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The Conceptualization of Justice Perceptions in Appraising Performance of Knowledge Work

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The Conceptualization of Justice Perceptions in Appraising Performance of Knowledge Work

by

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A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Business Administration
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DEDICATION

This research is dedicated to my parents – personal role models of lifelong learning. Thank you for the pragmatic push and the continuous support. I always look forward to our next discussion at the table. A special thank you to my daughter Caroline, who gives me great confidence in the next generation. Carolyn and George, thank you for showing me the meaning of unconditional. And Christopher…I’m looking forward to writing our next chapter.

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In loving memory of Stanley Thomas Norton --his charisma, brilliance, and joyous laughter continue to fill empty spaces.
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ABSTRACT

Organizational justice theory suggests employees are more likely to accept appraisal outcomes if they believe the process to be fair. As an increasing percentage of the workforce is made up of knowledge workers with job characteristics that are less structured and more autonomous, the shift in appraisal research from measurement accuracy to perceptions on fairness is fitting. This research investigates the relationships between justice perceptions and performance appraisal satisfaction by knowledge workers. The study extends previous research with the creation of composite measures to examine whether perceptions of fairness vary according to the characteristics of work performed.

The research was conducted at a medium-sized, niche consultancy that specializes in data analytics and data science. Interviews served as an initial pilot study to obtain contextual data to identify relevant justice measures in the procedural and informational justice domains. A questionnaire survey was selected to analyze whether knowledge work characteristics moderate the relationship between justice perceptions on appraisal satisfaction.

Results support the underlying premise that positive justice perceptions lead to greater overall appraisal satisfaction. Median regressions were used to model the significant effect of procedural justice and informational justice on appraisal satisfaction. Consistent with prior research, the most autonomous workers reported the lowest levels of appraisal satisfaction. This may be explained by the heightened challenge in evaluating autonomous work that is not observed directly and may be difficult to measure.

However, the moderating effect of knowledge work components produced some puzzling results. As expected, the knowledge work component of autonomy correlated negatively with the knowledge work components related to structure. Yet, autonomy and structure had similar moderating effects on the relationship between procedural justice and appraisal satisfaction. Although it was speculated that more
autonomous workers would place less importance on procedural justice, the results indicated greater levels of autonomy strengthened the effects between the justice perceptions and appraisal satisfaction.

Justice theory as it is applied to appraisal satisfaction is limited without considering the impacts on other constructs such as job satisfaction and motivation. Herzberg’s two-factor (hygiene) theory provides an example of how knowledge work components and procedural justice might be viewed as job “satisfiers” versus job “dissatisfiers”. The theory posits there are factors that contribute to job satisfaction that are separate and distinct from factors that contribute to dissatisfaction. “Satisfiers” include factors such as autonomy and achievement. In contrast, performance appraisals represent administrative processes within the category of “dissatisfiers”, or hygiene factors. When absent, these processes cause frustration and result in dissatisfaction. This may help to explain some of the seemingly conflicting results from autonomous workers in this study.

Practical implications from this study include the creation of composite measures for describing the abstract nature of latent measures such as justice perceptions and knowledge work. These measures serve as a heuristic to facilitate the analysis of human resource processes such as performance management.
CHAPTER 1: INTRODUCTION

More than 90% of large U.S. companies conduct annual performance reviews, with comparable percentages for international companies worldwide (Society for Human Resource Management, September 2018; “The Measure of a Man”, 2016). Performance appraisals typically serve multiple organizational objectives, such as performance evaluation, recognition, motivation, and development of human capital (Latham & Wexley, 1993; Lawler, Benson & McDermott, 2012; Smith & Rupp, 1992). Although there are many potential purposes for conducting performance appraisals, a fundamental management goal is to motivate and control employees’ performance (A. Colquitt, 2017; Randell, 1973). With so much at stake, the satisfaction outcomes for appraisal systems is a major concern for employers.

Appraisals are designed to satisfy a variety of decision-making needs in a single process: pay decisions, promotion decisions, measurement of performance and productivity, anticipation of future work, clarification of expectations, etc. (Armstrong, 2009; Bretz et al., 1992; DeNisi & Pritchard, 2006; Pulakos, 2009; Randell, 1973). Along with the evaluative component, appraisals often include processes such as goal setting, personal development plans, and the identification of training opportunities as mechanisms to engage and motivate employees (Pulakos, 2011).

Despite the attention given to performance appraisals as a critical function of management, both managers and employees describe appraisal outcomes as mostly unsatisfactory. In a public survey conducted by Deloitte Consulting, 58% of the executives surveyed felt their current performance management approach drove “…neither employee engagement nor high performance” (Harvard Business Review [HBR], 2015). According to Deloitte’s Global Human Capital Trends research (2017), 82% of companies felt their performance evaluation systems were not worth the time and only eroded the employer’s relationship with employees.

Similarly, 71% of US employees surveyed, believe their performance evaluations were unfair
There are numerous principles that an individual considers when evaluating fairness. According to Chun, Brockner, and De Cremer (2018), if the combination of evaluation processes and evaluation outcomes are perceived to be commensurate with the employee’s notions of fairness, then the employee will more readily accept the evaluation.

In response to a perceived lack of discernible benefits from performance appraisals, corporations have experimented with alternate approaches to traditional performance review systems that use ratings or forced ranking methodologies. In 2012, only 3% of the companies surveyed by the Center for Effective Organizations had eliminated the practice of rating their employees (Lawler et al., 2012). In 2015, General Electric and Deloitte announced they were abandoning ratings altogether (Buckingham & Goodall, 2015; Nisen, 2015). Subsequently, other large corporations such as Netflix, Medtronic, the Gap, Adobe, and Atlassian, publicly announced they were eliminating their performance rating systems (A. Colquitt, 2017).

However, the appraisal process has not disappeared; rather the process is transitioning to something more agile and collaborative between manager and employees. As the role of human resource management is increasingly represented within the executive team, the relationship between motivation and performance is more explicitly identified in business strategy (HBR, 2015). Companies are incorporating more frequent, timely performance management strategies that are less formal and more conversational reviews (Deloitte Global Human Capital Trends, 2017).

### Performance Appraisal Objectives & Practice

The overarching objectives of appraisal outcomes fall into two categories: 1) the evaluation of performance and (2) the development of the employee (A. Colquitt, 2017; Dusterhoff, Cunningham, & MacGregor, 2013; Fletcher, 2001; Pulakos, 2009). Increasingly, performance appraisal research acknowledges the potential problems when trying to combine both categories of outcomes into one appraisal system (A. Colquitt, 2017; Fletcher, 2001; Levinson, 2003; Pulakos, 2004).

The means of appraising performance typically involves documented evaluations of an employee’s past work performance assessed by supervisors to allocate rewards (Cappelli & Conyon, 2018). It appears there are common, standard processes and procedures for conducting performance appraisals that are widespread across
corporate America. According to A. Colquitt (2017), the increasing reliance of companies to benchmark so-called “best practices” results in most companies using the same methods and processes to conduct performance appraisals. The proliferation of standard practices is further reinforced with software products and external consultants that aid companies in administering performance reviews. Upon investigating several online sources, the researcher identified a consistency with well-established processes, procedures, and the vernacular that support performance appraisal systems (http://www.capterra.com/performance-appraisal-software).

Typically, organizations communicate a prescribed performance appraisal process that is adhered to throughout the organization. Although performance metrics may differ by role, a single appraisal system is the norm (A. Colquitt, 2017). However, a reason for creating more than one system is to address the management level separately (Lawler et al., 2012, p. 197). Contrary to this reasoning, it is generally acknowledged that managers are more likely to be omitted from performance appraisal systems altogether (Bretz et al., 1992; Longenecker & Gioia, 1992).

The researcher did not find examples of appraisal systems that adapt to the differences between task-based and knowledge work within a given job role. This lack of differentiation was corroborated by an expert panel of human resource executives on best practices in performance management at the Society for Organizational and Industrial Psychologists (SIOP) 2018 Annual Conference (Panel Discussion, April 20, 10:00 am, Presenters: Chief Human Resource Officers from PepsiCo, Google, IBM, Accenture). Suggestions for reviewing highly specialized jobs included the use of multiple review sources such as peer reviews, and external references with relevant knowledge and/or comparable expertise. Moreover, it was suggested to add a response on the performance review form that acknowledges aspects that the manager is unable to evaluate.

There is general agreement that the competencies that should be evaluated are those that are most important for meeting the organization’s expectations of the job role (Pulakos, 2009). However, there is concern that the competencies that are easier to quantify are those that get measured, rather than the competencies that are most valuable (Doerr, 2018; Drucker, 2011; Levinson, 2003; Nickols, 2009; Pepitone, 2002). There is a growing body of research that questions the notion of objective measures, predominantly
quantitative, to effectively evaluate all types of work (Cappelli & Conyon, 2018; Davenport & Pruzak, 1998; Drucker, 1999; Moussa, Bright, & Varua, 2017; Pepitone, 2002).

Prior to reviewing the literature, the researcher consulted publications by the Society for Human Resources Management (SHRM) and various human resource/performance management textbooks for practical references on appraising components of work that lack structure (Aquinas, 2013; Armstrong, 2009; Lawler, 2010; Murphy & Cleveland, 1995; Pulakos, 2009; Randell, 1973). Few, if any, sources provided applications specific to the unique considerations for appraising components of knowledge work. Most practical applications provided examples from operational or administrative tasks embodied in functions such as sales, accounting, and delivery of units of service. Figure 1 illustrates the challenges encountered when applying a traditional performance appraisal system to knowledge work. In analyzing the system, the input-process-output model is used to describe the basic structure of the appraisal process.

![Figure 1](image)

*Figure 1.* Conceptual framework for the application of performance appraisals principles for knowledge work.
Evaluations of performance are typically guided by sources, such as competency models that serve as references for the corresponding performance and behaviors sought by the organization (Pulakos, 2004). Examples of inputs include the following:

- job designs,
- job analyses,
- work contracts,
- standard operating procedures or performance standards, and
- key performance indicators (KPIs) and objectives and key results (OKRs).

These input sources are usually generated by the employer and may involve input from experts performing the job (e.g., creating performance standards). In most cases, the ability to evaluate the corresponding performance implies surveillance and the ability to observe (Miller & Rose, 1990). In the case of unstructured project work, outcomes of the work are often more difficult to anticipate (Davenport, 2002). Furthermore, the autonomous work of a knowledge worker may preclude the ability to directly observe performance.

Consequently, references for evaluations tend to be more general in their descriptions. This enables a greater flexibility of knowledge work to be captured (Levinson, 2003; Thomas & Baron, 1994). The above references, along with goal setting, are often used by management as a basis for making judgments on how well the employee has performed. According to the Society of Human Resource Management “how-to” guide (March 2018), typical methods for appraising performance involve the following:

- direct observation,
- quantitative results (e.g., sales, completed projects, and time to complete),
- qualitative results (e.g., client satisfaction levels, creative problem-solving, and comparison to performance of peers), and
- self/peer evaluations.

Textbook examples of appraisal metrics used for measuring performance include Likert scales, graphic rating scales, behaviorally anchored scales, critical incidents, and mixed standard rating scales (Newton & Findlay, 1996). Apart from critical incidents, most of these measures are analyzed and interpreted quantitatively. However, many outcomes of knowledge work are not only challenging to measure objectively through quantitative data, but also to determine what should be appraised in the first place (Davenport &
Pilot Study

To first gain general insights into the perceptions of appraisals by knowledge workers, the author conducted an exploratory study, interviewing a cross-section of five knowledge workers at a niche consultancy in data analytics. Through semi-structured interviews, the author investigated the objectives, outcomes, and meanings that five knowledge workers attributed to performance appraisal experiences with previous employers. The discoveries were presented in a qualitative study as part of the author's doctoral coursework (refer to Appendix C). The interview questions and responses resulted in a natural separation of themes that spanned appraisal processes and outcomes. Common themes that emerged from the interviews centered on:

1) perceptions on fairness of the appraisal system,
2) relationships with their supervisor or manager, and
3) impressions of their employers’ commitment to their personal development.

These themes contributed to the prevailing impact performance appraisals had on their subsequent motivation and job satisfaction. The findings suggest there are unique challenges for appraising unstructured work.

The following research study was inspired by insights from the pilot study, and the identified need for practical and academic resources on appraising knowledge work.
CHAPTER 2: LITERATURE REVIEW

Literature Review (Search)

This research investigates whether perceptions of performance appraisal systems as tools for improving performance are different for structured vs. unstructured work (commonly referred to as knowledge work). The practice of appraising performance as a human resource management function is one of the most researched topics in work psychology (Fletcher, 2001). To explore the relevant extant research and theory, sources stem from a breadth of disciplines in the social sciences, including industrial and organizational psychology, organizational behavior, human resource management, and organizational justice theory.

The following literature review focuses on academic publications that address the objectives and intended outcomes of performance appraisal systems, and the applications of appraisal research in practice. Searches on performance appraisals were conducted across multiple databases: Emerald Insight, PsycINFO, JSTOR, ProQuest, EBSCO, and Google Scholar. Keywords included performance appraisal, performance evaluation, unstructured work, knowledge work, employee productivity, performance measures, justice perceptions, motivation, development, and performance management.

Before researching the breadth of these concepts, a general search on Google Scholar was undertaken to identify key concepts and theory on performance appraisal systems. It should be noted that the terms performance “appraisal,” “evaluation,” “review,” and “management” are often used interchangeably in the business press, however academia defines “evaluation” as some form of an assessment, whereas “appraisal” and “review” are broader in context to include communication that typically includes qualitative and interpersonal elements that are not necessarily evaluated (Thomas & Baron, 1994). The term “performance management” is increasingly used in place of “performance appraisal” to signify a more comprehensive, less bureaucratic management process that incorporates mutual expectations between the manager and employee. Appraisals connote a formal assessment that typically involves rating employees on
their past performance; in contrast, performance management is focused on the future rather than the past, and
development of the individual is a major focus (Armstrong, 2009). Bretz et al. (1992) described the adoption of
“performance management” jargon as a shift in focus from the appraisal event to the appraisal process (p. 329).

The initial academic search across a broad scope of these concepts resulted in over 11,000 articles that
were designated as scholarly/peer reviewed within the USF library search tools. Upon refining the search to
applications that included performance appraisals and/or evaluations of “structured” or task/skills-based work,
and “unstructured,” “autonomous,” or “knowledge work,” 749 articles were scanned for relevancy. Further
elimination of “self-appraisals” and specific contexts that were outside the general applications of business
practice resulted in 166 articles that satisfied academic rigor and were relevant to the research question.
SCImago Journal and Country Rank was consulted as a reference to ensure rigor for the academic articles cited.
Twelve books serve as references after reviewing the bibliographies of the articles most frequently cited in the
refined search on performance appraisals and evaluation of unstructured, or knowledge, work. Key authors that
had high numbers of citations by other researchers were used to identify sources that may be considered seminal
research. For example, Denise Rousseau is referenced in most academic articles that include the impact of
psychological contracts on performance evaluations. Also, textbook bibliographies on Organizational Behavior
and Human Resource Management were consulted for core concepts and theories along with performance
management topics in Harvard Business Review, human resource management trade publications predominantly
from the Society for Human Resources Management (SHRM), as well as recent articles and blogs by Human
Resources Management thought leaders, such as the former Director of People Operations at Google, Laszlo
Bock.

From the justice literature, as a dominant body of research; the notion of “fairness” was a key topic
associated with the outcomes of performance appraisals (Thibault & Walker, 1975, as cited in J.A. Colquitt,
for organizational justice and justice domains associated with the theory was conducted in the web of
science. All articles that were not either A or B journals were removed, leaving a remainder of 1,491 articles from 15 journals, led by the Journal of Applied Psychology, with a total of 2,606 authors.

To structure this literature review, the topics have been grouped into the following four sections:

1. Performance appraisal systems and performance measurement,
2. the nature of knowledge work,
3. justice theory literature, and
4. motivation and development.

**Performance Appraisal Systems and Performance Measurement**

According to Fletcher (2008), performance appraisals are two-way processes that have two main objectives: the assessment of performance and the development of employee potential. To improve the accuracy of evaluation, a dominant focus of earlier research sought to reduce cognitive bias and increase accuracy of measurement through the construction of objective rating methodologies (Bretz et al., 1992; Kuvaas, 2004; McNall & Thurston, 2008). Since the advent of intelligence and psychometric tests designed by the U.S. military to recruit soldiers for World War II, academics have dedicated research to the improvement of validity and reliability of performance evaluation measures (Bernardin, 1982). However, the pursuit of objective truth about performance assumes that there is a mutual understanding between manager and employee, and an ability to accurately measure it (Thurston & McNall, 2008, p. 203). Folger (1994) critiqued traditional research on performance appraisals as an “overly rational conceptualization” of systems that do not adequately represent the complexity of the modern workplace.

In examining the extant research on methods for evaluating performance, the predominant focus is on characteristics represented in jobs that are skills or task-based (e.g., operational and administrative jobs). Within this context, a critical component of performance evaluation corresponds to academic rigor: the ability to measure what you claim to be assessing (validity) with accuracy and reliability (Dickinson, T.L., 1993 in Sharma, 2016, p. 225; Folger, 1994). Yet, related to validity, numerous appraisal studies suggest that the criteria to evaluate performance are not perceived to adequately reflect the actual work that is performed (McGregor, 2013; Pettijohn, L., Parker, Pettijohn, C., & Kent, 2001).
Research conducted to illustrate the implementation of performance measurement is primarily with jobs that involve measurable contributions, such as frequency of task performed, and standard quantitative metrics, such as sales and profit (Thomas & Baron, 1994; Ramirez & Nembhard, 2004; Arsalan, Dahooei, & Shojaei, 2014). The evaluation is primarily described in terms of what can be directly observed or reported. This aligns with the focus of academic research on performance appraisals that seeks to measure “true” performance by dissecting the job into its component parts of knowledge, skills, attitudes, and behaviors (Fletcher, 2001; Thurston & McNall, 2008).

Kuvaas (2007, p. 378) noted that performance appraisal research has shifted from a reductionist view of “psychometric and evaluation issues”, to the roles of performance appraisals as motivational and developmental tools. Fletcher (2001) acknowledged the movement away from a limited preoccupation on psychometric interests, toward more relevant and broader research that encompasses motivational and developmental factors. However, given organizations’ continued dissatisfaction with performance appraisals as a performance management tool, Fletcher (2001) did not claim that this shift in research has led to more successful practice.

With increasing attention on how performance appraisals impact motivation and development, research has encompassed a broader theoretical base to include motivational theories, motivation climate, and an interest in employee perception of the appraisal process (Fletcher, 2001; Keeping and Levy, 2000; Kuvaas, 2006). This attention is driven by the recognition that employees that are satisfied with the appraisal system and deem it to be fair are more likely to accept feedback and be motivated to perform (Dusterhoff et al., 2014; Giles & Mossholder, 1990; Keeping & Levy, 2000). Principles on fairness are further developed within the body of literature on organizational justice (Lind, 1988; Thibaut & Walker in Colquitt, J.A., 2001).

Theory suggests that employee reactions to the appraisal are determinants of whether the appraisal outcomes are accepted (Armstrong, 2009; Keeping & Levy, 2000; Reilly, S.P., Smither, J.W., & Warech, M.A., 1998). For employees, perceptions associated with the appraisal system have far-reaching impacts on their subsequent motivation, relationship with the manager evaluating their performance, and satisfaction with the job and organization at large (Folger & 1994; Thurston & McNall, 2010). According to Bretz, Milkovich, and
Read (1992), managers view employee perception of fairness as the most critical issue in conducting performance appraisals (p. 332).

To link performance appraisals more explicitly to an organization’s strategic objectives, a customary practice is for companies to identify key performance indicators (KPIs) and critical success factors (CSFs). This movement has been heavily promoted in business press, such as the *Harvard Business Review*, and has featured Kaplan and Norton’s (1996) recommendations on performance management using their Balanced Scorecard. The practice of tracking and recognizing team performance has also become increasingly important (Doerr, 2018). According to Doerr, the most successful companies make use of team goal setting to garner collective commitment, rather than using goals as a vehicle for linking rewards and promotions.

In his book on the next generation of performance management, Alan Colquitt, (2017) presented evidence-based paradigms for changing flawed assumptions and beliefs that underlie performance management systems. Colquitt’s meta-analysis of research from the past 70 years suggested that most of the current performance management practices stem from dated principles in psychology and economics, such as behaviorism in the 1940’s and Frederick Taylor’s concepts of scientific management in the early 20th century.

**The Nature of Knowledge Work**

While traditional performance systems are still under review by academics and practitioners, the nature of human-centered work has evolved. The service sector exceeded the wealth generated by the manufacturing sector in 1956, often referred to as post-industrial society (Naisbitt, 1980). Prior to this event, workers were primarily classified into two groups based on the type of job they performed (Beruvides & Sumanth, 1987, cited in Thomas & Baron, 1994):

- “blue-collar” jobs, representing manual work that involved physical labor that may be skilled or unskilled, or
- “white-collar” jobs, describing work typically performed in an office environment: professional, managerial, or administrative.
The design of blue-collar work embraced the production efficiencies of Frederick Taylor’s scientific management principles in the early 1900’s. Small, basic tasks were created to minimize skill requirements, and maximize output and profit (e.g., assembly-lines). In contrast, white-collar work was described as “thinking work”, and outpaced the manufacturing sector as the U.S. service sector saw steady growth.

Drucker has been given credit for coining the term “knowledge worker” to describe employees who use and develop information to engage in problem-solving and creative thinking (Drucker, 2002). In 1968, Drucker predicted that the challenge for the 21st century would be to manage the performance of the knowledge worker (Drucker, 1973). Reports on the increasing percentage of knowledge work in the United States varies across sources, as the U.S. Bureau of Labor Statistics does not specify “knowledge work” as a category (Spira, 2005). It is estimated that anywhere from 50-75% of the jobs in postindustrial economies represent knowledge work (Nickols, 2009; Ramirez & Nembhard, 2004). For the United States, estimates of the number of jobs held by knowledge workers show incremental growth from 1950-2000 (Wolff, 2005). Drucker wrote about the significance of knowledge work and its impact on the 21st century as early as the 1950’s; however, his views did not stimulate widespread academic research until decades later.

In the 1990’s, Davenport’s research resulted in seminal works on the power of information technology as a driver for businesses to adopt analytics. He described how analytical capabilities made possible by technology impact organizations and the changing nature of work. Although there are inconsistencies in the literature regarding what constitutes knowledge work, Davenport’s definitions are extensively cited in academic literature for describing the knowledge worker profile: high degrees of expertise, education, or experience, with a primary focus on creation, distribution, or application of knowledge (Davenport, 1998). The intangibility of knowledge work is reinforced with the description that it is work largely “done in the head” (Zand, 2010).

Although this literature review focuses on human-centered work, the increasing influences of artificial intelligence (A.I.) and machine-centered work should be acknowledged. Mindell (2018) emphasized

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1 http://www.businessdictionary.com/definition/Taylorism.html
the far-reaching implications of changes in technology: “…change the technology and you change the task, and you change the nature of the worker—indeed you change the entire population of people who operate the system.”

Management of knowledge work requires tools to measure work that is often less structured, is non-routine, relies on employee judgment and expertise, and is performed with greater autonomy (Davenport, T.H., Thomas, R.J., & Cantrell, 2002; Thomas & Baron, 1994). Furthermore, people who perform knowledge work often do so with less tangible inputs and outputs, and typically resist structured approaches to work (Davenport et al., 1998; Drucker, 2002). Longenecker and Gioia (1992) described the irony as one climbs the corporate ladder within a corporation, the quality of feedback and evaluation of performance diminishes. Longenecker and Gioia (1992) argued that even though executive roles are less defined and structured than other roles, the need and desire for performance feedback is ever-present.

Kelloway and Barling (2000) provided a meta-analysis of the definitions of knowledge work that builds on and broadens Davenport’s definition. Their conceptual framework went beyond a profile or profession, to a “dimension of work,” by means of the following activities:

1) creating new knowledge,
2) applying existing knowledge to problem solving,
3) teaching or transmitting knowledge,
4) acquiring knowledge through research and learning.

In addition to the challenge of managing knowledge work, it can be difficult to objectively measure performance (Davenport et al., 1996, Nickols, 2000; Thomas & Baron, 1994). Drucker (1996) proposed that the outcomes of knowledge work processes defy standardization and measurement. In terms of identifying the essential elements of a job, knowledge workers are often the best source to define the tasks and priorities of the work (Drucker, 2011, p. 85; Kuvaas, 2004). Knowledge workers determine how they respond to work situations by making the choice of what job tasks to undertake and what methods to use to successfully meet job requirements (Gregerman, 1981).
Measurement of Knowledge Work

When measuring performance, some researchers have argued that knowledge workers are the best source to evaluate their own performance (Jääskeläinen & Laihonen, 2013). For collective efforts, it may be valuable to incorporate other members involved in the process of evaluation. However, peer evaluations involve subjective measurement that is difficult to compare and may not be credible to the knowledge worker being evaluated (Jääskeläinen & Laihonen, 2013).

The two main classifications of assessment models are performance assessment models and value assessment models. Performance assessment models assess to what degree and to what level of quality a specific job is completed. There is a significant body of research that attempts to quantify the outputs and standardize the measurement for knowledge work (Arsalan et al., 2012; Ramirez & Nembhard, 2004; Thomas & Baron, 1994). It should be noted that, within the context of the manufacturing sector, performance is more specifically defined as productivity, with an emphasis on quantitative measurement using engineering principles (Ramirez & Nembhard, 2004; Thomas & Baron, 1994).

Conventional wisdom suggests that any measurement is better than no measurement. The U.S. Army Corps of Engineers examined the literature on productivity measurement in knowledge work environments (Thomas & Baron, 1994). Although the intent was to improve productivity measures for the growing percentage of knowledge workers in the military, Thomas and Baron (1994) noted each job was context-specific. The following eight components were identified to categorize types of knowledge work (Thomas & Baron, 1994, p. 19):

- Knowledge Use,
- Decision-Making,
- Complexity,
- Time per Job,
- Degree of Repetition,
- Volume,
- Skill (Physical Activity vs. Mental Activity), and
- Degree of Structure

As previously mentioned, there is a general agreement that productivity of knowledge work is more challenging to measure. However, researchers and practitioners are divided as to whether it is worth the effort
(Chew, 1988). In their summary report for the U.S. Army, Thomas & Baron (1994) identified a variety of methods for each context and suggested that more creative ways are needed to measure knowledge work.

There is general agreement that methods to effectively measure knowledge work are lacking; no universally accepted approaches or categories of practice exist (Drucker, 1999; Ramirez & Nembhard, 2004; Thomas & Baron, 1994). Although performance assessment models may be relevant for certain types of knowledge work, there is a body of researchers that express concern when applying quantitative measures or industrial engineering principles to knowledge work (Arsalan et al., 2014; Drucker, 1999; Jääskeläinen, Aki & Laihonen, H., 2013; Klassen et al., 1998; Moussa et al., 2016; Pepitone, 2002). In contrast, value assessment models look at the value, or qualitative output created by the individual and/or organization. Qualitative measurement methods tend to measure relative productivity for a specific context (Ramirez & Nembhard, 1994; Thomas & Baron, 1994). In Ramirez and Nembhard’s (2004) taxonomy on measuring knowledge worker productivity, the researchers reported only 21% of the methodologies include qualitative measurements (p. 618), yet more than two-thirds of the work force is made up of knowledge workers. In contrast to eliminating bias for objective performance measurement, research on performance appraisals increasingly looks at the notion of fairness as conceptualized by the body of justice theory literature.

Justice Theory Literature

Organizational justice theory stems from and is related to numerous constructs in the social sciences, such as social exchange theory, psychological contracts, expectancy theory, and theories of equity.

Theories of Equity: Fairness and Reciprocity

Equity theory developed in the 1960’s by Stacy Adams and is often referred to as a foundation of organizational justice theory. Its central tenant is that people seek a fair distribution of resources implicitly “measured” by the ratio of costs versus benefits (Greenberg, 1990). Theories of fairness and reciprocity have replaced classic economic models that posit motivations to be exclusively generated by self-interest (A. Colquitt, 2017). Organizational behaviorists have applied equity theory to the workplace as employees seek a fair relationship between the inputs they provide the employer versus the benefits (outcomes or rewards) they receive. If an employee believes that an equitable relationship exists, then the employee is motivated to keep
the balance of fairness by performing well. The theory also considers referent comparisons where employees shape their perception of fairness by how their rewards compare with their peers (Greenberg, 1990).

The application of justice theory to performance appraisal systems is prevalent in the literature from evidence that employees are more likely to accept the outcomes of an appraisal when they believe the system to be fair (Chun et. al, 2018; Tyler, 19). Generally, the greater the perceived fairness, the more satisfied the employee is with the outcome. From the strength of these findings, Folger and Cropanzano (1998) proposed that the presence of fairness was a stronger foundation for managing people than financial rewards (as cited in Armstrong, 2009). The influence fairness perceptions have on the success of appraisal systems has gained attention from both researchers and practitioners (Jawahar, 2007). This marks a shift in focus from earlier research on creating an objective evaluation process that measures “true” performance.

Employee perceptions of fairness involve a dynamic process of cognitive responses that are highly sensitive to the context (Keeping & Levy, 2000). The appraisal literature includes research on the dyadic relationship between the employee and appraiser, often referred to as leader-member exchanges.

**Social Exchange Theory**

Social exchange theory seeks to explain the impact of social interactions in the form of processes that rely on reciprocal benefits. In the case of appraisals, the theory applies to social exchanges in the form of negotiations between the evaluator and the person being evaluated, (i.e., leader and member). A large body of research incorporates the social exchange theory, starting with Homan (1981). Homan introduced three propositions that involved success, stimulus, and deprivation – satiation. The constructs most directly associated with performance appraisals centers on the proposition concerning success and reward situations: if someone is rewarded for a certain action, they will repeat that action. More recent contributions involve the concepts of self-interest and interdependence (Roloff, 2015).

**Psychological Contracts**

Psychological contracts can be viewed as a specific construct within social exchange theory as it pertains to the process of negotiating exchanges between the employer and employee. Much of the existing research on this phenomenon has been conducted by researchers in work and organizational psychology.
Although there are several definitions of “psychological contract,” Denise Rousseau’s definition is most widely cited and valued for its specificity: the individual’s beliefs of mutual obligations in the relationship between employee and employer (McDermott, Rousseau, & Flood, 2013).

In the absence of specificity in the formal contract, there are relevant constructs implied in the psychological contract (Rousseau, Hansen, & Tomprou, 2018). Unlike the objective truth sought in earlier research on performance appraisals, the psychological contract focuses on the subjective exchange relationship between the employer and employee.

There is a growing conceptualization of the psychological contract as a determinant of attitudes and behavior in recent research (Harrington & Lee, 2015; Katou, 2015); perhaps this is where the research on performance appraisals and psychological contracts has the greatest potential to intersect. Yeh (2011) presented an interesting example of bridging the objective and subjective elements of evaluations and elements of the psychological contract in his research on quantitative productivity measurements (referred to as “in-role” behaviors) juxtaposed against organizational citizenship (referred to as “extra-role” behaviors).

However, to contrast this possible intersection between psychological contracts and productivity; the market model suggests knowledge worker loyalty is bound to their profession, more than to their employer (Cappelli & Conyon, 2018). Knowledge workers possess capabilities of an intellectual nature as a powerful resource they themselves own, as opposed to the organization (May, Korczynski, & Frenkel, 2016). The implications of psychological contracts have re-emerged in recent research as the changing nature of the work includes more project-specific contracts and knowledge workers with portfolio careers (also referred to as the “gig” economy) (Kuhn, 2016).

The literature on the impact of psychological contracts on performance evaluations focuses on employee perceptions of the implicit expectations that accompany the employment contract. Justice theory suggests that the psychological contract plays a pivotal role in employee perception of whether the appraisal was fair. However, critics question the added value of the concept of a psychological contract if it can only be explained through other theories and constructs (Guest, 1998).
The Evolution of Justice Theories Literature and Justice Domains

Justice theory and the validation of justice dimensions have developed as constructs in the social sciences since the 1970's. Early justice research focused on distributive justice as it pertains to the perception of fairness of decision outcomes, such as pay (Colquitt J., 2001). The next wave of justice research addressed procedural justice or the fairness of processes that lead to a decision, and whether those impacted by the decision have a voice (Leventhal, 1976). Distributive justice has been closely linked to individual or person-referenced perceptions, whereas procedural justice is typically linked to perceptions of the organization and authority (Sweeney & McFarlin, 1992).

More recently, the notion of interactional justice was introduced as an additional dimension to capture the behaviors and communication style used to deliver the decision. Some researchers have treated the interactional justice dimension as a subset of procedural justice, whereas Greenberg (1990) split interactional justice into two new dimensions: “interpersonal” and “informational,” for a total of four distinct dimensions:

- Distributive justice,
- Procedural justice,
- Interpersonal justice, and
- Informational justice.

Given the reported results of high correlations amongst the four dimensions, there is an ongoing debate over whether a one-, two-, three-, or four-factor perspective is the best model for justice research (Colquitt J., 2001). Furthermore, Ambrose and Cropanzano (2003) raised the concern that, although researchers have identified and defined various distinct justice dimensions, the subjects of the research (i.e., individuals responding to a survey) may perceive the same event from different justice perspectives without distinguishing between procedural and distributed justice.

The lack of consensus by researchers on the constructs of the organizational dimension of justice is confounded by various levels of measurement. The perceptions of individuals (e.g., an employee’s judgment of whether a manager acts fairly) require separate constructs of measurement to perceptions of an organization (e.g., judgments of whether organizational procedures are created and distributed fairly).
Furthermore, Greenberg proposed that the justice construct might be context-specific; therefore, a standardized instrument to measure justice construct validity may not be possible (Greenberg, 1993).

In addition to notions of fairness, research has shown that justice perceptions are positively correlated with increased motivation, development, and citizenship behaviors (Folger, 1994). Positive justice perceptions increase commitment, whereas negative perceptions are linked with a greater intent to quit (Pettijohn et.al. 2001; Tremblay, Vandenberghe & Doucet, 2013).

**Motivation and Development**

In addition to fairness, justice theory research alludes to the impact of performance appraisals on employee development and motivation (Fletcher 2001; Kuvaas 2007; Thurston & McNall, 2010). However, there is little research on the application of motivation theories as it pertains specifically to knowledge workers (Mládková, Zouharova, & Novy, 2015). Expectancy and self-determination theories are presented as general frameworks used to study so-called “talented workers” (Schneider, 2006).

**Vroom’s Expectancy Theory on Motivation**

Vroom’s expectancy theory (1964) on motivation dissected the cognitive processes associated with the elements of effort, performance, and outcomes (Van Eerde & Henk, 1996). Vroom proposed that an individual’s behavior is a product of conscious decisions that he or she voluntarily exercises. These intended choices are made to maximize desirable outcomes, based on the individual’s perceptions of the given situation. Expectancy Theory supports the theoretical construct for organizations to base their rewards on performance, and to ensure these rewards are justified and valued by the employee. Vroom translated this construct using three variables: expectancy, instrumentality, and valence (Walkley, 2008). The premise is that the employee will put in the effort if the outcome is worth it.

Critics such as Lawler & Suttle (1973) believed that Vroom’s model was too simplistic for suggesting that performance can be improved by merely providing greater rewards. The practice of offering financial rewards with the expectation it will lead to increased performance is a widespread practice. Lawler and others have built upon this model to include additional conditions, such as individual preferences, values, and expectations, which increase the complexity of the original model. Extensive research on motivation exists on
the limitations of financial rewards as a motivator; a clear distinction is made between intrinsic and extrinsic motivation. Self-motivated, or intrinsic motivation, overlaps with theories on organizational commitment behaviors (OCBs), whereas external, or extrinsic, motivation, such as financial rewards, has short-term effects that may not necessarily result in employee commitment to the organization (Gagné & Deci, 1999).

**Self-determination theory (SDT)**

Self-determination theory (SDT), developed by Deci and Ryan (2008), is classified as a theory of motivation within the organizational sciences and is one of the most researched theories on needs, along with Maslow’s (1943) hierarchy of needs. SDT names three psychological needs:

1. Autonomy – control of one’s own life (free will),
2. Competence – the ability to master one’s environment,
3. Relatedness – the ability to form relationships with others.

Needs are defined as conceptualizations of experiential requirements that facilitate humans’ natural tendency to grow and develop (Deci & Ryan, 2008). According to the results of a meta-analysis, SDT needs are related to organizationally relevant outcomes, such as task performance, engagement, well-being, and satisfaction (Van den Broek et al., 2016). SDT theory suggests optimal performance will be achieved when the three needs of autonomy, competence, and relatedness are met. However, there is debate among researchers: there may be additional fundamental needs (e.g., the need for experiencing meaning at work) that go beyond those described in SDT to explain motivation at work (Hackman & Oldham, 2010).

**Herzberg's Motivators and Hygiene Factors: Two-factor Theory**

As a means for understanding employee satisfaction, Frederick Herzberg concluded there are factors that contribute to job satisfaction that are separate and distinct from factors that contribute to job dissatisfaction (Marcouse, 2007). He described this finding as a dichotomy of satisfiers and dissatisfiers, existing on two separate continuums.

The dissatisfiers were labeled hygiene factors, and include work dynamics such as company policies, work conditions, supervision, salary, and status (Herzberg, 2003). Herzberg described these hygiene factors as environmental issues that when absent, result in dissatisfaction. In contrast, the satisfiers include factors such as achievement, responsibility, and recognition, and meaningful work (Herzberg, 1966). These are
compatible with Abraham Maslow’s self-actualization descriptors in his hierarchy of needs construct (Maslow 1948).

The two-factor theory states the elimination of the causes of dissatisfaction will not result in satisfaction, and the creation of satisfiers will not remedy dissatisfaction factors. Herzberg suggests enhancing job satisfaction requires a two-step process: the first step is to eliminate dissatisfiers, followed by the second step of building conditions for job satisfiers (Herzberg, 2003).

Herzberg’s two-factor theory draws criticism on his assumption that there is a strong correlation between job satisfaction and productivity that is not explained in his research (House and Wigdor, 1967). Also, Herzberg’s dual-theory is criticized for not suggesting that sources of motivation may vary from one individual to another (Sachau, 2007). However, Herzberg’s two-factor theory continues to be cited as a formative theory on motivation and job satisfaction (Herzberg, 2003; Zink, 2008).

Summary of Literature Review

The literature on fairness, known as organizational justice, stems from social justice and equity theory in social contracts. Early applications of justice theory in organizations focused on the distribution of rewards, such as salary and promotion (distributive justice), and are linked to person-referenced perceptions. In the context of performance appraisals, this relates to the person conducting the evaluation. Procedural justice emerged from the literature on legal justice (Thibault & Walker, 1975) in organizational research of fairness in decision-making processes, such as performance (Folger, 1994).

Performance appraisals are progressively considered part of a broader scope of human resource management strategies referred to as performance management (Armstrong, 2009; Bretz et al.1992; Fletcher, 2001: Sharma et al., 2016). The perspective of research on performance appraisals has shifted from assessing an objective reality to the use of performance appraisals as a tool for motivation and development (Fletcher, 2001). Extant justice literature provides theories and methods to improve the processes and perceived value of the appraisal with the goal of increasing employee satisfaction toward work, supervisors, and organizations. The relationships between perception of fairness and satisfaction with performance appraisal is most commonly researched as an instrument for improving productivity, but also as an effective tool for motivation and
Justice theory constructs have been tested and validated across a variety of industries and job roles (Birecikli et al., 2016; Colquitt, J. 2001; Thurston & McNall, 2010). The sampled populations cited in the literature comprise a mixture of job roles, often across more than one industry, to demonstrate potential generalizability. Although justice theory research has tested specific segments of the workforce, the results were analyzed primarily for generalizable applicability of the constructs. For example, Thurston and McNall (2010) surveyed 188 employees from four different organizations with four different appraisal systems, representing a mixture of skilled and semi-skilled roles that encompassed both task-based and unstructured work. The subsequent results were amalgamated to test construct validity in relationship to affective and behavioral responses.

Research on justice perceptions of performance appraisals has focused predominantly on validating the justice domain constructs (e.g., distributive, procedural, information, and interpersonal) and the relationships to appraisal system satisfaction, appraisal outcome satisfaction, and member-leader satisfaction (Colquitt, J. 2001; Cropanzano, 2001; Greenberg, 1990, Leventhal, 1980; Thurston & McNall, 2010). As a result, contributions of the justice literature to business practice have resulted in a deeper understanding of the reactions to performance appraisals.
CHAPTER 3: RESEARCH METHODS

Research Overview

A mixed methods approach was used to examine knowledge workers’ perceptions of performance appraisals. The research began in doctoral coursework with a qualitative study using semi-structured interviews of knowledge workers. The insights gathered from the exploratory pilot study led to further exploration of the topic by reviewing the literature on performance appraisals. Perceptions on fairness, or justice, emerged as a key topic of appraisal satisfaction in both the literature and the pilot study interviews.

A survey questionnaire was designed to capture knowledge workers’ self-reported perceptions of the appraisal system at the company of interest. The following empirical research examines the relationships amongst three constructs in the context of performance appraisals:

- components of knowledge work,
- justice measures, and
- appraisal satisfaction outcomes.

The research was conducted at a medium-sized, niche consultancy that specialized in data analytics and decision science. For over 20 years, the company had leveraged its patented econometric models and methodologies to provide pricing and analytics expertise to large brands in the food and beverage industry.

Research Methodology

The research steps are outlined chronologically with the following sequence of events in Figure 2.

Figure 2. Research Methodology Time Line
1) April 2017: As part of doctoral coursework, an exploratory study was conducted through semi-structured interviews with five knowledge workers. Insights on their reactions to performance appraisals informed the subsequent review of the literature and serves as the pilot study for this dissertation.

2) May–December 2017: From the results of the pilot study, the literature review was expanded to include three main topics: components of knowledge work, performance appraisals/performance management, and organizational justice theory.

3) January 2018: The company of interest chose to focus on the reactions to their performance appraisal system as the topic for their upcoming annual employee satisfaction survey. The decision was made after reviewing the year-end performance reviews for 2017.

4) March 2018: For survey measures, justice theory constructs were presented and approved by the company’s leadership. The survey proposal was an adaptation of Colquitt’s (2001) summary of seminal research and his validation of justice constructs to measure appraisal satisfaction.

5) March–April 2018: An expert panel was formed to review and develop survey questions within the context of the company.

6) April 2018: The survey was tested on three managers and two employees to check for understanding and meaning.

7) April 2018: The survey was sent company-wide on April 16, 2018.

8) May – August 2018: Analyzed data.

**Input from the Pilot Study**

The pilot study explored the subjective reactions to performance appraisals. Perceptions on performance appraisals were gathered from semi-structured interviews with five knowledge workers that represented a cross-section of jobs in analytics, information technology specialists, and consultants. This preliminary investigation was undertaken to gather insights from newly hired knowledge workers on their previous appraisal experiences with former employers.

The interview questions were purposefully broad to allow the participants to voice what they viewed as important in their appraisal experiences. The following topics were prompted if they did not emerge naturally during the interview discourse.

- procedural information about the performance appraisal system
- employee’s appraisal objective(s)
- performance evaluation outcomes
- impact on motivation
- vision of the ideal appraisal system

The researcher provided the company’s leadership a synthesis of the results along with a summary of Thurston & McNall’s (2010) research on procedural and distributive justice for appraisal practices. These insights led to the decision for a deeper investigation on employees’ perceptions of
the performance appraisal system. The subsequent annual employee satisfaction survey focused on justice perceptions and attitudes towards performance appraisals.

**Empirical Study: Questionnaire Survey**

A questionnaire survey was selected to test the applicability of justice theory (i.e. perceptions of performance appraisal fairness) as it relates to knowledge workers’ appraisal satisfaction.

Previous research findings on appraisal satisfaction typically focus either on sample populations within a single domain (e.g. sales, education), or aggregated sample populations from a variety of industries and/or types of work (Hernaus & Mikulic, 2014). As a result, the findings do not address whether outcomes differ according to the type of work performed. In adapting the survey instrument to the context of the company of interest, the researcher sought to test the applicability of justice theory to appraisal satisfaction as perceived by knowledge workers.

**Research Questions and Hypotheses**

The following research questions and hypotheses guided the empirical study.

- *What is the impact of justice perceptions on performance appraisal satisfaction for knowledge workers?*

More specifically, is there a relationship between justice perceptions and characteristics of the knowledge work (i.e. the degree of work characteristics: structure, measurability, routine, use of one’s own judgement, and predetermined timeframes to complete tasks).

- *Does the perception of justice in appraisals of performance vary depending upon knowledge work characteristics?*

The primary sources for the survey questionnaire were informed through the justice literature and job characteristics of knowledge work. In addition, the potential impacts on development and motivation emerged from the literature on appraisals and was a key discussion point during the interviews in the pilot study.

The study incorporates the characteristics of knowledge work, henceforth referred to as knowledge work components, as a moderating variable (*figure 3*).
Independent variables: Perceptions on justice domains (procedural, informational, and interpersonal)

Moderating (Independent) Variables: Components of knowledge work

Dependent Variable: performance appraisal satisfaction

Hypotheses

H1: procedural and informational justice will be positively related to performance appraisal satisfaction.
H2: knowledge work components will moderate the relationship between procedural and informational justice, and performance appraisal satisfaction.

Expert Panel

An expert panel was formed to develop the survey instrument to measure knowledge workers’ justice perceptions and appraisal satisfaction at the company. The author solicited a panel of four experienced managers at the company of interest; each member had contributed to the company’s prior research on performance metrics, and each was responsible for conducting performance appraisals for several types of knowledge work. The panel studied different versions of questions adapted from seminal research on justice measures across the four justice domains (procedural, distributive, interpersonal, and informational). Jason Colquitt’s (2001) validation of the justice constructs guided the process of adapting the
survey to the context of the company. As supplementary information, the insights from the pilot study were labelled across the four justices and presented by the author to the expert panel.

The survey was tested on three managers at the company for further input before sending out to the entire organization. The survey questions were informed through the literature on justice, performance appraisals and management, and job characteristics that apply to knowledge work.

**Survey Structure**

The general property of the justice construct comprised a conceptualization of perceptions of fairness procedures. The unit of analysis was viewed at the individual level.

Justice measures were selected to reflect the perceptions of the appraisal system at the company of interest across the four justice domains. Data was acquired through a 5-point Likert scale to gauge the strength of agreement. Measures ranged from *totally disagree* to *completely agree* (see Appendix A for the complete survey instrument). This is consistent with Colquitt’s (2001) construct validation of justice measures that were adapted from seminal research for the setting of his studies.

Perceptions on the characteristics of knowledge work also employed a 5-point Likert scale. The structure of these response scales is consistent with the research on job design and the Work Design Questionnaire (WDQ) created by Humphrey & Morgeson, (2006). Perceptions were represented with discrete ordinal numbers, and responses were mapped with assigned values to signify strength of positive or negative agreement. Nature of work questions were positively worded whereby stronger agreement shows greater presence of the work characteristic (Humphrey & Morgeson, p. 1324).

**Procedural Justice**

The justice measure items were chosen from seminal research by Thibaut & Walker, 1975; Leventhal, 1980; Bies & Moag, 1986).

**Adaptations to Company Context**

Within the company, each employee reported to one team leader whom they depended upon for the allocation of work, on-the-job training and development, interaction with the client (if applicable), as well as feedback. The team leader served as the primary source for all matters relating to performance discussions
and the appraisal process. The leader-member exchange in this consultancy was defined by a single person (team lead) as the main source of input for all performance matters. In determining appraisal satisfaction outcomes for the procedural, informational, and interpersonal, domains, the panel identified the team leader as the key reference for these three domains.

**Procedural Justice Measures**

Given the comprehensive role of the team leader in the implementation of performance appraisals, the panel voiced different interpretations of whether certain measures applied to the informational or interpersonal justice domain. Some of the justice measures were rationalized as applicable to both justice domains since information was primarily communicated by the team leader. For example, “my team lead frequently provides information I can use to improve my performance” is identified in the literature as an informational justice measure (Shapiro, Buttner, & Barry, 1994). Panel members expressed the relevance of this measure to perceptions on interpersonal justice as well.

In the company’s appraisal context, both informational and interpersonal justices involved team leader-member exchanges. As a result, the panel chose to collapse these two justice domains into one construct, henceforth identified as “informational justice”.

Past research suggests multiple interpretations is a common outcome given that justice measures are context specific (Greenberg, 1993; A. Colquitt, 2001; MacKenzie, Podsakoff A., Podsakoff N; 2011). Since the constructs are highly correlated, interpretations are often subjective, and potential overlap between justice domains exist (Bies & Moag, 1986; Greenberg, 1993; J.A. Colquitt, 2001). Different views are represented in the body of justice theory as to whether researchers should consider one, two, three, or four discrete justice domains. From the literature review, it appears the choice and number of justice domains in any given study depends upon the context and the interpretation of the researcher (Bies & Moag, 1986; Greenberg, 1993; J.A, Colquitt, 2001).

The panel also eliminated several questions they felt were repetitive, or not relevant. For example, “the team leader treated you with respect” was chosen to represent four related questions as measures of
interpersonal justice (Leventhal, 1976). The panel cited survey fatigue as a primary reason for eliminating related questions on dignity, politeness, and the use of appropriate remarks.

As a result, procedural justice was measured using a five-item scale adopted from the seminal research by Thibaut & Walker (1975) and Leventhal (1980). Informational justice included both interpersonal and informational measures in a four-item scale adopted from Bies & Moag, 1986 and Shapiro et al., 1994.

**Distributive Justice**

Research on distributive justice is linked to the allocation of outcomes and stems from the principles of the equity theory: workers weigh the inputs and contributions they provide the employer against the rewards, resources, and benefits they receive (Leventhal, 1976). However, the company did not directly link the annual appraisals with rewards such as financial compensation or promotions. Although the validated construct measures of procedural justice were largely applicable to the given organizational context, the panel had difficulty in identifying distributive justice measures that were relevant to the company’s appraisal system.

**Adaptations to Company Context**

The company’s annual appraisal process included a standard template of open questions that served as a guide for narrative from both parties, the employee and the team leader (see Appendix B for the annual process template). Individual rewards were contingent on a combination of performance and market conditions that were determined and communicated separately from performance appraisal conversations.

Most of the literature on distributive justice is with the goal of increasing productivity through the distribution of rewards (Jason Colquitt, 2001). In contrast, the panel reaffirmed the company’s purpose for conducting appraisals was to improve performance. It could be reasoned that performance improvement typically led to improved productivity, however, this was not always the case. For example, an employee’s performance may have improved by becoming more accurate, however, the result may have taken longer to complete. “Productivity” implies efficiency and quantitative measures; whereas “performance” encompasses a broader scope of activity that may be qualitative and/or quantitative (Baron & Thomas, 1994). Given the company’s choice to link rewards with additional sources for decision-making that went beyond performance
appraisals, the panel was not able to define distributive justice outcomes. As a result, this study does not include distributive justice measures.

**Appraisal Outcomes**

The panel discussed the interpretation of what signified the allocation of appraisal outcomes given there were no ratings nor employee rankings; and that pay increases and promotions involved several other processes that were separate from the annual appraisal. The company had placed the focus of appraisals on the management of work and individual progress on stated goals. In addition to performance, the company relied on the specific needs of the client. Opportunities to demonstrate capabilities were reviewed continuously and distinctly from the formal annual appraisal (e.g. acquisition of new skills, client feedback, etc.). This supported some researchers’ recommended practice to focus appraisals on improving performance rather than seeking to address a multitude of objectives and solutions with a singular appraisal process (A. Colquitt, 2017; Randell, 1973).

The author summarized the following examples from the literature for the panel to consider. Colquitt (2001) used Leventhal’s seminal research (1976) on justice measures to compare the results from justice measures with questions on overall satisfaction. In one of the two sample populations studied, Colquitt tested measures on distributive justice with the following two outcome satisfaction questions posed to undergraduate students evaluating a management course: “The grade I am currently receiving in this course is acceptable”, and “I am satisfied with my current grade in this course” (Colquitt, 2001, p. 389). Colquitt’s survey also posed three leader evaluation questions: “I really liked my instructor”, “I thought my instructor was a good one”, and “I would probably recommend my instructor to my friends” (Colquitt, 2001, p. 389). In Colquitt’s second sample population of workers in manufacturing of automobile parts, he posed a series of outcome satisfaction questions that were related to pay and rewards.

**Appraisal Satisfaction Outcomes**

Given the specific context of the company’s appraisal system, the panel researched the organizational goals as expressed by leadership. From a review of the company’s documentation on the appraisal system, three outcomes were communicated internally: articulate job requirements and expectations, assess the quality
of work contributions and provide feedback for future performance. The panel summarized the organizations’ intended appraisal outcomes as the team leader’s ability to:

- evaluate relevant job requirements and responsibilities,
- recognize contributions, and
- provide constructive feedback.

The panel defined overall appraisal outcome satisfaction on how well the individual perceived the appraisal feedback captured the quality of their work. The question was posed in the survey as follows: “My performance appraisal reflects the quality of my contributions to the company”.

Colquitt’s (2001) “leader outcome” measures for the instructor were adapted to the team leader who evaluated the employee’s work. To fit the context of the company’s work environment, the panel agreed upon the following leader outcome questions: “My team lead understands the requirements and responsibilities of my work”, and “I believe my team lead is the most appropriate person to provide feedback on my performance”.

Although the distributive domain was relevant for traditional appraisals systems that allocate rewards and compensation, this was not applicable to the company of interest. There were no tangible outcomes “distributed” solely as a result of the appraisal. Instead, the panel focused on the outcomes of the appraisal system at large. This led to the identification of appraisal satisfaction. The panel referenced the intended outcomes of the appraisal system communicated by the company’s leadership. A 3-item scale was used to measure appraisal outcome satisfaction (see italicized statements above).

Knowledge Work Components

To explore justice perceptions in the context of knowledge work, this empirical study examines the work characteristics associated with the employees at the company of interest. A preliminary survey was sent to twelve team leaders with the eight dimensions of knowledge work identified by Baron & Thomas (1994) in their research for the US Army.

- Knowledge Use
- Decision-Making
- Complexity
- Time per Job
- Degree of Repetition
- Volume
- Skill (Physical Activity vs. Mental Activity)
- Degree of Structure.
Upon receipt of the survey, all twelve team leaders were invited to attend an informal meeting to discuss in more depth with the expert panel. Eleven team leaders attended, representing all departments except administration and executive leadership.

The participants were asked for feedback on which characteristics contributed to describing the unique attributes of the work their team performed. The dimension on “volume of work” was deemed to be too ambiguous and instead “measurability” was recommended. The dimension on decision-making was confusing as many felt the client ultimately determined what the consulting division worked on. Instead, the ability to use one’s own judgment in getting the job done was suggested to better represent what was described as autonomy in fulfilling the clients’ expectations.

The dimensions of “use of knowledge” and “complexity” solicited divergent views. “Use of knowledge” was described as superfluous given the nature of the company as a consultancy that relied on quantitative analyses and logic. The belief was that employees would feel compelled to respond with a maximum score, as the company’s ethos revolved around the theme of scientific knowledge. Also “complexity” was viewed with subjective interpretations without a common context to guide the response. A deeper discussion ensued where several team leaders felt dealing with the client was far more complex than dealing with data, and therefore felt the term was too vague. The following five dimensions were perceived to be the least ambiguous and resulted in commonly understood concepts as they pertained to the work they performed:

- Structure
- Measurability
- Routine
- Use of one’s own judgement
- Predictability of timeframe to complete majority of tasks

The questionnaire opened with five introductory questions on these five dimensions of work. The responses to these questions served to categorize, in relative terms, the self-reported degree to which the respondent’s work reflected the attributes of knowledge work.

Given the variety of definitions for knowledge work in the literature, there is no single, overriding attribute used to describe knowledge work. However, “unstructured work” is featured as a key component
found in earlier literature to describe knowledge work (Drucker, 1999; Davenport, 1998; Thomas & Baron, 1994; Beruvides & Koelling, 1992). The researcher tested the phrasing of the questions on five employees from different departments and whom had not been involved in prior discussions about the survey.

From the results of testing the survey, “structured work” was not commonly understood. An employee in the IT department associated structured work with data types; structured versus unstructured. This describes whether the data is organized within a data model, and the implications for creating a database. The focus was on the data rather than characteristics of the job. Another meaning of work structure was expressed by an analyst. He described how he created structure in work by methods to organize multiple tasks in parallel. The inference was that unstructured work represented chaos that might be remedied with better organization.

Rather than focusing on a leading indicator such as work structure; the hypotheses were revised to test relationships with justice perceptions for all five components of knowledge work characteristics.

As per Colquitt’s literature review (2001), the researcher acknowledged the importance of applying what Lind and Tyler (1988) define as the “indirect question” in social psychology. Rather than asking direct questions on a given perception, the questions focus on the underlying criteria that make up the construct. The purpose of indirect questioning is to limit the over-reporting of values that are congruent with what is socially or professionally desirable. This technique was adopted for the questions that replicated validated construct measures for work components and the justice perceptions, as well as the interview questions in the pilot study.

Particular attention was given to the characteristic of autonomy as one of the most widely studied work characteristics (Campion, 2006). The characteristic of autonomy is often associated with three related elements: work methods, work scheduling, and decision-making (Morgeson & Humphrey; 2006). Given the specific context of the company, the focus was on the use of independent judgement on the appropriate work methods and decision-making. Rather than using the word autonomy, the question appear as follows: “I rely on my own judgement when determining the information or specialized skills needed to complete my job”.

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Two additional questions were posed to obtain general attitudes, or beliefs on performance appraisals as developmental and motivational tools. From the literature review, research suggests justice perceptions are positively correlated with increased motivation and development (Folger, et. al, 1992). These questions were not part of the justice construct nor the characteristics of work, however of interest to the company.

Survey Instrument

The data collection process began in April 2018 when the self-administered questionnaire was sent electronically to all employees at the company of interest. With the approval of the company’s leadership team, feedback on employees’ perceptions of the performance appraisal system was chosen as the topic for the annual employee satisfaction survey. As per the previous five years, the creation and distribution of the survey was a responsibility the researcher assumed within her role at the company of interest. Each year, the annual employee satisfaction survey focus changed, but the survey format was largely the same: participation was strictly voluntary, anonymous, and the survey was not to exceed 10 minutes to complete. Although the topic of performance appraisals had been a factor of the surveys in the past, this was the first instance where perceptions on team leader performance and perceptions of fairness were explored.

The survey was sent to all 152 employees at the company of interest via the company’s internal email with a weblink to the questionnaire. A similar format as prior annual satisfaction surveys was adopted: an introductory message in the email explained the purpose of the survey and the assurance of anonymity; participation was voluntary; and willing participants were directed to a hyperlink for access to the web-based survey. The researcher sent one reminder email a week later, and after three weeks the survey was closed.

Consistent with previous employee satisfaction surveys, the instrument excluded any personally identifiable information. Descriptive data was limited to classification within three ranges of years of employment, and whether the person had direct reports or not. The first series of questions captured perceptions on the components of the participant’s work. The results served to classify the responses according to the level of knowledge versus task-based work, often referred to as structured versus unstructured work. The second series of questions encompass perceptions on the four domains of organizational justice theory. From the results of the literature review and insights from the pilot study interviews, two additional questions
were posed on perceptions of performance appraisals as tools for development and motivation. The final three questions included an open text field for any additional comments or suggestions, the length of employment, and whether the participant had any direct reports.

Survey Population

The empirical research was conducted with the same company as the interviews for the pilot study. At the time the survey questionnaire was distributed, the private company employed 152 employees. 95 responses were collected for a response rate of 62.5%. As specified in the instructions, participants were able to skip any question(s) they did not wish to answer. This resulted in a range from 84 to 95 responses to each question.

At least 96% of the employees fit Davenport’s definition of knowledge workers: high degrees of expertise, education or experience, with a primary focus on creation, distribution, or application of knowledge (Davenport, 1998). Most job functions involved expertise in one or more of the following: data analytics, data management, software programming, technology specialization, and/or consultancy. Employee roles include data scientists, analysts, statisticians, econometricians, IT programmers, IT technicians, database analysts, consultants, research & development, accountants, and human resource specialists.

By ensuring total anonymity, the following demographic statistics only describe the total population of 152 employees at the time the survey was administered. Gender make-up comprised 67% male and 33% female, with a mean age of 34 years. The average tenure at the company was a little over 5 years. Almost all employees were University graduates. Education was more variable amongst the information technology specialists, including certifications and learning through open-source platforms.
CHAPTER 4: RESULTS

Introduction

The relationships amongst the constructs of knowledge work components, justice measures, and appraisal satisfaction outcomes were analyzed according to self-reported responses to a questionnaire survey conducted at the company of interest; a consultancy specialized in data analytics and decision science.

The survey was inspired by interviews with several employees as part of the researcher’s doctoral coursework. Their reflections on the impact of performance appraisals at their previous places of employment led to further research on the constructs previously mentioned.

The data collected from the structured questionnaire survey was guided by the two hypotheses:

**H1**: procedural and informational justice will be positively related to performance appraisal satisfaction.

**H2**: knowledge work components will moderate the relationship between procedural and informational justice, and performance appraisal satisfaction.

To analyze the relationships between these constructs, composite measures were created for each of the four constructs.

1) knowledge work components (structure)
2) procedural justice (procedural)
3) informational justice (informational)
4) appraisal satisfaction (satisfaction)

Median regressions were used to test the first hypothesis for significant effects. This was followed with a bi-directional stepwise median regression procedure to determine if knowledge work components moderated the relationship between procedural and informational justices and performance appraisal satisfaction.

For analysis purposes, the survey questions *(see Appendix A)* were categorized as follows: questions 1-5 represent knowledge work components and are labeled k1-5; questions 6-23 refer to justice measures and are labeled j1-16; and questions 22 and 23 refer to demographic data and are labeled d1 and d2.
Survey Data Profile and Missingness

Data for the questionnaire consisted of survey responses from 95 knowledge workers on 23 self-report items. The data were tested for Missing Completely at Random (MCAR) using Little’s MCAR test. The results of this test indicated that the missingness within the data could be assumed completely at random ($X^2(382) = 393.9158, p = 0.326$). As such the missing cases merely represented a random subset of the total responses, meaning that use of complete cases only would not significantly bias the results. All cleaning and analyses were conducted using R 3.5.0 (“Joy in Playing”).

As is common in survey research, some of the items of the survey displayed higher levels of missingness than the others. Figure 4 reveals that question j13, “I have the ability to challenge a performance appraisal that I think is biased or unfair” had the highest level of missingness at 21 missing values, which represents a response rate of roughly 78%. As the company of interest has no written process in place to contest appraisal results, this is not surprising. All other items had a response rate above 80%.

More than 58% of the sample provided a complete response to the survey, while 71% left no more than one item blank. In terms of overall survey attrition, six respondents left the survey at the point where questions on the team leader were solicited; “My team lead ensures that expectations on standards of work are set for me at the start of each review period.” A possible rationale for nonresponses to this question involves positions that are created as new business opportunities arise. In the earlier phases the new roles often lack articulation of standards and expectations. One respondent chose to leave the survey near the end, prior to answering the two questions on demographic data: “How long have you worked at RMS?”, “and “Do you have direct reports”. Eighty-eight respondents (almost 93% of the sample) made it to the end of the survey. A plot of attrition is provided in Figure 5.
Figure 4. Item-Level Missingness

Figure 5. Plot of Attrition by Item
Comments and Potential Issues

The data were self-reported, meaning the analyses in this report made the implicit assumption that the responses accurately reflected the thoughts, attitudes, and feelings of the respondents. The sample size was relatively small, limiting the range of statistical options for addressing the primary research questions. A much larger sample would have allowed for the use of Structural Equation Modeling, a procedure better suited for data of this type compared to the median regression procedures used in this report. As per previous surveys within the company, limited demographic data was gathered to ensure total privacy. Therefore, important demographic characteristics (such as age, sex, etc.) were not measured, limiting the focus of analysis possible.

Lastly, many of the items included in the survey were not associated with pre-defined scales. Therefore, the creation of composite measures was necessary for analysis using Item Response Theory.

Descriptive Analyses and Composite Measure Construction

Participants

The sample for the current study consisted of 95 knowledge workers employed by the company of interest. Due to the fact that the missing values could be assumed missing completely at random, only those with a complete response profile were utilized throughout the analyses (both descriptive and inferential) included in this report. Thus, the sample was reduced to 58 observations. While this may seem like a substantial reduction in sample size, it should be noted that case exclusion at the analysis level was explored and often resulted in the use of only 65-70 observations.

Roughly 31% of the sample reported having been with the company for two years or less, while 38% and 31% had been with the company between two and five years and more than five years, respectively. A majority of survey respondents reported having direct reports (59%). No other demographic information was collected as part of the current study. The results of two separate Kruskal-Wallis tests (a non-parametric analog to the more familiar one-way ANOVA) indicated that missingness, here defined as a response left entirely blank or a response in which an “N/A” option was selected, did not differ significantly based on how
long the worker had been with the company ($X^2(2) = 5.359, p = 0.069$) or whether they had direct reports ($X^2(1) = 0.730, p = 0.393$).

**Performance Appraisal Satisfaction Measures**

Performance appraisal satisfaction was measured using three items:

- “My team lead understands the requirements and responsibilities of my work,” (j2)
- “My team lead helps me ensure my performance appraisal reflects the quality of my contributions to the company,” (j7)
- “I believe my team lead is the most appropriate person to provide feedback on my performance” (j16).

Responses to these items ranged from 1 = “Totally disagree” to 5 = “Completely agree.” As can be expected, these items were significantly correlated. Satisfaction item correlations are provided in Table 1, where the upper diagonal contains the Spearman (rank-based) correlation coefficients, while the lower diagonal contains the $p$-values associated with the pairwise tests that a given population correlation coefficient is different from 0. Due to the level of correlation between these items and the benefit of a single measure of satisfaction, a composite measure was created. Item distributions are provided in Figure 6. There, we see that each of the satisfaction items was negatively skewed.

<table>
<thead>
<tr>
<th></th>
<th>J2</th>
<th>J7</th>
<th>J16</th>
</tr>
</thead>
<tbody>
<tr>
<td>J2</td>
<td>1</td>
<td>0.525</td>
<td>0.346</td>
</tr>
<tr>
<td>J7</td>
<td>&lt;0.001</td>
<td>1</td>
<td>0.383</td>
</tr>
<tr>
<td>J16</td>
<td>0.008</td>
<td>0.003</td>
<td>1</td>
</tr>
</tbody>
</table>

**Table 1. Performance Appraisal Satisfaction Item Correlations**
Graded Response Models (GRM) are a type of Item Response Theory (IRT) Model often used in the field of psychometrics to create, analyze, and score measures involving ordinal variables. Two GRM models were fit to the responses of the three satisfaction items, one with a constrained discrimination parameter and another without such a constraint. A likelihood ratio test revealed that the discrimination parameter could be constrained without a significant reduction in model quality ($X^2(2) = 1.00, p = 0.607$). The parameters for the resulting model are provided in Table 2, where the discrimination parameter (denoted as $D$) represents a slope for the difference between respondent ability and item difficulty, while the extremity parameters (denoted as $E$) represent the standardized latent satisfaction score at which respondents have a 50% chance of choosing an option at or above a given value. For instance, respondents with a latent satisfaction score of -0.52 had a 50% chance of responding to item j2 with a 3, 4, or 5 (somewhat agree or above). According to Baker (2001), a discrimination parameter above 1.7 is considered very high (i.e., the scale does a good job of discriminating between individuals). A test information curve is provided in Figure 7 below, where we see most of the information provided by the composite satisfaction measure was below the mean of respondent
scores. Therefore, estimations of the latent ability for responses below the mean will be more precise than those above the mean. A check on the two- and three-way margin residuals indicated that model fit was not an issue. Unidimensionality was assessed by way of a scree plot based on the polychoric correlation matrix of the satisfaction items. The plot indicated a single-factor structure. The satisfaction composite distribution in Figure 8 is more uniform than in the raw data.

These tests support the reliability of using a constrained, one-parameter logistic model to produce an appraisal satisfaction composite.

Table 2. Performance Appraisal Satisfaction GRM Results

<table>
<thead>
<tr>
<th>Item</th>
<th>( D )</th>
<th>( E1 )</th>
<th>( E2 )</th>
<th>( E3 )</th>
<th>( E4 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>J2</td>
<td>1.90</td>
<td>NA</td>
<td>-2.01</td>
<td>-0.52</td>
<td>0.36</td>
</tr>
<tr>
<td>J7</td>
<td>1.90</td>
<td>-2.99</td>
<td>-1.81</td>
<td>-0.45</td>
<td>0.42</td>
</tr>
<tr>
<td>J16</td>
<td>1.90</td>
<td>-2.50</td>
<td>NA</td>
<td>-0.96</td>
<td>-0.11</td>
</tr>
</tbody>
</table>

Figure 7. Test Information Curve for the Constrained Satisfaction GRM
Components of Knowledge Work Measures

Components of knowledge work were measured using five items intended to assess the structure, autonomy, and predictability of the time it takes to complete tasks in their role within the company. The five questions dedicated to knowledge work components appear below and are labeled Q1-Q5. For each question, the 5-point Likert scale was used to capture the strength of agreement, 1 = “Does not at all describe my job”, to 5 = Perfectly describes my job”, as well as the option to reply with “not applicable” N/A.

- k1: My work is highly structured in terms of what and how it is performed.
- k2: I perform activities that can be measured.
- k3: The majority of my job functions are executed essentially the same, each time I perform them.
- k4: I rely on my own judgement when determining the information or specialized skills needed to complete my job.
- k5: I am able to predetermine the timeframe to complete the majority of my job tasks, from start to finish.

Knowledge work component (Spearman) correlations are provided in Table 3. There, we see the first three items are fairly well correlated with one another, while the final two items have relatively low correlations across the other knowledge work items. As predicted, question 4 (K4) on autonomy was negatively correlated with the other structure-related component measures (k1-3): “I rely on my own judgment when...
the information or specialized skills needed to complete my job”.

**Table 3. Knowledge Work Component Item Correlations**

<table>
<thead>
<tr>
<th></th>
<th>K1</th>
<th>K2</th>
<th>K3</th>
<th>K4</th>
<th>K5</th>
</tr>
</thead>
<tbody>
<tr>
<td>K1</td>
<td>1</td>
<td>0.634</td>
<td>0.489</td>
<td>-0.261</td>
<td>0.194</td>
</tr>
<tr>
<td>K2</td>
<td>&lt;0.001</td>
<td>1</td>
<td>0.303</td>
<td>-0.242</td>
<td>0.296</td>
</tr>
<tr>
<td>K3</td>
<td>&lt;0.001</td>
<td>0.021</td>
<td>1</td>
<td>-0.199</td>
<td>0.249</td>
</tr>
<tr>
<td>K4</td>
<td>0.048</td>
<td>0.068</td>
<td>0.134</td>
<td>1</td>
<td>0.091</td>
</tr>
<tr>
<td>K5</td>
<td>0.145</td>
<td>0.024</td>
<td>0.060</td>
<td>0.497</td>
<td>1</td>
</tr>
</tbody>
</table>

A composite was created for the first three items, labeled “structure”, using a graded response model.

Knowledge work component item distributions are provided in Figure 9.

![Figure 9. Knowledge Work Component Distributions](image)

A likelihood ratio test comparing the constrained and unconstrained structure GRM’s revealed that the discrimination parameter could be constrained without a significant reduction in model quality ($X^2(2)$ = [value]).
The results of the constrained model fit are provided in Table 4. There, we see that the structure composite measure did pretty well at discriminating between respondents. Further, the test information curve in Figure 10 reveals that the information provided by the structure composite is well distributed around the mean score. As was the case for the satisfaction model, a check on the two- and three-way margin residuals indicated that model fit was not an issue. Unidimensionality was assessed by way of a scree plot based on the polychoric correlation matrix of the structure items. The plot indicated a single-factor structure. Lastly, a plot of the distribution of the structure composite is provided in Figure 11.

Table 4. Structure GRM Results

<table>
<thead>
<tr>
<th>Item</th>
<th>$D$</th>
<th>$E1$</th>
<th>$E2$</th>
<th>$E3$</th>
<th>$E4$</th>
</tr>
</thead>
<tbody>
<tr>
<td>K1</td>
<td>1.90</td>
<td>-2.09</td>
<td>-0.97</td>
<td>0.16</td>
<td>1.88</td>
</tr>
<tr>
<td>K2</td>
<td>1.90</td>
<td>-2.19</td>
<td>-1.26</td>
<td>0.06</td>
<td>1.47</td>
</tr>
<tr>
<td>K3</td>
<td>1.90</td>
<td>-1.39</td>
<td>-0.30</td>
<td>0.96</td>
<td>1.94</td>
</tr>
</tbody>
</table>

Figure 10. Test Information Curve for the Constrained Structure GRM
Procedural justice was measured using five items with a 5-point Likert scale ranging from 1= “Totally disagree” to 5= “Completely agree”:

- “Company procedures enable me to give input in setting the expectations used to evaluate my performance,” (j1)
- “My team lead ensures that expectations on standards of work are set for me at the start of each review period” (j3)
- “My team lead understands the processes and procedures for evaluating my performance,” (j4)
- “I believe my team lead applies standards consistently across team members without pressure from others” (j6)
- “I have the ability to challenge a performance appraisal that I think is biased or unfair.” (j13)

Spearman correlations for the procedural justice items are provided in Table 5 below. Except for the correlation between j1 and j13, all the correlation values were significant (p<0.05). As was the case for both satisfaction and knowledge work components, a GRM was used to create procedural justice composite scores. Procedural justice item distributions are provided in Figure 12.
Table 5. Procedural Justice Item Correlations

<table>
<thead>
<tr>
<th></th>
<th>J1</th>
<th>J3</th>
<th>J4</th>
<th>J6</th>
<th>J13</th>
</tr>
</thead>
<tbody>
<tr>
<td>J1</td>
<td>1</td>
<td>0.533</td>
<td>0.514</td>
<td>0.326</td>
<td>0.229</td>
</tr>
<tr>
<td>J3</td>
<td>&lt;0.001</td>
<td>1</td>
<td>0.631</td>
<td>0.487</td>
<td>0.265</td>
</tr>
<tr>
<td>J4</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>1</td>
<td>0.540</td>
<td>0.340</td>
</tr>
<tr>
<td>J6</td>
<td>0.012</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>1</td>
<td>0.510</td>
</tr>
<tr>
<td>J13</td>
<td>0.084</td>
<td>0.044</td>
<td>0.009</td>
<td>&lt;0.001</td>
<td>1</td>
</tr>
</tbody>
</table>

Figure 12. Procedural Justice Item Distributions

A likelihood ratio test conducted on the constrained and unconstrained procedural justice graded response models indicated that constraining the discrimination parameter did not result in a significant reduction in model fit ($\chi^2(4) = 8.14, p = 0.086$). The results of the constrained model fit are provided in Table 6 below. Further, the test information curve provided below indicates that the procedural justice
composite provides more information below the mean score of the respondents. As was the case for the satisfaction and structure models, a check on the two- and three-way margin residuals indicated that model fit was not an issue. A scree plot based on the polychoric correlation matrix of the procedural justice items revealed a single-factor structure. A plot of the distribution of the procedural justice composite is provided in Figure 14.

Table 6. Procedural Justice GRM Results

<table>
<thead>
<tr>
<th>Item</th>
<th>$D$</th>
<th>$E1$</th>
<th>$E2$</th>
<th>$E3$</th>
<th>$E4$</th>
</tr>
</thead>
<tbody>
<tr>
<td>J1</td>
<td>1.96</td>
<td>NA</td>
<td>-1.10</td>
<td>0.64</td>
<td>1.82</td>
</tr>
<tr>
<td>J3</td>
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<td>-2.52</td>
<td>-0.58</td>
<td>0.08</td>
<td>1.16</td>
</tr>
<tr>
<td>J4</td>
<td>1.96</td>
<td>-2.55</td>
<td>-1.55</td>
<td>-0.52</td>
<td>0.70</td>
</tr>
<tr>
<td>J6</td>
<td>1.96</td>
<td>-2.51</td>
<td>-1.32</td>
<td>-0.37</td>
<td>0.61</td>
</tr>
<tr>
<td>J13</td>
<td>1.96</td>
<td>-2.51</td>
<td>-1.98</td>
<td>-0.16</td>
<td>0.54</td>
</tr>
</tbody>
</table>

Figure 13. Test Information Curve for the Constrained Procedural Justice GRM
Informational Justice Measures

Informational justice was measured using three items with response options ranging from 1 = “ Totally disagree” to 5 = “Completely agree,” and one item (j5) with options ranging from 1 = “We don’t discuss my goal(s)” to 5 = “We discuss my goal(s) monthly.”

The informational justice items included:

- “My team lead periodically reviews progress towards my goal(s) with me” (j5)
- “My team lead helps me understand my potential future with the company” (j10)
- “My team lead frequently provides information I can use to improve my performance” (j11)
- “My team lead gives me real examples to justify his/her appraisal of my work” (j12).

Item correlations are provided in Table 7, while item distributions are provided in Figure 15. From this figure, we see that all the informational justice items exhibit negative skew. Further, all the Spearman correlations are significant (p<0.05), with the exception of j5 versus j12.
Table 7. Informational Justice Item Correlations

<table>
<thead>
<tr>
<th></th>
<th>J5</th>
<th>J10</th>
<th>J11</th>
<th>J12</th>
</tr>
</thead>
<tbody>
<tr>
<td>J5</td>
<td>1</td>
<td>0.424</td>
<td>0.552</td>
<td>0.230</td>
</tr>
<tr>
<td>J10</td>
<td>0.001</td>
<td>1</td>
<td>0.540</td>
<td>0.470</td>
</tr>
<tr>
<td>J11</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>1</td>
<td>0.607</td>
</tr>
<tr>
<td>J12</td>
<td>0.082</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>1</td>
</tr>
</tbody>
</table>

Figure 15. Informational Justice Item Distributions

Two initial GRM’s were fit to the informational justice data (one including j5 and one excluding j5) and revealed that the exclusion of j5 resulted in a highly significant increase in model fit (AIC with j5: 643.64, AIC without j5: 471.14). Therefore, j5 was not included in the informational justice composite measure. A likelihood ratio test comparing a constrained and unconstrained informational justice graded response model indicated that constraining the discrimination parameter did not result in a significant reduction in model fit ($\chi^2(2) = 2.31, p = 0.315$). The results of the constrained model fit are provided in Table 8 below. There, we
see that the informational justice composite does a good job of discriminating between individuals \((D = 2.552)\). Further, the test information curve provided below indicates that the informational justice composite provides more information below the mean score of the respondents. As was the case for the other three composites, a check on the two- and three-way margin residuals indicated that model fit was not an issue. Further, unidimensionality was verified using the same method utilized for the previous composite measures. A plot of the distribution of the informational justice composite is provided in Figure 16.

**Table 8. Informational Justice GRM Results**

<table>
<thead>
<tr>
<th>Item</th>
<th>(D)</th>
<th>(E1)</th>
<th>(E2)</th>
<th>(E3)</th>
<th>(E4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>J10</td>
<td>2.55</td>
<td>-2.39</td>
<td>-0.94</td>
<td>0.01</td>
<td>0.57</td>
</tr>
<tr>
<td>J11</td>
<td>2.55</td>
<td>-1.91</td>
<td>-0.95</td>
<td>-0.11</td>
<td>0.66</td>
</tr>
<tr>
<td>J12</td>
<td>2.55</td>
<td>-2.45</td>
<td>-1.71</td>
<td>-0.43</td>
<td>0.61</td>
</tr>
</tbody>
</table>

**Figure 16. Test Information Curve for the Constrained Informational Justice GRM**
Figure 17. Informational Justice Composite Distribution

Figure 18. Scatterplot Matrix for all Composite Measures
From the scatterplot matrix (figure 18), we see that performance appraisal satisfaction appears to have a positive linear relation to both procedural and informational justice, which in turn have a high degree of linear correlation among themselves. Without any controls or interactions involved, structure appears to be mostly independent of satisfaction, procedural justice, or informational justice. That is, the characteristics of work do not seem related to the patterns of justice perceptions or appraisal satisfaction.

**Inferential Analyses**

**H1: Procedural and Informational Justice will be positively related to Performance Appraisal Satisfaction.**

Median regression is a type of quantile regression that involves the modeling of the median of the response, as opposed to the mean of the response as in Ordinary Least Squares (OLS) regression. Median regression is more robust to the presence of outliers and does not include homoscedasticity as an assumption. The choice not to use OLS regression was based mainly on heteroskedasticity issues, which were not alleviated through transformations (for example Box-Cox).

The results of two median regressions (one for each justice type) revealed a significant effect of procedural justice on performance appraisal satisfaction ($R^2 = 0.32$, $b = 0.70$, $p < 0.001$), as well as a significant effect of informational Justice on satisfaction ($R^2 = 0.24$, $b = 0.66$, $p < 0.001$). For every unit increase in (standardized) procedural justice, there was a 0.70 increase in (standardized) satisfaction, while for every unit increase in (standardized) informational justice, there was a 0.66 increase in satisfaction. Based on the $R^2$ statistic (a measure of model fit), procedural justice explains slightly more of the variation in satisfaction than informational justice. Plots of the estimated regression lines (with confidence bounds) are provided in Figure 19.
Figure 19. Plot of Performance Appraisal Satisfaction by Procedural and Informational Justice (with 95% Confidence Bands)

**H2:** Knowledge Work Components will moderate the relationship between Procedural and Informational Justice, and Performance Appraisal Satisfaction.

All variables (structure, autonomy, timeframe, procedural justice, and the demographics) were entered into a bi-directional stepwise median regression procedure. Interactions between procedural justice and knowledge work components were included, as was an interaction between the demographic variables. Due to issues relating to low cell counts, the two respondents who chose option 2 on the autonomy item were excluded. Helmert contrasts were used for autonomy, timeframe, and work years. Dummy coding was used for direct reports, where “No” was the reference category.
The results of the stepwise procedure indicated that the main effects for procedural justice, autonomy, timeframe, and structure should be retained. Additionally, interaction effects for procedural justice by autonomy, timeframe, and structure (three interactions total) were retained. The model displayed moderate fit, with an $R^2 = 0.51$ and $AIC = 85.84$. The results of the median regression are provided in Figure 18 above. Note that timeframe1 represents the first Helmert contrast for timeframe.

The first significant interaction listed is procedural justice by autonomy. A margin plot is provided below for this interaction. There, we see that higher levels of autonomy are associated with a stronger positive relationship between procedural justice and satisfaction. In other words, autonomy appears to strengthen, moderates, the relationship between these two variables.
The next interaction included in the model was procedural justice by timeframe, which was only marginally significant. From Figure 22 below, we see that procedural justice appears to be positively related to satisfaction for all levels of timeframe except the fifth, which corresponds to those who could predetermine the timeframe for a majority of their job tasks.
The final interaction term included was procedural justice by structure, which was significant. A plot of this interaction is provided below. There, we see that higher levels of structure are associated with a stronger relationship between procedural justice and performance appraisal satisfaction.
Overall, the results of the median regression indicate that autonomy, structure, and timeframe moderate the relationship between procedural justice and performance appraisal satisfaction. Now, we move on to the informational justice model, which was conducted in a manner very similar to the procedural justice model.

A similar stepwise median regression procedure (with the same interactions included) was used to model the effect of informational justice, knowledge work components, and demographics on performance appraisal satisfaction. The results of this procedure (provided in Figure 24 below) indicated that none of the knowledge work component interactions for informational justice were retained (neither structure, autonomy, nor timeframe). In other words, structure, autonomy, and timeframe do not appear to moderate the relationship between informational justice and performance appraisal satisfaction. The interaction term for the demographics was retained for its ability to significantly enhance model fit. Overall, the model showed moderate fit ($R^2 = 0.45$, AIC $= 96.86$). As was the case in the informational-only model, informational justice was positively related to satisfaction.

**Figure 24.** Informational Justice Median Regression Results
A margin plot for autonomy is provided in Figure 25. There, we see that the most autonomous respondents had the lowest levels of satisfaction, while the other two levels of autonomy were not significantly different from one another.

**Figure 25.** Margin Plot for Performance Appraisal Satisfaction by Autonomy

**Figure 26.** Margin Plot for Performance Appraisal Satisfaction by Timeframe
From the margin plot for timeframe above, we see that there appears to be a significant drop in satisfaction from the second to the third response category, while levels 4 and 5 are associated with a virtually identical level of satisfaction as the second category. As level 3 serves as a middle-point in the scale with the response “somewhat describes my job”, the result may capture those who had difficulty evaluating the relative number of tasks they could predetermine the timeframe for completion. This may signal an issue with the interpretation of the question and ambiguity within the scale.

Lastly, a margin plot for the demographic interaction is provided below. We see that there was a significant increase in satisfaction after two years with the company, with this increase only partially moderated by whether the respondent had direct reports. This initial increase in satisfaction at two years might be attributed to the significant length of time required to become proficient with the company’s portfolio of tools and methodologies. In tandem, the average length of time for an analyst (entry level) to be promoted to senior analyst is slightly more than 2 years.

Satisfaction appears to decrease after five years with the company. The career progression from analyst to consultant is described as typically taking approximately five years. Once the role of consultant is attained, there are decreasing numbers of opportunities for promotion.

Figure 27. Margin Plot for Performance Appraisal Satisfaction by Work Years and Direct Reports
Summary

Highlights from the findings support the first hypothesis. From the sample population of knowledge workers, for every unit increase in procedural justice, there was a .70 increase in appraisal satisfaction. Comparable results were seen with every unit increase in informational justice, appraisal satisfaction increased by .66.

The second hypothesis produced mixed results. The knowledge work components of autonomy, structure and timeframe were shown to moderate the relationship between procedural justice and performance appraisal satisfaction. Higher levels of both autonomy and structure were associated with stronger relationships between procedural justice and satisfaction. Procedural justice was positively related to timeframe, except amongst respondents that reported the strongest agreement with the following statement, “I am able to predetermine the timeframe to complete the majority of my job tasks, from start to finish”.

In contrast, the knowledge work components (autonomy, structure, and timeframe) did not appear to moderate the relationship between informational justice and performance appraisal satisfaction. The second hypothesis was therefore not supported by the results from this study.

Additional findings suggest the lowest levels of appraisal satisfaction were found amongst the respondents who perceived the greatest autonomy. According to interactions amongst the demographic variables, satisfaction levels show an increase after two years with the company, but then appear to decrease after five years. This finding was irrespective of whether respondents had people directly reporting to them (i.e. direct reports).
CHAPTER 5: DISCUSSION AND RECOMMENDATIONS

This chapter provides a summary of the research study followed by a discussion on the results and recommendations for future research.

Summary

From a managerial perspective, an overriding goal of performance appraisals is to motivate and control employees performance (A. Colquitt, 2017). Additional objectives are often attached to the appraisal process such as compensation and reward decisions, training and development plans, and promotions.

Gaps in the literature

Academic research has provided managers with improved cognitive processes that underpin the administrative tasks of performance appraisal systems. Concepts, such as the role of memory, the influence of prior expectations on the rating process, rating errors, and methods to improve accuracy of measurement have informed business practices (Bretz & Thomas, 1994). Theories on cognition have guided practice predominantly to increase the validity and reliability of rating “true” performance (Thurston & McNall, 2010).

The relevance of this objective to the modern workforce has diminished, as more and more work is unstructured, non-routine, and performed autonomously (Nichols). Davenport (1996) described knowledge work as “messy”, and those who take on such roles typically resist structured approaches. The ability to measure so-called “true” performance is problematic for knowledge work characterized by creative solutions to unique problems.

In general, the literature on appraising performance of knowledge work is sparse. The academic community acknowledges the need for greater alignment between theoretical research on the evaluation of performance and the pragmatic needs of practitioners/managers (Bretz, 1994). As previously identified in Ramirez & Nembhard’s (2004) taxonomy of performance measurement methods, the inclusion of qualitative
methods for evaluating knowledge work is lacking. Many researchers are concerned that what is readily quantifiable, and therefore easier to measure, gets attention over what is most important to measure (Levinson, 2003, Nickols, 2012; Pepitone, 2004).

The focus of performance appraisal literature has shifted from accuracy of measurement to perceptions of fairness from the literature on organizational justice theory. As an organizational phenomenon, performance appraisal has been a popular context to study the effects of procedural justice (Greenberg, 1990, p. 403). The underlying premise suggests if the employee perceives the system to be fair, there is greater likelihood the results will be accepted. There is a gap in the literature as to whether the perceptions of fairness (justice) varies according to the type of work performed.

**Research Question/Hypotheses**

As a result, this study investigates what impact justice perceptions have on performance appraisal satisfaction by knowledge workers. The following hypotheses were tested:

**H1**: procedural and informational justice will be positively related to performance appraisal satisfaction.

**H2**: knowledge work components will moderate the relationship between procedural and informational justice, and performance appraisal satisfaction.

**Conclusions**

From the survey results, procedural and informational justices have a significant effect on appraisal satisfaction (H1). Knowledge work components moderate the relationship between procedural justice and appraisal satisfaction, however they do not appear to have such a moderating effect on the relationship between informational justice and appraisal satisfaction (H2).

Interestingly, those that reported the greatest autonomy in their jobs were also the least satisfied with the appraisal system. Generally, satisfaction levels increase as the employee becomes established in their role after two years, but after five years, satisfaction levels decrease.
Discussion

The survey produced findings that support general principles of justice theory; namely, positive justice perceptions led to greater overall performance appraisal satisfaction (both procedural and informational were tested). Because the company of interest did not directly associate outcome decisions such as rewards or promotions to the single appraisal process, this research did not attempt to measure distributive justice items in the questionnaire survey. As presented in the literature review, prior research studies suggest procedural justice is strongly associated with attitudes about organizations and authority, whereas distributive justice is strongly associated with specific outcomes such as decisions about compensation.

Underlying Assumptions

According to the literature, there is an underlying assumption that extends perceptions of fairness and outcome satisfaction, to outcome acceptance. According to justice theory, if the system is perceived to be fair, there is a greater likelihood of satisfaction with the outcomes, and the individual is more likely to accept the outcomes. Past research implies that positive perceptions of fairness should lead to a greater likelihood that appraisal outcomes will be accepted (Armstrong, 2009; Keeping & Levy, 2000; Smither, 1998; Taylor et al., 1995). However, outcome acceptance is not equivalent to appraisal satisfaction, and goes beyond the scope of this research study. The underlying assumption that perceptions of justice increase outcome acceptance warrants further research.

Moderators of Procedural Justice

The knowledge work component effects on appraisal satisfaction (H2) produced some unexpected results. The more structured the perceived role, the stronger was the moderating effect on the positive relationship between procedural justice and satisfaction. It seems logical that those performing roles that are more easily measured, more structured, and more routine, would have greater expectations for procedural consistency and set standards for the implementation of the appraisal system. Thus, the more the expectations on procedural justice were fulfilled, the greater the satisfaction. Also, with less structured, less measurable, and less routine roles (perceived), the relationship between procedural justice and appraisal satisfaction was still positive, but not as strong.
Keeping in mind that all questions were positively worded so that the strength of agreement indicates the strength of the characteristic, the Spearman pairwise correlations indicated the responses to autonomy were negatively correlated with the other knowledge work characteristics of structure, routine, and measurability of the work activities. As per the characteristics of knowledge work, it was anticipated that the results from the more autonomous worker would align with the results of less structured work.

The researcher speculated that the more autonomous worker would place less importance on procedural justice as a factor of appraisal satisfaction. This was projected in the semi-structured interviews conducted in the pilot study (Exhibit 1). Reflections highlighted the ambiguity that often accompanies applications of standard appraisal processes and procedures for work performed autonomously. Appraisal experiences portrayed a general apathy towards the administrative requirements with expressions such as “going through the motions” and “checking the boxes”. From these descriptions, it was not known if the remarks referred to the process, the outcomes, or the entire appraisal system. However, the processes used by other employers as described in the interviews support the apparent widespread use of similar practices across industries; and those used by the company of interest. Thus, it was expected that procedural justice would not be as strong a predictor of appraisal satisfaction for the more autonomous workers.

Yet, the findings suggest the opposite. The more autonomous the perceived role, the stronger was the moderating effect on the positive relationship between procedural justice and satisfaction. In other words, the autonomous worker responded in a similar pattern with those that perceived their work to be more structured. This is at odds with the expectation that more autonomous workers would have a weaker moderating effect on procedural justice as a predictor of appraisal satisfaction.

Interestingly, in analyzing the characteristic of autonomy with appraisal satisfaction directly, those that reported greatest autonomy reported the lowest level of appraisal satisfaction. This is aligned with the literature that describes the challenges of appraising autonomous knowledge work. These somewhat conflicting results might be partially explained by extrapolating Herzberg’s two-factor theory, also known as motivation-hygiene theory. In the context of this study, the elements of procedural justice can be likened to
Herzberg’s hygiene factors described as administrative policies. Other hygiene factors were not explored in this study, but include compensation, status and work conditions. These factors, also known as dissatisfiers, are necessary in the workplace and become dissatisfiers if they are absent. However, on their own, Herzberg concluded that hygiene factors do not lead to long-term motivation or job satisfaction. Interestingly, these examples of hygiene factors span both procedural and distributive justice measures.

Herzberg found that a separate group of factors, mostly intrinsic to the work, served as motivational factors, or satisfiers. These factors included meaningfulness, responsibility, and growth opportunities. Although the constructs of motivation and job satisfaction were not measured nor were they analyzed in this study, the literature cites these constructs as common to organizational objectives for conducting performance appraisals. In practice, the appraisal system is often linked with motivation and development functions to enhance job satisfaction as well as performance (Pulakos, 2004).

Interestingly, the concept of autonomy is representative of the motivational factors identified by Herzberg. This characteristic was defined in the survey questionnaire as the ability to rely on one’s own judgement to complete the job. As described by Herzberg’s two-factor theory, satisfiers and dissatisfiers exist on two separate continuums. Conceivably, the fact that an employee works autonomously may contribute to increased motivation and job satisfaction, as per Herzberg’s theory on satisfiers; but, at the same time greater autonomy may also correlate negatively with appraisal satisfaction (as a hygiene factor). Further research is needed to explore the impacts of appraisal satisfaction on motivation and/or job satisfaction for all types of work.

Given that the company does not link appraisals to concrete outcomes such as rewards, it is plausible that procedural justice provides the most tangible element to attach appraisal satisfaction sentiment. The performance appraisal system is a necessary process (hygiene factor) irrespective of job characteristics such as structure and autonomy. The independent nature of the structure composite measure, in comparison to the composite measures of satisfaction and the justice perceptions, is visually supported by a scatterplot matrix for all composite measures (fig. 16).
The research question and hypotheses of this study were limited to the relationships of knowledge work components and justice perceptions as predictors of overall appraisal satisfaction. Within this framework, the findings generally support extant justice theory as it is applied to appraisal satisfaction. Without knowledge of the potential impacts on other constructs such as job satisfaction and motivation, these research findings are confined to the body of justice theory. This can be considered analogous to a closed system.

**Moderators of Informational Justice**

The three items that were used to form the informational justice composite measure inevitably implicated a level of interaction the individual had with their team lead (i.e. lead-member exchanges). The measures captured whether the team lead was perceived as follows: someone that helped the individual understand their potential future at the company, provided information to improve their performance, and was able to justify the appraisal of their work. In the context of the company’s culture and hierarchy, the team lead was the primary source of information relating to performance. As per company procedures, lead-member exchanges during the review process also extended to discussions on the individual’s future development.

As previously stated, informational justice closely matched procedural justice as a predictor of appraisal satisfaction. However, the strength of this relationship was not moderated by any of the knowledge work components as hypothesized (Hypothesis 4).

One explanation for this is that team leads have subject matter expertise relevant to the role being evaluated. In addition, team leads are described as effectively transmitting critical information on performance, regardless of whether the job is structured or unstructured, routine, highly autonomous, etc. Open text comments include praise for team leads that draw from examples including those experienced at other companies, as well as advice on what and how to improve approaches to a given challenge (i.e. guidance on processes). Comments that addressed whether the team lead helped the individual to understand their future potential at the company revealed divergent views. For example, one described their unique role in the company, as “unfamiliar territory”, therefore their future was something they needed to “figure out on their
own”. Another comment recognized that the team lead did what was possible, but s/he did not see a future at the company.

Attitudes versus Values and Beliefs

In interpreting the findings from the questionnaire survey, there is a limit to the meanings that can be extracted from the responses provided. For example, the survey asked for perceptions on whether standards were applied consistently across team members. Although the relative strength of agreement within the given context may have been captured, the response does not reveal whether applying consistent standards was important to that individual. The validated constructs measured attitudes; but these attitudes do not necessarily extend to values and beliefs. Given that fairness is typically valued in society, answers to the justice measures may have been rote and subject to social desirability bias.

Organizational justice theory research has empirically differentiated four distinct justice domains: procedural, distributive, information, interpersonal. The fact that at least four justice domains have been validated, does not necessarily translate that such distinct constructs are perceived by the individual in the same way (Greenberg, 1987). Given the high degree of linear correlation between procedural and informational justice (illustrated in the scatterplot matrix, figure 18), the two constructs might be effectively combined as one justice domain.

As previously stated, the notion of fairness was a key theme identified in the reflections provided in the interviews for the pilot study. The results in this study as well as the seminal research suggest procedural justice is a key determinant of satisfaction concerning organizations and authorities (J.A. Colquitt, 2001). However, there is also the possibility that overall appraisal satisfaction is a factor in determining the reflected attitudes on procedural justice. This research study did not test if the attitudes towards performance appraisal procedures might also depend upon whether the individual was satisfied with the outcomes of the appraisal.

Overall, the various possible interpretations of the results demonstrate that justice measures carry a degree of subjectivity and are context-bound. With each study, meaningful applications require the researcher to decipher a rationale that is suited to the given environment.
The responses in the survey’s open text fields, measures on procedural and informational justice, and pilot study interviews support the shift in academic research on appraisals: from objective evaluations to a focus on perceptions of fairness. The participants did not express the expectation for appraisals to measure true performance. Rather, their interests were directed at whether their manager was knowledgeable and supportive about the work they performed.

**Knowledge Work Composite Measure**

Building on work design features identified by Humphrey et al., and Thomas & Baron’s productivity measures, a composite measure of knowledge work components was created to describe characteristics of a given job. For the purposes of this study, composite measures serve as a heuristic to summarize the degree of abstraction (e.g. unstructured, non-routine, complex, etc.) associated with the given job role.

The results in the questionnaire survey indicated some apparent inconsistencies amongst the interpretations of knowledge work components. Aggregated survey results presented to teams within the company of interest were met with a range of understandings attributed to the knowledge work components. These interpretations were more varied than what the researcher and expert panel had encountered during the design phase of the survey.

A composite measure was created for the three measures on structure, however the concept of structured work did not have the same connotation across teams. For example, information technology specialists discussed the degree of structure in terms of the type of data that was handled (i.e. whether the information was organized in a pre-defined format). This demonstrates a need for greater clarification and description of the various work components.

**Demographic Interactions**

As per previous surveys within the company, limited demographic data was gathered to ensure total anonymity. Information specific to certain departments, job titles, work characteristics, and gender could result in identifiable data given the small number of employees within certain teams.
**Recommendations**

This research explores the impact of justice perceptions on performance appraisal satisfaction for knowledge workers. To strengthen the findings from this study, a larger sample including nonknowledge workers is recommended. Additional research opportunities emerge with the lack of empirical research to support the underlying assumption that appraisal satisfaction is more likely to lead to the acceptance of appraisal outcomes. The value of examining the constructs of knowledge work components and justice perceptions on appraisal satisfaction is limited if the consequences of increased appraisal satisfaction are not further developed. An exploration of the interactions between outcome satisfaction and outcome acceptance by knowledge workers would be a logical extension of this research study. Specifically, the use of structural equation modeling would aid the analysis on latent constructs; for example, does appraisal satisfaction function as a formative measure for the latent construct of motivation?

Although the validated justice measures found in the literature did not include questions on the importance of a given attitude, additional questions could be posed to capture this in the survey. In-depth interviews are recommended for a deeper understanding of the values and beliefs that accompany reported attitudes in a survey questionnaire such as the one adapted in this study to capture justice perceptions.

Viewing justice measures through the lens of Herzberg’s two-factor theory could provide opportunities for further experimentation with the latent constructs of motivation. Related research on whether appraisal satisfaction is a predictor of motivation would be of interest. To enrich jobs, Herzberg suggests to first eliminate the dissatisfiers and second ensure satisfiers are designed into the role. In the case of knowledge workers, it would be interesting to investigate what mitigates “dissatisfiers” such as the administrative procedures related to performance appraisals.

A complex construct that is not included in the analysis of this research study concerns contextual background knowledge on the relationship between the person being evaluated and the evaluator. Constructs such as psychological contracts and the effects on appraisal reactions, are additional factors that might enhance the models created in this study.
Recommendations for human resource practices include development of composite measures to describe the composition of a given job role defined according to categories of work characteristics. Such a typology would facilitate a more comprehensive description of the abstract characteristics of knowledge work. With the creation of a composite measure heuristic, work components can aid in the articulation of unique qualities of a job role (e.g. how a given job compares and differs from other similar job titles). The potential applications for human resource processes are far-reaching: on-boarding, training and development, job design, and more effective leader-member exchanges for performance appraisals are some examples.

Composite measures can be viewed individually or in aggregate to inform practices and organizational strategies that involve human work. Furthermore, such measures may signal what elements of a job are ideal for automation or machine-centered work to augment human talent.

In conclusion, there are many possible additional factors to consider in addressing the impact of justice perceptions on performance appraisal satisfaction for knowledge workers. Although an ever-increasing percentage of the work force represents knowledge work, little research has explored whether appraisal satisfaction varies according to the type of work performed. This study applied procedural and informational justice measures as predictors of appraisal satisfaction for knowledge workers. Further research is needed to determine how these factors may relate to other latent constructs such as motivation and retention.
REFERENCES


APPENDIX A

Survey

1. Work Design

To help define your work and make performance conversations more meaningful, all associates are invited to complete the following survey. Participation is voluntary, completely anonymous, and you can withdraw at any stage before hitting "done".

This survey should take approximately 10 minutes to respond to 24 questions. The results will be aggregated and shared with all associates, including themes from open comments. Please base your responses solely on your experiences while working at RMS.

Thank you for your support!

1. My work is highly structured in terms of what and how it is performed.

   1. Does not at all describe my job
   2. Somewhat describes my job
   3. Perfectly describes my job
   4. N/A

   Additional comments:

2. I perform activities that can be measured.

   1. Does not at all describe my job
   2. Somewhat describes my job
   3. Perfectly describes my job
   4. N/A

   Additional comments:

3. The majority of my job functions are executed essentially the same, each time I perform them.

   1. Does not at all describe my job
   2. Somewhat describes my job
   3. Perfectly describes my job
   4. N/A

   Additional comments:
4. I rely on my own judgment when determining the information or specialized skills needed to complete my job.

<table>
<thead>
<tr>
<th>1. Does not at all describe my job</th>
<th>2.</th>
<th>3. Somewhat describes my job</th>
<th>4.</th>
<th>5. Perfectly describes my job</th>
<th>N/A</th>
</tr>
</thead>
</table>

Additional comments:

5. I am able to predetermine the timeframe to complete the majority of my job tasks, from start to finish.

<table>
<thead>
<tr>
<th>1. Does not at all describe my job</th>
<th>2.</th>
<th>3. Somewhat describes my job</th>
<th>4.</th>
<th>5. Perfectly describes my job</th>
<th>N/A</th>
</tr>
</thead>
</table>

Additional comments:

6. Company procedures enable me to give input in setting the expectations used to evaluate my performance.

<table>
<thead>
<tr>
<th>1. Totally disagree</th>
<th>2.</th>
<th>3. Somewhat agree</th>
<th>4.</th>
<th>5. Completely agree</th>
<th>N/A</th>
</tr>
</thead>
</table>

Additional comments:

7. My team lead understands the requirements and responsibilities of my work.

<table>
<thead>
<tr>
<th>1. Totally disagree</th>
<th>2.</th>
<th>3. Somewhat agree</th>
<th>4.</th>
<th>5. Completely agree</th>
<th>N/A</th>
</tr>
</thead>
</table>

Additional comments:
Survey (continued)

<table>
<thead>
<tr>
<th>2. Performance Feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. My team lead ensures that expectations on standards of work are set for me at the start of each review period.</strong></td>
</tr>
<tr>
<td>1. Totally disagree</td>
</tr>
<tr>
<td>○</td>
</tr>
<tr>
<td>Additional comments:</td>
</tr>
<tr>
<td><strong>2. My team lead understands the processes and procedures for evaluating my performance.</strong></td>
</tr>
<tr>
<td>1. Totally disagree</td>
</tr>
<tr>
<td>○</td>
</tr>
<tr>
<td>Additional comments:</td>
</tr>
<tr>
<td><strong>3. My team lead periodically reviews progress towards my goal(s) with me.</strong></td>
</tr>
<tr>
<td>1. We don’t discuss my goal(s)</td>
</tr>
<tr>
<td>○</td>
</tr>
<tr>
<td>Additional comments:</td>
</tr>
<tr>
<td><strong>4. I believe my team lead applies standards consistently across team members without pressure from others.</strong></td>
</tr>
<tr>
<td>1. Totally disagree</td>
</tr>
<tr>
<td>○</td>
</tr>
<tr>
<td>Additional comments:</td>
</tr>
</tbody>
</table>
Survey (continued)

5. My team lead helps ensure my performance appraisal reflects the quality of my contributions to the company.

<table>
<thead>
<tr>
<th>1. Totally disagree</th>
<th>2.</th>
<th>3. Somewhat agree</th>
<th>4.</th>
<th>5. Completely agree</th>
<th>N/A</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

Additional comments:

6. My team lead tends to inflate evaluations to avoid bad feelings.

<table>
<thead>
<tr>
<th>1. Totally disagree - provides critical feedback when needed</th>
<th>5. Completely agree - avoids giving critical feedback when needed</th>
<th>2.</th>
<th>3. Somewhat agree</th>
<th>4.</th>
<th>N/A</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</table>

Additional comments:

7. My team lead treats me with respect throughout the appraisal process.

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<thead>
<tr>
<th>1. Totally disagree</th>
<th>2.</th>
<th>3. Somewhat agree</th>
<th>4.</th>
<th>5. Completely agree</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Additional comments:

8. My team lead helps me to understand my potential future in the company.

<table>
<thead>
<tr>
<th>1. Totally disagree</th>
<th>2.</th>
<th>3. Somewhat agree</th>
<th>4.</th>
<th>5. Completely agree</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Additional comments:
9. My team lead frequently provides information I can use to improve my performance.

<table>
<thead>
<tr>
<th>1. Totally disagree</th>
<th>2.</th>
<th>3. Somewhat agree</th>
<th>4.</th>
<th>5. Completely agree</th>
<th>N/A</th>
</tr>
</thead>
</table>

Additional comments:

10. My team lead gives me real examples to justify his/her appraisal of my work.

<table>
<thead>
<tr>
<th>1. Totally disagree</th>
<th>2.</th>
<th>3. Somewhat agree</th>
<th>4.</th>
<th>5. Completely agree</th>
<th>N/A</th>
</tr>
</thead>
</table>

Additional comments:

11. I have the ability to challenge a performance appraisal that I think is biased or unfair.

<table>
<thead>
<tr>
<th>1. Totally disagree</th>
<th>2.</th>
<th>3. Not sure</th>
<th>4.</th>
<th>5. Completely agree</th>
<th>N/A</th>
</tr>
</thead>
</table>

Additional comments:

12. I believe performance appraisals are important to my future development.

<table>
<thead>
<tr>
<th>1. Totally disagree</th>
<th>2.</th>
<th>3. Somewhat agree</th>
<th>4.</th>
<th>5. Completely agree</th>
<th>N/A</th>
</tr>
</thead>
</table>

Additional comments:

13. Constructive performance appraisals motivate me to continually improve the work I do.

<table>
<thead>
<tr>
<th>1. Totally disagree</th>
<th>2.</th>
<th>3. Somewhat agree</th>
<th>4.</th>
<th>5. Totally agree</th>
<th>N/A</th>
</tr>
</thead>
</table>

Additional comments:
14. I believe my team lead is the most appropriate person to provide feedback on my performance.

1. Totally disagree  2.  3. Somewhat agree  4.  5. Totally agree  N/A

Additional Comments:
3. Additional comments and work status

1. If you have any additional comments or suggestions, please include them here:

2. How long have you worked at RMS?
   - 0 – 2 years
   - 2+ – 5 years
   - 5+ years

3. Do you have any direct reports?
   - Yes
   - No
APPENDIX B
Performance Review Template

<table>
<thead>
<tr>
<th>Associate Name</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Associate Title</td>
<td></td>
</tr>
<tr>
<td>Team Leader Name</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td></td>
</tr>
</tbody>
</table>

**Goal**

**Accomplishments Since Previous Review**

**Personal Development Plan**

*Valuable Feedback Received from Team Leader (Since Last Review)*
PERFORMANCE REVIEW + CAREER DEVELOPMENT PLAN

Page 2 - To Be Completed by Team Lead

Goal

Accomplishments Since Previous Review

Personal Development Plan

Associate Signature

Date

Team Leader Signature

Date
The pilot study interviews provided reflections of appraisal procedures and processes the participants had experienced with previous employers; prior to joining the company of interest. As such, these accounts supplement the information collected in the questionnaire survey and include practices external to the company. The following themes are relevant to the literature review and/or results of the survey and will be included in the subsequent discussion chapter.

From an operational perspective, the findings from the pilot study interviews support the reported widespread use of similar performance appraisal processes and procedures as identified in the literature review. The interview accounts provide contextual information on appraisal formats and practices represented in the procedural justice domain.

### Appraisal Procedures: Going through the Motions

Performance appraisal procedures were described using expressions such as “going through the motions” and “checking the boxes” to reflect the experience in satisfying the procedural and administrative requirements. The interviewees reflected a general apathy towards the performance appraisal process as “not a particularly fruitful exercise”. Given the all-encompassing context of such statements, they may have referenced the appraisal system in general: processes, as well as outcomes.

### Goal-setting: Gaming the System

Goal setting was identified as a source of frustration more than motivation. Three of the five interviews included examples where “gaming” the system was commonplace. It should be emphasized this topic was brought up by the respective interviewees; it was not prompted by the researcher. A concrete example involved choosing goal tasks that were already near completion, but the manager was not aware of the fact. Therefore, the achievement of these goals was nearly guaranteed. Goal setting was described as particularly problematic for those who performed project work that involved continuous changes and adaptations. Two participants mentioned the goals that were set were either not relevant to their work or were of low priority. This reflects the findings in the literature that suggest performance is often evaluated on job elements that are easy to quantify and measure, rather than by the job elements that are most important (Levinson, date).

### Appraisal Satisfaction: Perceived Fairness

The interpretations and satisfaction levels attributed to appraisal outcomes were variable, context-bound, and encompassed complex personal feelings and beliefs. Perceptions on fairness and equity became a central discussion point when performance appraisal outcomes were discussed. Judgments on fairness were especially relevant when the topic of rewards and promotions surfaced. This reflects research that suggests reactions to appraisals are influenced by perceived notions of fairness and the relationship the individual has with their evaluator (Dusterhoff et al., 2014).