework. In the next section, we discuss the theoretical and practical implications of our research. To assist with future IS and practitioner research, we have populated the two-dimensional grid with sample research questions which we argue merit further scrutiny in an EPA context (Table 2)

		Perspectives		
		Company	Worker	Modality
Concerns	B	IIS Architecture		
	Knowledge & IP			
	Motivation & Remuneration			
	Information Governance	C		
	Quality Assurance			

Table 1. EPA Two-Dimensional Grid Framework: (A) a multi-concern, single perspective study, (B) a single-concern, multi perspective study, (C) a single-concern, single perspective study

Discussion and Implications

In this section, we discuss our EPA research framework presented in Table 1 in greater detail. We also provide an overview of how IS researchers and practitioners can use this framework (see Table 2).

Concerns

Individual Information Systems Architecture

Advances in information and communication technologies (ICT) over the last 20 years has “enabled more-and-more complex individual IS” (Baskerville, 2011). IT consumerization, or the adoption of consumer devices and applications in the workforce, is pervasive. Employees bring computer tablets and smartphones into the workplace and harness social media applications and special-purpose apps for their work lives [Harris et al., 2012]. Consequently, recent IS research studies have called for an expanded investigation into the individuation of IS [Yoo, 2010; Baskerville, 2011 and Carroll and Reich, 2017] whereby the individuation of IS has largely gone “unnoticed in the IS research discipline, simply because we have traditionally defined the field in terms of social, organizational, and managerial relations” [Baskerville, 2011]. A typical individual’s information system (IIS) architecture is inherently complex comprising of two specific work systems. The first is the individual’s work system as an employee, and the other is the individual’s personal work system. These systems are facilitated by individually and enterprise provided cloud computing technologies which produce and consume services. Baskerville [2011] opines that organizations can no longer ignore IIS architectures for the following reasons. First, IIS represent the most recent frontier for the computer information system design. Second, they IIS complicated and unique systems which cross boundaries between personal life (e.g. social aspects) and work life (e.g. organizational aspects). Third, IIS do not merely store data, individuals are “actively collecting data and processing it into information for various purposes and feeding it outward” [Baskerville, 2011]. The dearth of research into the individuation of IS leads to enterprise personal analytics IIS architecture research questions which are presented in Table 2.

Knowledge and Intellectual Property (IP)

Modern organizational business operations encompass knowledge-intensive management and sharing processes. Subsequently, organizations have turned to business intelligence and analytical applications to manage the day to day running of their business operations. While these applications may have been used in the past to merely produce high-level summarized data about business performance, they are now being used to analyze this data in specific business contexts which can drastically improve decision making and the organizational knowledge cycle as a whole. EPA possesses the potential to create a new dimension in the organizational knowledge cycle which organizations can leverage to gain information and insights which can improve business operations and improve decision making. According to Ruckenstein [2014] “personal analytics is firmly rooted in the externalization of ‘nature’ as something that people are able to transform. It is not enough to have a more transparent view of oneself, one needs to respond to that knowledge and raise one’s goals. With the aid of digital technology, the tracking and monitoring of the self, optimization becomes not only possible, but also desirable”. In an EPA context, where the individual worker personal analytics’ data is an information asset, the manner in which knowledge and intellectual property are managed becomes of paramount importance from legal and ethical perspectives. However, the (ill)legal and (un)ethical considerations with regards to EPA creates the urgent necessity of safeguarding personal individual information and knowledge. Further EPA business cases are required to determine how companies can effectively implement a requisite level of knowledge production versus knowledge protection in an EPA context. Additional research is also required to determine how companies can effectively implement a requisite level of knowledge production versus knowledge protection in an enterprise personal analytics context. The theoretical justification for this choice has been received empirical support “as a strategic reaction to competitive conditions mandating the aggressive use of business analytics for knowledge development juxtaposed with substantial investment in knowledge protection” [Liebowitz, 2016].

Motivation and Remuneration

The ultimate goal for an organization when designing or introducing a new IS or digital technology is to ensure that workers will want to use it (Markus and Keil, 1994). While the benefits may be clear-cut from the company perspective (e.g. enhanced productivity, sales and decision making) getting employees on board can be challenging. Oftentimes, while “there is consensus on the importance of adopting a new digital technology strategy, most employees find the process complex and slow...leaders lack urgency and fail to share a vision for how technology can change the business [Fitzgerald et al., 2014]. Motivation and remuneration are topics which have received significant attention in the personal analytics literature (Lupton, 2014; Ledger and McCaffrey, 2014; Clawson et al., 2015). How an organization “measures and rewards employee performance matters...aligning incentives with desired behaviours in the context of personal analytics use is important” [Huang et al., 2015]. Workers may also be reluctant to share their personal data openly with peers. Particularly, when that data is used to compare their individual performance with others in their team. Furthermore, meaningful individual analysis can only be achieved after an adequate volume of data has been collected. The modality through which organizations enable their workers to collect and analyze their personal analytics data will a significant role to play. Research has identified mobile devices and wearable technologies as major instruments which will facilitate an enhanced user experience (e.g. usefulness) in conjunction with a substantial automation of personal analytics [Ingelbrecht and Herschel 2015; Mazzei, 2017]. Ultimately, organizations must develop EPA strategies that inspire long-term use amongst workers. It is recommended that organizations opt for EPA technologies which are persuasive and come with minimal learning overhead. Persuasive technologies are specifically designed to keep users engaged. The lessons learned from the large-scale abandonment of personal health tracking technologies which is currently occurring amongst users of smart watches and fitness trackers can provide valuable insights for organizations contemplating implementing EPA initiatives [Canhoto and Arp, 2017].

Information Governance

Information governance is the set of multi-disciplinary policies and controls aimed at managing information at an organizational level, supporting legal, regulatory and risk compliance requirements. Effective information governance policies secure confidential data and enable unneeded data to be disposed of in a systematic and legally compliant manner. According to Smallwood [2014] “there is a high-value benefit of basing business analytics decisions on better, cleaner data, which can come about only through rigid, enforced, information governance policies that reduce information glut”. However, information governance has emerged as a major challenge for organizations in today’s environment of big data, business analytics, increasing information risks etc. There are a plethora of high profile examples of how poor information governance practices can lead to disastrous consequences for the organization in question (e.g. US National Security Agency, Ford motor company, Sony). In the case of EPA, this stumbling block maybe more exacerbated. The potential nexus of parties (e.g. partners, workers, customers, data pools, cloud and network providers) encompassed in an EPA context necessitates robust information governance mechanisms. For example, the privacy and security of personal data generated by workers pose serious challenges. We highlighted earlier how some companies are giving their workers access to wearable technologies to reduce health insurance premiums. However, these workers do not own their data. Instead, “data may be collected and stored by the manufacturer who sells the device. Being provided with only a summary of results extracted from these data creates a rather odd paradox for the user - they own the device, but not the resulting data” [Piwek, 2016]. In other instances, certain manufacturers of these devices sell on customer information to third parties. Most significantly, the general data protection regulation (GDPR), which comes into regulation in 2018, applies to all companies worldwide that process the personal data of European Union citizens. Companies considering implementing EPA initiatives will have to operationalize information governance strategies which are fully in line with GDPR requirements. High-maturity business analytics organizations derive value by effectively embedding information governance policies, toolkits, and practices which align business needs with growth in analytics sophistication. There may be a need to develop regulatory frameworks which support the validation of EPA initiatives.

Quality Assurance

In highly regulated environments, organizations must equip themselves with the requisite tools and safeguards to ensure that their information is transparent and above all accurate. Consequently, business analytics competencies and data management tools have become strategic priorities in organizations. In order to advance the science of EPA, organizations must “develop methods and principles for representing data quality, reliability, and certainty measures throughout the data transformation and analysis process...where the goal is to facilitate high-quality human judgement” [Thomas and Cook, 2006]. Furthermore, new tools are required “to make insights easier to understand and to act on at every point in an organization, and at every skill level” [Lavelle et al. 2011]. When implementing EPA initiatives, it is imperative for organizations to pair good data with appropriate analytical techniques. We recommend that for running high-quality personal data analytics should also strive for high-quality data whereby “preparatory analytics and cross-examination of data will play a significant role” [Jugulum, 2016]. Additionally, as different forms of analytics exist, organizations must ascertain which align best with their business requirements. Once again, lessons can be harnessed from the wearable technology industry where critics have questioned the quality of the individual data being generated. For example, there is considerable variation across wearable technology devices and sensors with regards to functions, data quality, and measurement approaches. According to Davenport and Lucker [2015], “the presence and size of a step taken are often a different construct from device to device. Sensors such as accelerometers are often developed by semiconductor and microelectromechanical systems firms, each of which may detect and measure something as simple as a step in a different fashion”. To put it simply, if a user bought five different wearable tracking devices and compared various measurement dimensions, such as the number of steps taken, the number of hours slept or average heart rate, at the end of the day there would be considerable differences between them. Moreover, the manner in which these devices measure these dimensions would also vary. This leads to questions pertaining to what manufacturers do companies use for their EPA technologies and most importantly how do they ensure that all worker personal analytical data is successfully integrated. We envisage that the standards required to aggregate data across various monitoring devices could prove challenging. We would recommend for companies to partner with other organizations to collaborate on common data standards and issues pertaining to data integration.

Perspectives

Company

This perspective represents organizations who are looking to adopt EPA and those organizations who are resisting or rejecting EPA. Modern 21st-century workplaces are increasingly becoming more transparent, instrumented and more data-driven. According to Davenport [2014], the use of personal analytics “has much to teach organizations about alignment, performance improvement (individual and team) and business ecosystems”. For instance, an organization may want to increase innovation in their current business processes. The use of personal analytics can enable employees to identify and suggest improvements which can result in cost savings, better customer service and decreased employee frustration. These new improved processes and follow-on developments can become institutionalized across an organization. Furthermore, an organization may want to leverage the associated productivity benefits. For example, organizations can derive value from employees who use their personal analytic devices to productively sync to organizational resources while working remotely (e.g. smart watches). There is also scope for organizations to use personal analytics in a team context so that they can evaluate across different team compositions. Moreover, individual personal analytics data could be used strategically at a micro level for improving team performance at a macro level. Davenport [2014] outlines an example whereby companies would be able to use personal analytics to assess not just individual performance, but performance in the context where organizations can determine how specific teams perform with or without a particular worker. This is called “plus/minus” analysis. While the forward looking organizational trend towards the technologically enabled surveillance of employees is expected to lead to better hiring, improved workplace conditions, healthier and more productive employees and better management, organizations will have to take into account a number of salient considerations which a company must take into account prior to commencing an EPA digital transformation journey such as: identifying the maturity and sophistication of the organization’s analytical capabilities, determining the turnaround time for implementing such a strategy (e.g. quick wins vs longer-term goals), implementing

procedures for gaining strong organizational commitment towards the new personal analytics strategy and most significantly the impact on individual worker morale and group team dynamics.

Worker

This perspective represents individuals who perform roles which encompass responsibilities within a company for which they receive a salary. Personal analytics “can be considered a digital implementation of self-analysis practices and objectives...such digital implementation may facilitate the creation of new practices and objectives, which did not exist before” [Dobrinevski, 2013]. According to Gartner, workers are beginning to reap the benefits of new consumerized working environments which are underpinned by digital transformation personal analytics initiatives [Ingelbrecht and Herschel, 2015]. This phenomenon is likely to continue as a result of employee driven consumer technology and usage trends and the proactive efforts of organizations who want to exploit these consumerization trends as a means of enhancing employee engagement and achieving enterprise objectives across a range of domains.

The use of personal analytics can also facilitate a multitude of benefits for workers with regards to an increased understanding of how their ‘significant work’ impacts the company’s strategy and goals (e.g. business insight), facilitating meaningful working environments, enhancing career opportunities and improving job satisfaction [Harris et al., 2010; Harris et al. 2012]. All of these factors are critical for retaining and engaging all types of workers. For instance, the use of modern digital technologies in the face of “changing characteristics of the generation of employees now entering the workforce, particularly their high levels of comfort with, and expectations about, social networking and consumer technologies, are seen as valuable tools in attracting and retaining these new hires” [Harris et al., 2012].

Organizations must determine how they can implement personal analytical strategies which mimic the benefits of personal activity applications providers derive in terms of loyalty, brand engagement and real user data activity monitoring. In return, users derive a multifold of self-improvement benefits. This model which has been tried and tested has potential to be used within an enterprise setting. If these personal analytics technologies can be used to motivate people to achieve specific goals in their personal lives (e.g. run faster, lose weight), questions arise pertaining to if they can be used to achieve similar goals in people working lives? For example, can EPA technologies be used to motivate customer support workers to increase the number of satisfied customers they have following each interaction, or can they be used to assist sales representatives to enhance their sales pipelines? With regards to the latter, Davenport [2014] describes how organizations are moving towards the provision of relevant data analytics dashboards, traditionally used by managers, to employees. He describes a scenario where a company enables their sales employees to use the extensive data from their customer relationship management applications to assess and improve their performance. For instance, if the most successful sales professionals tend to spend less than 10% of their time on lead generations, then average and low performers can adjust their daily work routines accordingly.

The Modality

Modality refers to the mode through which personal analytics is experienced by the worker or is deployed by the company. This is becoming an increasingly important perspective as an expanding set of information, services and devices such as traditional computing and communication (platform, desktop, mobile, tablet), wearable (health monitors, augmented and virtual reality displays), internet of things (mobile apps, consumer appliances, transportation and environmental sensors), and data storage (hard drives, cloud, USB) are fluidly and dynamically interconnected to support intelligent digital ecosystems. As our digital environment evolves, a number of important questions emerge in the context of personal analytics modality. For example, how does the user experience fundamentally change and what digital technologies, security architectures, and platforms are required to support this change? Most significantly, the ability for workers to use multiple modalities (e.g. multitasking, context switching) effectively is a salient requirement for the successful development of a company’s EPA strategy. A digitally saturated working environment can create a number of salient challenges for organizations. For instance, workers can experience communication overload as a result of their continuous interactions with a multitude internal communication ICT channels. This can lead to issues relating to an employee’s deterioration in cognitive control, attention span and a loss of productivity and quality of life [Whelan, Islam and Brooks, 2017]. Therefore, when considering the best modalities for their EPA initiatives, organizations should consider the frequency of interruptions and how quickly users can recover from

them. Clearly delineated policies should also be put in place so that employees are not left second guessing what is expected of them when using EPA devices. Without clearly defined protocols in place, workers run the risk of drowning in a never-ending stream of information.

Using the Framework: Theoretical and Practical Implications

Having discussed the five core EPA concerns and the three perspectives we will now focus on the theoretical implications. Our framework encourages a systematic focus and strives for a common understanding of the role of individual personal analytics within the enterprise. Only continued IS theoretical deliberations and rigorous evaluation and exploration of the perspectives and concerns identified within our framework will reveal whether EPA is here to stay or is just the latest in a series of technological trends or buzzwords. Consequently, this research represents one in an initial series of proposed studies through which we hope to advance the concept of EPA.

A novel feature of the “grid” type roadmap presented in Table 2 pertains to the various permutations of research designs that can be operationalized. The first design is a multi-concern, single-perspective view denoted by the letter A. The second design is a single-concern, multi-perspective view denoted by the letter B. The final design represents a single-concern, single-perspective view denoted by the letter C. Given the rather infant status of the EPA phenomenon, we encourage future research to populate each of the cells within this grid framework. This will facilitate the categorization of future research EPA studies within the IS discipline. To assist the process, we have devised a number of questions that we believe merit further consideration which are depicted in Table 2.

		Perspectives		
		Company	Worker	Modality
Concerns	IIS Architecture	What reference architectures are suitable for creating productive and interoperable IIS architectures for workers?	How can the company effectively develop a flexible IIS architecture that continuously facilitates worker learning and improvement?	How can IIS architectures contribute to the teams' and company's overall goals?
	Knowledge & IP	What data governance agreements can be put in place to handle scenarios in which workers request access to their EPA data when they leave the company?	How can workers create and analyze knowledge in a meaningful way?	What digital tools should be in place for effective knowledge sharing between workers?
	Motivation & Remuneration	What practices should be put in place to effectively empower and satisfy workers?	How can personal analytics be made appropriate for use in enterprise contexts – including by people who have little experience with data, visualization, or statistical reasoning?	What are the effects of using multiple digital devices and ubiquitous connectivity on individuals' attitudes, behaviors, and performance?
	Information Governance	How can the company minimize privacy and IT security issues for individual workers' private lives?	Who assumes the responsibility for monitoring and controlling worker personal analytics data?	What digital device policies are appropriate for data retention, data sharing, and interteam data transfers?
	Quality Assurance	Who or what algorithms govern the analysis and presentation of personal analytics data?	What specific individual worker metrics can contribute to organizational KPIs in a meaningful way?	What digital tools can workers use to ensure the effective sourcing and subsequent analysis of their personal data?

Table 2. EPA research framework example questions

Conclusion

While personal analytics scenarios have received attention in different research fields, this paper sought to gather the fragmented views pertaining to EPA and bring together researchers interested in the impact of this new phenomenon. Specifically, in an IS context, given that “ignoring individual IS within our discipline is an evolutionary oversight that may simply reflect our own assumptions that personal, individual IS are uninteresting: simple; or mostly recreational systems used after hours or outside of real organizational IS” [Baskerville et al., 2011]. Consequently, this study attempts to advance our understanding of the EPA concept. In this study, we have presented a framework comprising five specific concerns in the context of several perspectives. These concerns may represent the greatest hurdles in the broader adoption of the self-analysis culture and practices within an enterprise. It provides a foundation for IS researchers to build upon, understanding other user cohorts in different work and personal situations. It also provides guidance to practitioners. Our hope is that the term “enterprise personal analytics” and our EPA theoretical framework are useful organizing concepts. In summary, this study offers the following contributions to the emerging IS literature on personal analytics and its potential use in an enterprise setting: (1) it provides a holistic framework which aims at synthesizing and advocating future research in the promising area of EPA, and (2) it identifies possible research questions aimed at highlighting how the framework can be used.

The following limitations should be kept in mind when considering the findings of this paper. First, personal analytics as an academic topic of study is relatively young, and there are few well-established theoretical frameworks or unified discourses. While it is felt that the sample of publications is representative of the personal analytics literature, there may be some bias associated with the narrow focus of the research resources under review. Additionally, there are potentially research resources that investigate similar phenomena but discuss it with different terms, and thus, were difficult to find. We found throughout our survey of the literature that the only consistency pertaining to the concept of personal analytics is inconsistency. This fluid state of the personal analytics field in conjunction with the subjective nature of the literature review filtering process – necessary due to the inconsistent use of the term across disciplines/fields – limits this work. However, at the same time, it seems that increasing the focus would not change the general conclusions or provide additional insights. Further, our analysis, which is based on a holistic integration of ideas across various research strands provides a strong theoretical grounding from which IS researcher can operationalize future research studies in the area. Second, we would also like to acknowledge the potential for researcher bias. From the initial study design, through to the development of the methodology and the reporting of the findings, the study made use of an audit trail and audit process [Schwandt, Lincoln and Guba, 2007]. This ensured that the study was underpinned by rigour, authenticity and neutrality.

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