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COMPETENCIES IN THE WILD: TESTING THE
THEORETICAL ASSUMPTIONS OF COMPETENCIES

by

Andrea Bordwell Hyneman

A Dissertation

Submitted in Partial Fulfillment of the

Requirements for the Degree of

Doctor of Philosophy

Major: Psychology

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Abstract

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Competencies have been present in the field of industrial-organizational psychology for 40 years, but there is little empirical research available concerning the construct. The current study used data from a functioning organization to better understand the relationships between competencies and the relationship of competencies to job performance. The study results suggest that competency ratings are stable over time, that different competencies are used to perform different types of goals, and that competencies moderate the relationship between job performance in year one and year two. A better understanding of competencies is necessary for practitioners to use the constructs most effectively.

Table of Contents

Section	Page
List of Tables	vii
Competencies in the Wild: Testing the Theoretical Assumptions of Competencies	1
Brief History of Competencies and Competency Definitions.....	2
Competencies and Performance.....	8
Psychometric Properties of Competencies.....	11
Competencies and Individual and Organizational Goals	13
Method	16
Sample	16
Measures	17
The Organization's Competency Model	21
The Organization's Performance Review System	23
Analyses.....	25
Results.....	27
Discussion	39
Limitations and Future Research	45
Conclusion	47
References.....	49

List of Tables

Table	Page
1. Exemplar Definitions of Competencies in the Literature	5
2. Competency and Goal Descriptions and Sample Size	18
3. Process steps of the Organization's Performance Review Process	24
4. Descriptive Statistics and Correlations Table: Full Sample	28
5. Correlations Table for Same and Different Manager Groups	31
6. Baseline Prediction Model	35
7. Goal Category Prediction Models	35

Competencies in the Wild: Testing the Theoretical Assumptions of Competencies

Competencies have become fixtures in performance management systems in many large businesses. The creation of generic competency models by consulting firms (e.g., SHL's Universal Competency Framework) has spurred the use of competencies in selection and performance evaluation systems. Despite their wide use in business, the academic literature concerning competencies is still limited, disorganized and lacking in consistency.

A Web of Science Database search, using the keyword "competency," returns 21,412 articles, books, and presentations cited in the research literature. Two-hundred and three of these citations are related to competencies within the field of industrial-organizational (I-O) psychology and related disciplines (e.g., organizational behavior). However, many ideas about competencies in the literature do not make it into current research (Campion et al., 2011; Sanchez & Levine, 2012). The question arises of the nature and quality of the competency literature available.

A greater understanding of the constructs is necessary in order for businesses to use them most effectively. The current study analyzed competency information currently used in a large organization in order to understand the properties of competency ratings and how they relate to individual performance within the organization. The investigation contributes to the academic literature concerning competencies, the understanding of competencies, and the relationship of competencies to organizational goals. The study also contributes to the applied community by informing common practice so that competencies may provide greater utility to organizations.

Brief History of Competencies and Competency Definitions

The limited number of citations in competency articles is due primarily to the lack of a consistent definition of “competency” within the literature. As it is understood today, the term “competency” was first used in McClelland’s 1973 article, “Testing for Competence Rather than ‘Intelligence’”. In the article, he argued that traditional intelligence tests do not predict future life outcomes. McClelland believed that in order to know how successful an individual might be in the future, the individual should demonstrate his or her level of competence (ability to perform) in a test of the criterion in question. He stated that if the sampled criterion space is related to work outcomes and more general life outcomes, the results of the test would be more suitable for predictive studies than the results of traditional intelligence tests. McClelland never formally defined the term competencies, but instead described what they are by example. He wrote, “Some of these competencies may be rather traditional cognitive ones involving reading, writing, and calculating skills. Others should involve what traditionally have been called personality variables, although they might better be considered competencies” (McClelland, 1973, p. 10). It is from McClelland’s short description that our current understanding of competencies is derived.

McClelland’s legacy was fostered by other researchers, including Boyatzis (1982) and Spencer and Spencer (1993). Boyatzis (1982) conducted a long-term study of competencies to create competencies for generic use. He also conducted the first study of the relationship of competencies to performance. Spencer and Spencer (1993) published a book that details the methodology used by Boyatzis and themselves to identify

competencies. The authors provided detailed competency models for specific job families, like Human Resource workers.

The proliferation of ideas in articles and books concerning competencies and competency modeling led to the creation of a SIOP panel called, “The Job Analysis and Competency Modeling Task Force”. The SIOP Task Force was developed to investigate the construct of competencies and competency models and to compare these constructs with job analysis. Jeffrey Shippmann, the task force leader, and his associates published the task force’s findings in 2000 (Shippmann et al., 2000) The task force reviewed the available literature, interviewed individuals using and developing competency models, and surveyed individuals to determine the perceived differences between competency modeling and job analysis. The group’s findings suggested that competency modeling was a construct that developed in five spheres: individual differences and educational psychology, leadership research and assessment centers, job analysis, multiple intelligences, and Prahalad and Hamel’s (1990) paradigm of core competencies. They found in the interview and survey data that job analysis was viewed as the more rigorous in methodology, and there was a strong perceived link between competency models and the organization’s goals. Shippmann et al.’s work generated more consensus in the thinking around competency models but did not articulate clearly definitive answers to essential questions concerning competencies because of the scope of their project.

In 2011, Campion et al. published an article that described the 20 best practices of competency modeling. The authors’ descriptions of the best practices are brief. Although research on competencies was available, the authors state that the competency literature, “consists mostly of writings based on practical experience (e.g., case studies,

commentaries) because little empirical research exists” (pp. 225-226). The observation that there is “relatively scarce competency modeling research to date,” was also noted in a review article on job analysis by Sanchez and Levine (2012).

For the current study, the 203 articles previously mentioned were reviewed and the various definitions of competencies (as opposed to “competence” or “core competencies”) were extracted. The definitions of competencies found in the literature are presented in Table 1. As can be seen in this table, competencies are generally defined as groupings of knowledge, skills, abilities, and other characteristics (KSAOs), often described in behavioral terms, which are theorized or empirically shown to be associated with job performance. Often, competencies are linked to the organization’s strategy with the expectation of creating a synergistic effect in the organization.

Table 1

Exemplar Definitions of Competencies in the Literature

Reference	Definition
Athey & Orth, 1999, p. 216	"a set of observable performance dimensions including individual knowledge, skills, attitudes, and behaviors as well as collective team, process, and organizational capabilities that are linked to high performance, and provide the organization with sustainable competitive advantage"
Bartram, Robertson, & Callinan, 2002	"sets of behaviors that are instrumental in the delivery of desired results or outcomes"
Campion, et al., 2011, p. 226	"collections of knowledge, skills, abilities, and other characteristics that are needed for effective performance in the jobs in question"
Green, 1999, p. 5	"an individual competency is a written description of measurable work habits and personal skills used to achieve a work objective"
Klemp, 1980	"an underlying characteristic of a person which results in effective and/or superior performance in a job"
Lahti, 1999, p. 64	"key strengths that each individual within an organization possesses and demonstrates"
Lawler, 1994, p. 7	"skill- or competency-based approach"
McClelland, 1973	skills, abilities and personality characteristics that are related to life outcomes.
McLagan, 1980, p. 22	"the knowledge and skills which underlie effective job performance"
Mirabile, 1997, p. 75	"a knowledge, skill, ability, or characteristic associated with high performance in a job"

(table continues)

Table 1 (cont.)

Exemplar Definitions of Competencies in the Literature

Reference	Definition
Parry, 1998, p. 60	“a cluster of related knowledge, attitudes, and skills that affects a major part of one’s job (i.e., one or more key roles or responsibilities); that correlates with performance on the job; that can be measured against well-accepted standards; and that can be improved via training and development”
Rodriguez, Patel, Bright, Gregory, & Gowing, 2002, p. 310	"a measurable pattern of knowledge, skill, abilities, behaviors, and other characteristics that an individual needs to perform work roles or occupational functions successfully"
Rosman & Burke, 1980, p. 260	"job related skills and abilities"
Serpell & Ferrada, 2007, p. 586	"entry attributes, that is, the knowledge, abilities, and attitudes of a person upon joining an organization"
Sparrow, 1995, p. 169	“soft skills that are associated with underlying characteristics of an individual”
Spencer and Spencer, 1993, p. 9	"an underlying characteristic of an individual that is causally related to criterion-referenced effective and/or superior performance in a job or situation"
White, 1959, p. 297	"capacity to interact effectively with its environment"

For the current study, competencies were defined as related groupings of KSAOs that lead to job performance. Although studies of competencies have been conducted, the theoretical underpinnings of competencies had not been empirically explored. Figure 1 displays the theoretical understanding of competency development. Competencies are groupings of related KSAOs; KSAOs are derived from behaviors that are observed or understood by subject matter experts to be important for job performance. Behaviors are identified using task-based job analysis techniques, but KSAOs can be derived directly from worker-based job analysis techniques (Schippmann, 1999). Inferential leaps occur at each process step, but competencies should be correlated performance because the original behaviors are closely linked to performance.

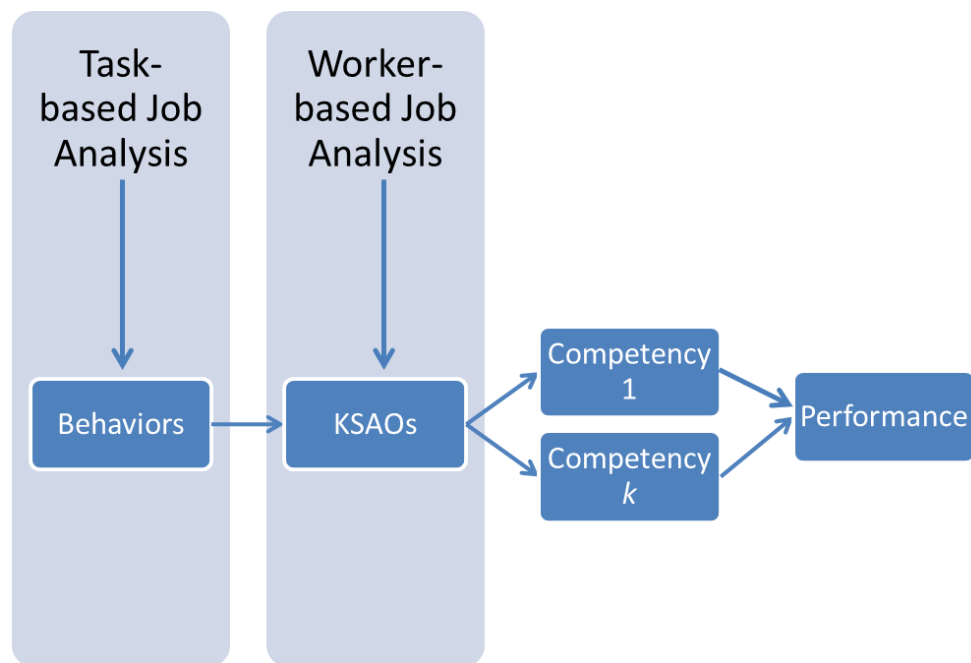


Figure 1. Theoretical process of competency development

In summary, discussions of competencies have appeared in the literature since 1973, but there has not been strong, connected group of articles to define the construct or empirically explore it. As mentioned above, the lack of cohesion in the competency literature is evidenced by researchers who claim that no empirical research on competencies exists (Campion et al., 2011; Sanchez & Levine, 2012). Articles concerning competencies have generally defined competencies as related grouping of KSAOs that lead to job performance. However, as competencies have begun to be used in performance evaluations, the characteristics of competency ratings and their relationship to performance ratings are unknown. The questions around the characteristics of competency ratings have been explored in the literature, but the findings are inconclusive.

Competencies and Performance

Competencies add value to organizations because they provide a vehicle for behavior management beyond the goals set for individual employees. Employees are accountable for completing a variety of tasks, and task-based job analysis can be used to identify these accountabilities. However, the goals an employee is expected to achieve (e.g., one sales representative's total yearly sales) in a given performance period (e.g., a calendar year) do not represent the full extent of the employee's accountabilities. There are other behaviors that the employee must engage in to meet accountabilities not defined in the employee's goals (e.g., networking with members of the community to generate sales prospects). Further, there are behaviors that employees are expected to engage in that support the organization's functions but may not be related to the employee meeting his or her assigned goals (e.g., refraining from stealing prospective customers from another sales representative). Behaviors that support the organization are sometimes

called discretionary behavior. Competencies provide a way by which discretionary behavior and behavior not related to the employee's goals are measured.

Determining whether competencies are valid (i.e., related to performance) is important to understanding their viability in academic research and their utility in behavior management for organizations. Although Boyatzis's initial intent was for competencies to be descriptive (Boyatzis, 1982), competencies began to be measured using other instruments (Saville, Sik, Nyfield, Hackston, & MacIver, 1996). In a similar way, competencies themselves began to be used as measures. The most common place for competencies to appear as measures was in performance evaluations (Fletcher, 2001), but they were also used in assessment centers and 360 development feedback processes (Beehr, Ivanitskaya, Hansen, Erofeev, & Gudanowski, 2001; Carless & Allwood, 1997).

The question of the validity of competencies has been addressed by some researchers but has not been conclusively answered. Boyatzis (1982) published the first publicly available study to provide evidence that competencies were related to performance. Using discriminant function analysis, he found that possession of competencies correctly predicted 51% of the managers' group memberships ($N = 253$; chance prediction = 33%), underestimated the group membership of 33% of managers, and overestimated the group membership of 16% of managers.

The available empirical studies addressing competencies cannot be included together in a comprehensive analysis because the methodologies used to develop, implement, and measure competencies vary among the studies. However, there are a number of articles that, to some extent, examine the relationship between competency possession and performance. One of the earliest studies was conducted by Caldwell and

O'Reilly (1990), who used a q-sort method to determine competencies relevant for a particular job. They then used the same q-sort method to determine the competencies of individuals. They found that those individuals whose competency profile more closely matched the competency requirements of the job were more likely to score higher on measures of job performance and job satisfaction. Goldstein (2001) found that competencies provided incremental validity beyond that of a paper-and-pencil cognitive measure for predicting overall job performance. The competencies were found to provide incremental validity when they were examined separately and when the competencies were combined into one group. Russell (2001) found candidates selected using competency measures produced \$3 million more in profit for branches where they worked per year than other candidates. Zimmerman, Triana, and Barrick (2010) found that measures of conscientiousness, emotional stability, leadership, and interpersonal skills were positively related to measures of work performance.

Two studies with the primary purpose of investigating the relationship between competency ratings and performance were conducted by Levenson, Van der Stede, and Cohen (2006) and Beehr et al. (2001). Levenson et al. (2006) looked at competency ratings as part of a promotion system and correlated them to performance evaluation scores. The researchers focused on the performance of individuals who had attained the intermediate or advanced level of competencies. When the advanced level and intermediate levels were correlated with performance scores, both levels showed small but significant correlations with performance ($r = .16$ and $r = .15$, respectively). The competency levels accounted for only 7% of the performance rating. The relationship between competencies and performance found in the study is potentially manufactured

due to knowledge of competency levels in the performance evaluation and vice versa. Also, the competency promotion system used in the study was an atypical use of competencies and does not reflect the normal use of competences in organizations. Beerh et al. (2001) sought to determine the relationship between competencies rated during a 360-feedback and performance evaluation scores. Competency ratings were provided by peers, managers, and the employees themselves. The analyses concluded that competency ratings of peers and manager showed a range of small correlations with performance evaluation scores ($r = .12 - .28$).

In summary, there have been studies undertaken to establish the validity of competencies by studying the empirical relationship between competencies and performance. However, most of these studies were completed in a context that does not represent how competencies are commonly used in organizations. Many of the studies found small correlations between competency ratings and performance, providing the initial indication that there is little to no relationship between the two constructs.

Psychometric Properties of Competencies

One of the least understood aspects of competencies are the properties of competency ratings. Competencies are grouped together as part of a system called a competency model where multiple competencies are used for a single job or job family. The competency model, in theory, should describe the KSAOs necessary to perform a particular job. The original intent of competencies was for description (Boyatzis, 1982), but competencies began to be used as units of measure, particularly in selection instruments and performance evaluations. However, there has been little research exploring competency ratings.

Competency models provide an outline of the presumed factor structure of competency measures. There have been a number of studies that used factor analytic techniques to better understand the structure of competency measures (Beerh et al., 2001; Carless & Allwood, 1997; Dragoni, Tesluk, Russell, & Oh, 2009; Russell, 2001; Spreitzer, McCall, & Mahoney, 1997). The results of the factor analyses have been inconclusive with respect to the factor structure of competency models. For instance, Dragoni et al. (2009) found that a competency model made up of six competencies fit equally well into one factor or six factors. Beerh et al. (2001) found that competency ratings in 360-feedback fell into three factors across different rating groups. Others have found that competencies are related to a single overarching performance factor (Carless & Allwood, 1997; Russell, 2001; Spreitzer et al., 1997).

Researchers studying competencies have the opportunity to create multi-item measures for competencies, which is not a common framework for competencies used in organizations. It is not uncommon to find a single measure of a competency within organizations. The single-item competency measures inhibit the ability to understand factor structure of a competency model because there is only one piece of information per scale (i.e., competency). This constraint precludes the use of factor analytic techniques, which provide information concerning how the measures relate to one another.

One of the least researched, but most important, psychometric properties of competencies are the reliabilities of competency measures. Although internal reliability measures have been used in competency research (e.g., Dragoni et al., 2009), these internal measures do not provide an indication of whether competencies change across time. Some investigators have reviewed interrater reliabilities for judging competencies.

For instance, Beerh et al. (2001) found that manager ratings across competency factors were highly correlated ($r = .75$), but peer and manager ratings of the same competency factor were weakly correlated ($r = .12$). Having knowledge of the stability of competencies is important because some believe that competencies are changeable (Maurer, Wrenn, Pierce, Tross, & Collins, 2003), and others have defined competencies as KSAOs that can be developed over time (Parry, 1998).

Some studies have focused on the consistency of individuals rating the importance of competencies for a particular position instead of the use of competency ratings for performance related purposes (Lievens & Sanchez, 2007; Lievens, Sanchez, & De Corte, 2004). Lievens and Sanchez (2007) found that a group of individuals who received frame-of-reference training in competency modeling rated the importance of competencies for a position more consistently than a group of individuals with no competency modeling training. Lievens et al. (2004) found that the consistency of competency importance ratings for a position were higher when a group of raters was given competency and task information than if the group were given competency information or task information alone.

Competencies and Individual and Organizational Goals

Many organizations use competencies in their performance evaluations (Fletcher, 2001). Competencies are rated in performance evaluations alongside goals or objectives accomplished during the most recent rating period. There is no empirical evidence demonstrating that ratings of competencies and goal achievement (i.e., job performance) in performance appraisals are correlated to one another. There is an assumption in the literature that the possession of competencies is related to the accomplishment of goals

(i.e., job performance; Athey & Orth, 1999; Campion et al., 2011; Klemp, 1980; McLagan, 1980; Mirable, 1999; Parry, 1998; Rodriguez, Patel, Bright, Gregory, & Gowing, 2002; Spencer & Spencer, 1993). There are articles that link competencies to job performance rated in a variety of ways (Beerh et al., 2001; Levenson et al., 2006). For instance, Catano et al. (2007) found a small but significant relationship between scores on a job simulation test and self-report competency ratings used for police promotions. Similarly, Locke and Latham (1990) found that the relationship between goals set and performance is mediated by abilities.

Further, there is evidence that constructs similar to competencies are related to goal commitment. Goal commitment is the intention and desire to achieve a goal. Conscientiousness is the tendency to be neat, planful, organized, and achievement oriented. Bipp and Keingold (2011) found that conscientiousness (as measured by the NEO-FFI) was positively and significantly related to goal commitment ($r = .31$). However, Johnson (2001) found that dependability (a factor of conscientiousness) had virtually no correlation with a measure of job-task performance ($r = .05$). Johnson also found a small correlation between ability and a measure of job-task performance ($r = .13$).

Many researchers define competencies as being related to the organization's broader goals and mission (Athey & Orth, 1999; Lawler, 1994; Shippmann et al., 2000). That is, there may be behaviors that are needed to support the larger organization that do not contribute to the duties and responsibilities of completing a specific job (i.e., discretionary behaviors). Contextual performance is the pattern of behaviors that supports the broader organization's social and psychological environment (Motowidlo & Van

Scotter, 1994). The construct of contextual performance is differentiated from task performance, which is the pattern of behaviors necessary to perform a specific job. Motowidlo and Van Scotter (1994) found that only work orientation and dependability among Air Force mechanics were related to task performance, and work orientation, dominance, dependability, adjustment, cooperativeness, and internal control were all related to contextual performance. Contextual performance was shown to have a small correlation with task performance ($r = .20$), indicating that the two constructs are somewhat differentiated. Conway (1999) found that job dedication and interpersonal facilitation in a population of managers contributed to overall performance ratings beyond technical/administrative performance. Many see the construct of contextual performance as analogous to the construct of organizational citizenship behaviors (OCBs; Conway, 1999; Johnson, 2001). In a meta-analysis, Podsakoff, Whitting, Podsakoff, and Blume (2009) found that OCBs had a moderate correlation with job performance ratings ($r = .46$) and a moderate correlation with objective measures of unit performance ($r = .36$).

There is little evidence to support the use of competencies as units of measure because little research is available that addresses the properties of competency measures. The evidence of the relationship of competencies to job performance is inconclusive based on empirical research available. Furthermore, the relationship between goal achievement and competencies cannot be hypothesized based on the available evidence, but there is a logical basis to conclude that competencies should be related to performance. The current study attempted to accomplish three goals:

1. To explore the properties of competencies, including their stability and relationships to one another.
2. To explore the relationship between competency ratings and different types of goals.
3. To explore the relationship between competency ratings and overall performance.

By quantitatively exploring competencies as they are most commonly used, the study provides direction to practitioners using competencies and moves the academic research on competencies forward based on the findings.

Method

Sample

The participants in the study were employees working in a corporate environment in a national organization. The organization owns a number of different brands, all of which are part of service industries. The organization employs approximately 20,000 people nationwide. The participants work in a variety of fields, including human resources, finance, legal, and benefits. The data from the organization contained performance information about 1,407 employees working at the individual contributor level within the organization. No demographic data for the employees (e.g., age, race, gender, etc.) were available. All employees remained at the same organizational level across the 2010 and 2011 performance years (i.e., no employee in the sample was promoted to a higher organizational level), but 829 employees changed job titles between the 2010 and 2011 performance years. A total of 874 employees had the same manager across the 2010 and 2011 performance years and 533 employees had a different manager.

Measures

Competency ratings were available for all employees in the sample. Although all individuals in the sample were rated on five main competencies, some individuals were rated on some additional competencies. On average, each individual was assigned 6.64 competencies in 2010 and 6.60 competencies in 2011. Goal ratings were available for some employees but not all. In the 2010 performance year, 97 employees had at least 1 goal assigned to them, with an average of 5.08 goals being assigned to an individual. In the 2011 performance year, 1221 employees had at least 1 goal assigned to them, with 5.28 goals being assigned to an individual, on average. Table 2 provides competency and goal labels, definitions (if available), and sample size in the 2010 and 2011 performance years.

Table 2
Competency and Goal Descriptions and Sample Size

Competency	Competency Definition	<i>n</i>	
		2010	2011
Change Mastery	Effective performers stay adaptable and effective in the company's continuously evolving business situation. They embrace needed change and modify their behavior when appropriate to achieve organizational objectives. They stay effective in the face of ambiguity. They understand and use change management techniques to help ensure smooth transitions.	1406	1406
Customer Orientation/ Positive Impact	Effective performers stay close to customers (e.g., franchisees) and consumers. They view the organization through the eyes of the customer/consumer and go out of their way to anticipate and meet customer needs. They continually seek information and understanding regarding market trends. They make positive impressions with customers and others. They are optimistic and enthusiastic about what they do and their excitement is contagious.	1406	1406
Initiative	Effective performers are proactive and take action without being prompted. They understand the need for independent action in a service business driven by the success of thousands of autonomous representatives. They see a need, take responsibility, and act on it. They make things happen.	512	517
Integrity/High Standards	Effective performers think and act ethically, honestly, and with the highest work standards. They take responsibility for their actions and foster a work environment where integrity is valued. They establish and model standards that guarantee exceptional quality and necessary attention to detail. They understand that the inner work standards of every individual company representative at a consumer site can be a key marketplace differentiator. They find best practices, share them, and then improve upon them.	23	0

(table continues)

Table 2 (cont.)

Competency and Goal Descriptions and Sample Size

Competency	Competency Definition	<i>n</i>	
		2010	2011
Organizing and Planning	Effective performers have strong organizing and planning skills that allow them to be highly productive and efficient. They manage their time and resources wisely and effectively prioritize multiple competing tasks. They plan, organize, and actively manage meetings for maximum productivity. If in a management role, they delegate effectively to maximize team productivity.	20	4
Problem Solving/ Decision Making	Effective performers are able to identify problems, solve them, act decisively, and show good judgment. They approach problems creatively and are open to learning from other brands and best practices. They isolate causes from symptoms, and compile information and alternatives to illuminate problems from a variety of sources. They find balance between studying the problem and solving it. They readily commit to action and make decisions that reflect sound judgment.	535	526
Relationship Building/ Sensitivity	Effective performers understand that a primary factor for success in the service industry is establishing and maintaining productive relationships. They like interacting with people and are good at it. They devote appropriate time and energy to establishing and maintaining networks. They initiate contacts readily and maintain them over time. They are able to utilize relationships to facilitate business transactions. They value and respect the concerns and feelings of others. In the workplace, this compassion translates into behaviors that communicate empathy toward others, respect for the individual, and appreciation of diversity among team members.	1406	1406

(table continues)

Table 2 (cont.)
Competency and Goal Descriptions and Sample Size

Competency	Competency Definition	<i>n</i>	
		2010	2011
Results Orientation/ Sense of Duty	Effective performers are achievement motivated and maintain an appropriate focus on outcomes and accomplishments. They see this as a critical success factor in the service industry where autonomous representatives interact with customers. They convey a sense of urgency to make things happen. They respect the need to balance short- and long-term goals. They are driven by a need for closure.	1406	1406
Sales Mind Set/ Selling Skills	Effective performers enjoy the competitive world of sales and selling. They are resilient and persistent. They like being measured and strive toward stretch goals. They understand the need for continuous top-line growth while maintaining profitability. They embrace innovative techniques to improve volume and readily share productive sales practices within and across brands to grow the business. In selling roles, they are credible and persuasive. They understand the importance of developing long-term customer relationships in the service businesses of the company.	139	145
Company Values	We delight customers. We do the right thing. We care about people. We value teamwork. We do what we say. We value diversity. We are a learning organization. We are committed to innovation.	1405	1407
Strategic Insight for Growth	Effective performers act with the future in mind. They plan and make decisions within the framework of the organization's strategic intent. They know and understand the factors influencing strategy (e.g., core competence, customers, competition, and the organization's current strengths and limitations). They constantly think in terms of expanding the business, always looking for new ways to grow and achieve competitive advantage. They generate (or understand) and communicate a preferred future vision for their brand or the enterprise as a whole.	2	0

(table continues)

Table 2 (cont.)
Competency and Goal Descriptions and Sample Size

Competency	Competency Definition	<i>n</i>	
		2010	2011
Talent Development	Effective performers understand the need to hire and grow exceptional talent. They keep a continual eye on the talent pool, monitoring skills and needs of all team members. They expand the skills of staff through training, coaching, and development activities related to current and future jobs. They evaluate and articulate present performance and future potential to create opportunities for better use of staff abilities. They identify developmental needs and assist individuals in developing plans to improve themselves. They stay proficient in appropriate talent management processes, including best practices for prospecting, recruiting, selection, orientation, and succession management.	27	10

Goal	Goal Definition	<i>n</i>	
		2010	2011
Beat Our Plan	Goals concerned with surpassing performance expectations.	56	109
Develop Teams	"Develop high performing, highly engaged, diverse teams."	42	105
Grow Our Business	"Grow our business by transforming our customers' experience."	95	110
Goals	Generic category	24	1095

The Organization's Competency Model

The organization's competency library and subsequent competency models were developed by an outside consulting firm. The consulting firm had worked with a number of national and international organizations prior to working with the organization in the

study. The consulting firm was tasked with developing competency models for each level of the organization's hierarchy. Figure 2 provides a picture of the organization's hierarchical levels.

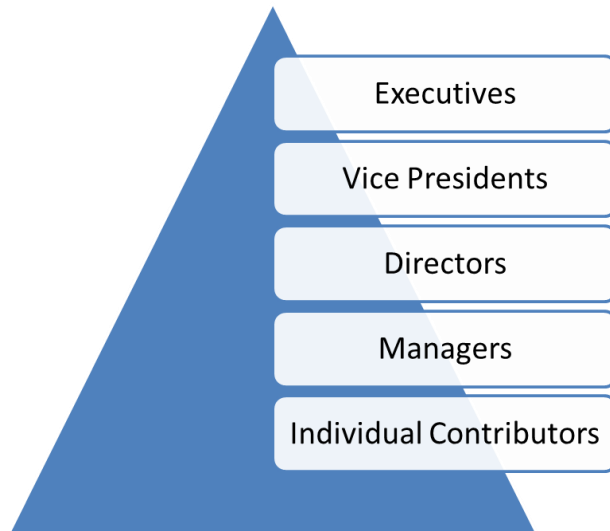


Figure 2. Organization's hierarchy by level

The consulting firm went through a series of process steps to develop the competency models. First, the consulting firm interviewed top performers at all hierarchical levels who were identified by leaders of each brand in the organization, including the organization's corporate arm. Second, the consulting firm developed its initial drafts of the competency models for each level across the organization's brands. Third, the consulting firm sent surveys to all Vice Presidents, Directors, and Managers who had received a rating of 4 or 5 (on a 5-point rating scale) on their most recent performance review. Individuals who were sent the survey were asked to rate the importance of the competencies for three levels: the level the individual reported to (superior level), the level occupied by the individual (peer level), and the level reporting

up to the individual (subordinate level). Finally, the survey results were analyzed, and the results were sent to the brand executives for refining before being implemented to the organization. Therefore, for the individual contributor level, interview data were compiled to create an initial competency model, and managers rated the importance of the competencies for individual contributors. The executives of each of the organization's brands were provided the opportunity to make changes to the competency models before they were implemented.

The Organization's Performance Review System

Both competency ratings and goal ratings were provided concurrently by the employee's manager in each performance year. Competencies were assigned to individuals based on their level in the organizational hierarchy.

The performance review process contains 7 steps. In total, the process takes approximately four months to complete, not counting the year-round documentation of behavior by the employee. An online performance management vendor site is used to manage the performance review process in the organization. Table 3 provides the details of the performance review process.

Table 3

Process Steps of the Organization's Performance Review Process

Step	Name	Description
1	Goal Setting	At the beginning of each calendar year, goals are set for each employee, either manually by each manager or via the cascading of goals from a higher level to a lower level (e.g., Manager's goals cascaded to Individual Contributors). Goals are placed into one of three categories corresponding to the organization's goals: "Beat Our Plan," "Grow Business Rapidly by Transforming Our Customers' Experience," and, "Develop High Performing, Highly Engaged, Diverse Teams." A generic "Goals" category is also available.*More than one goal can be assigned to the goal categories, and there is no obligation for an individual to have a goal in each goal category.
2	Employee documentation	An employee's performance review form is open throughout the performance year (i.e., the calendar year) for the employee to document relevant behaviors as they pertain to goals and competencies.
3	Manager Review of Documentation	At the end of the performance cycle, the employee sends the documentation collected throughout the year to his or her manager for review. The manager reviews the documentation and returns the form to the employee.
4	Self-Rating	The employee is tasked with providing a self-rating on goals accomplished and competencies. Ratings are based on a 5-point Likert scale (1 = Below Required Performance, 5 = Consistently Exceptional Performance), with 3 (Successful Performance) being the minimum standard of acceptable performance. After self-ratings are assigned, the employee sends the form back to the manager.
5	Manager Rating	The manager is able to review the employee's documentation and the employee's self-ratings. The manager adds his or her documentation and provides his or her ratings of the employee's goal attainment and competencies. Upon completion, the manager then sends the form to the next step.

(table continues)

Table 3 (cont.)

Process Steps of the Organization's Performance Review Process

Step	Name	Description
6	Calibration	The calibration step is used to ensure that competency weightings within a group falling under a VP are consistent with respect to each other (i.e., goal attainment and competencies are rated on the same scale by all managers under the VP) and to allocate merit-based compensation. An overall performance rating is calculated. Competency ratings are averaged into an overall competency score, and goal attainment ratings are averaged into an overall goal score. The overall performance rating is a weighted average, with 40% of overall performance rating coming from the overall competency score and 60% of overall performance rating coming from the overall goal score. Merit-based compensation is based on the overall performance score. If an individual's overall performance rating is modified to fit either other raters or to fit merit allocation, all competency scores are modified proportionally to fit the revised overall performance rating. According to the employee who oversees the performance review process for the organization, approximately 80% of the competency ratings and goal ratings are consistent with the manager's original rating made in step 5. After the calibration step is completed, the performance forms are sent back to the manager.
7	Feedback Meeting	The manager schedules a formal feedback meeting in which the employee's performance and competencies are discussed. His or her allocated merit compensation based on his or her performance scores is also disclosed at this time.

The current study focused on the competency ratings provided by the manager in step 5 of the performance review process.

Analyses

First, aggregate scores were created. An overall competency score was computed for each of the 2010 and 2011 performance years by averaging all competency ratings within each year. Because not all employees were assigned the same competency model,

the overall competency scores were calculated with a different number of competencies depending on the individual and his or her designated competency model. An overall goal score was created by averaging the ratings for all goals assigned to an individual. Again, each individual was assigned and rated on a different number of goals and not all goal categories were represented for all individuals. The ratings for each goal may be made up of one or more goals, depending on the individual.

The 2010 performance year acted as a baseline year in the analyses. Therefore, two groups were created: one group had the same manager in both 2010 and 2011 performance years (same manager group) and the other group had a change in manager from the 2010 to 2011 performance years (different manager group). Descriptive statistics and correlations were computed for all competencies and goal categories, including the overall competency score and the overall goal score. T-tests were then computed for the 5 IC competencies (Change Mastery, Customer Orientation/ Positive Impact, Relationship Building/ Sensitivity, Results Orientation/ Sense of Urgency, Company Values), goal categories, and overall goal score to compare mean ratings in the 2010 and 2011 performance years. The t-tests were run for the full sample, for the same manager group and the different manager group. Next, a regression analysis was used to determine the baseline prediction model of performance using the 2010 performance data. Further regression analyses were used on the 2011 performance data to determine if competencies differentially predicted goal categories. Finally, path analyses via a structural equation modeling (SEM) program were used to determine if the baseline prediction model found in the 2010 performance data fit the 2011 performance data. Path

analyses were also conducted to determine the variables that moderated relationship between the 2010 and 2011 overall goal scores.

Results

Table 4 shows the means, standard deviations, and correlations for competencies, overall competency score, goal categories, and overall goal score. Most of the correlations fell in the moderate range and correlations among the variables in the 2010 data are higher than the correlations among the 2011 variables.

Table 5 shows the correlations of the 2010 and 2011 variables for the same manager and different manager groups. Correlations among the same manager group are higher than the different manager group when looking at the variable ratings across the two performance years. There was a moderate correlation between the Overall Competency Score and the Overall Goal Score in 2010, $r = .64, p < .001$. There was a lower correlation between the Overall Competency Score and the Overall Goal Score in 2011 when compared to 2010, $r = .39, p < .001$. When looking at the correlations between the Overall Competency Score and the Overall Goal Score in 2011 for the same manager group and different manager group, the correlation was higher between the two variables for the same manager group than for the different manager group, $r = .45, p < .001$, and $r = .29, p < .001$, respectively.

Table 4

Descriptive Statistics and Correlations Table: Full Sample

Competency	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
2010									
1. Change Mastery	3.34	0.67	1.00						
2. Customer Orientation/Positive Impact	3.49	0.72	.42	1.00					
3. Relationship Building/Sensitivity	3.39	0.69	.44	.53	1.00				
4. Results Orientation/Sense of Urgency	3.34	0.73	.49	.46	.39	1.00			
5. ServiceMaster Values	3.49	0.67	.45	.43	.44	.40	1.00		
6. Overall Competency Score	3.40	0.52	.74	.75	.73	.75	.70	1.00	
7. Beat Our Plan	3.40	0.58	.29	.28	.18	.33	.32	.47	1.00
8. Develop Teams	3.43	0.72	.21	.29	.34	.38	.30	.37	.37
9. Grow Our Business	3.42	0.49	.47	.54	.48	.42	.51	.68	.53
10. Goals	3.44	0.66	.13	.45	.33	.28	.52	.39	-
11. Overall Performance Score	3.38	0.44	.41	.47	.43	.46	.50	.64	.81
2011									
12. Change Mastery	3.38	0.66	.38	.27	.26	.22	.22	.39	-.07
13. Customer Orientation/Positive Impact	3.49	0.69	.25	.42	.36	.27	.28	.42	.36
14. Relationship Building/Sensitivity	3.42	0.67	.25	.30	.41	.20	.22	.37	.35
15. Results Orientation/Sense of Urgency	3.37	0.71	.26	.27	.23	.43	.21	.40	.31
16. ServiceMaster Values	3.45	0.62	.26	.27	.31	.23	.40	.39	.12
17. Overall Competency Score	3.41	0.48	.39	.42	.42	.52	.35	.55	.35
18. Beat Our Plan	3.47	0.60	.09	.31	.15	.20	.24	.27	.21
19. Develop Teams	3.44	0.59	.29	.35	.17	.15	.21	.33	.52
20. Grow Our Business	3.44	0.60	.37	.23	.22	.25	.11	.33	.22
21. Goals	3.40	0.60	.23	.27	.21	.33	.22	.35	-
22. Overall Performance Score	3.41	0.59	.24	.28	.21	.33	.22	.36	.30

Note. Bold values are not statistically significant. Correlations with $n < 15$ are not reported.

(table continues)

Table 4 (cont.)

Descriptive Statistics and Correlations Table: Full Sample

Competency	8	9	10	11	12	13	14	15	16
2010									
1. Change Mastery									
2. Customer Orientation/Positive Impact									
3. Relationship Building/Sensitivity									
4. Results Orientation/Sense of Urgency									
5. ServiceMaster Values									
6. Overall Competency Score									
7. Beat Our Plan									
8. Develop Teams	1.00								
9. Grow Our Business	.23	1.00							
10. Goals	-	.54	1.00						
11. Overall Performance Score	.74	.84	.73	1.00					
2011									
12. Change Mastery	.06	.06	-.19	.01	1.00				
13. Customer Orientation/Positive Impact	.33	.19	-.18	.22	.39	1.00			
14. Relationship Building/Sensitivity	.36	.29	.37	.34	.40	.48	1.00		
15. Results Orientation/Sense of Urgency	-.04	.31	.06	.22	.42	.40	.32	1.00	
16. ServiceMaster Values	.34	.36	.17	.34	.36	.43	.42	.36	1.00
17. Overall Competency Score	.26	.35	-.04	.33	.71	.73	.69	.72	.68
18. Beat Our Plan	-.03	.20	.32	.20	.33	.35	.28	.35	.26
19. Develop Teams	-.19	.40	.54	.35	.42	.40	.49	.48	.28
20. Grow Our Business	.00	.32	.12	.24	.50	.51	.53	.44	.33
21. Goals	-	-	-	-	.25	.27	.12	.37	.21
22. Overall Performance Score	-.08	.35	.36	.29	.27	.29	.16	.39	.22

Note. Bold values are not statistically significant. Correlations with $n < 15$ are not reported.

(table continues)

Table 4 (cont.)

Descriptive Statistics and Correlations Table: Full Sample

Competency	16	17	18	19	20	21	22
2010							
1. Change Mastery							
2. Customer Orientation/Positive Impact							
3. Relationship Building/Sensitivity							
4. Results Orientation/Sense of Urgency							
5. ServiceMaster Values							
6. Overall Competency Score							
7. Beat Our Plan							
8. Develop Teams							
9. Grow Our Business							
10. Goals							
11. Overall Performance Score							
2011							
12. Change Mastery							
13. Customer Orientation/Positive Impact							
14. Relationship Building/Sensitivity							
15. Results Orientation/Sense of Urgency							
16. ServiceMaster Values	1.00						
17. Overall Competency Score	.68	1.00					
18. Beat Our Plan	.26	.42	1.00				
19. Develop Teams	.28	.58	.34	1.00			
20. Grow Our Business	.33	.65	.22	.40	1.00		
21. Goals	.21	.36	-	-	-	1.00	
22. Overall Performance Score	.22	.39	.73	.80	.75	1	1.00

Note. Bold values are not statistically significant. Correlations with $n < 15$ are not reported.

Table 5

Correlations Table for Same and Different Manager Groups

Competency	1	2	3	4	5	6	7
2010							
1. Change Mastery	1.00						
2. Customer Orientation/Positive Impact	.41/.44	1.00					
3. Relationship Building/Sensitivity	.43/.46	.52/.55	1.00				
4. Results Orientation/Sense of Urgency	.45/.54	.43/.50	.35/.44	1.00			
5. ServiceMaster Values	.43/.48	.43/.44	.43/.45	.36/.46	1.00		
6. Overall Competency Score	.72/.76	.74/.76	.71/.75	.73/.78	.69/.72	1.00	
7. Beat Our Plan	.17/.48	.19/.40	.11/.32	.38/.32	.28/.35	.47/.44	1.00
8. Develop Teams	.22/-	.23/-	.29/-	.40/-	.26/-	.35/-	-/-
9. Grow Our Business	.39/.55	.52/.52	.45/.50	.40/.65	.44/.54	.62/.76	.49/.61
10. Goals	-0.11/-	0.51/-	0.35/-	0.43/-	0.50/-	0.35/-	-/-
11. Overall Performance Score	0.33/0.44	0.46/0.40	0.40/0.44	0.51/0.50	0.46/0.44	0.63/0.58	0.78/0.86
2011							
12. Change Mastery	.44/.28	.30/.19	.30/.20	.30/.28	.23/.18	.44/.30	-.11/-.14
13. Customer Orientation/Positive Impact	.29/.18	.49/.29	.42/.26	.30/.23	.31/.23	.49/.30	.41/.22
14. Relationship Building/Sensitivity	.30/.14	.37/.16	.50/.24	.24/.12	.28/.10	.46/.20	.31/.36
15. Results Orientation/Sense of Urgency	.30/.19	.30/.20	.24/.20	.46/.38	.23/.19	.44/.32	.30/.31
16. ServiceMaster Values	.30/.19	.31/.19	.34/.25	.27/.15	.51/.19	.47/.25	.01/.36
17. Overall Competency Score	.45/.28	.48/.30	.47/.32	.46/.34	.41/.25	.65/.40	.33/.32
18. Beat Our Plan	-.03/.37	.26/.40	.01/.53	.16/.33	.39/-.21	.23/.37	.18/.29
19. Develop Teams	.16/.49	.36/.30	.08/.35	.09/.33	.17/.21	.24/.46	.48/-
20. Grow Our Business	.35/ .25	.22/.16	.18/.19	.29/.16	.11/.00	.34/.20	.14/-
21. Goals	.26/.18	.34/.18	.25/.15	.36/.29	.23/.20	.41/.2	-/-
22. Overall Performance Score	.35/.20	.22/.19	.18/.17	.29/.29	.11/.18	.34/.28	.14/.26

Note. Values to the left of the forward slash are correlations from the same manager group. Values to the right of the forward slash are correlations from the different manager group. Bold values are not statistically significant. Correlations with $n < 15$ are not reported.

(table continues)

Table 5 (cont.)

Correlations Table for Same and Different Manager Groups

Competency	8	9	10	11	12	13	14
2010							
1. Change Mastery							
2. Customer Orientation/Positive Impact							
3. Relationship Building/Sensitivity							
4. Results Orientation/Sense of Urgency							
5. ServiceMaster Values							
6. Overall Competency Score							
7. Beat Our Plan							
8. Develop Teams	1.00						
9. Grow Our Business	.12 /.73	1.00					
10. Goals	-/-	.51/-	1.00				
11. Overall Performance Score	.72/-	.82/.89	.69/-	1.00			
2011							
12. Change Mastery	.10 /-	.01 / .01	-.17 /-	-.04 / -.15	1.00		
13. Customer Orientation/Positive Impact	.36/-	.09 / .24	-.39 /-	.15 / .18	.38/.36	1.00	
14. Relationship Building/Sensitivity	.43/-	.21 /.39	-.15 /-	.31/ .30	.41/.34	.52/.38	1.00
15. Results Orientation/Sense of Urgency	.30 /-	.26/.42	.03 /-	.17 / .28	.40/.46	.40/.39	.33/.27
16. ServiceMaster Values	.35 /-	.36/ .31	.24 /-	.35/ .22	.35/.34	.42/.42	.42/.38
17. Overall Competency Score	.34 /-	.30/ .37	-.10 /-	.31/ .24	.70/.71	.74/.72	.71/.65
18. Beat Our Plan	-.11 /-	.15 / .40	-/-	.13 / .37	.25/.56	.25/.59	.20 /.45
19. Develop Teams	-.31 /-	.38/ .39	-/-	.31/ .31	.38/.49	.33/.45	.42/.56
20. Grow Our Business	-.02 /-	.23 /.52	-/-	.14 / .33	.49/.48	.42/.60	.52/.48
21. Goals	-/-	-/-	-/-	-/-	.27/.21	.31/.9	.19/ .01
22. Overall Performance Score	-.02 /-	.23/ .19	-.06 /-	.14/ .15	.29/.23	.33/.22	.23/ .04

Note. Values to the left of the forward slash are correlations from the same manager group. Values to the right of the forward slash are correlations from the different manager group. Bold values are not statistically significant. Correlations with $n < 15$ are not reported.

(table continues)

Table 5 (cont.)

Correlations Table for Same and Different Manager Groups

Competency	15	16	17	18	19	20	21	22
2010								
1. Change Mastery								
2. Customer Orientation/Positive Impact								
3. Relationship Building/Sensitivity								
4. Results Orientation/Sense of Urgency								
5. ServiceMaster Values								
6. Overall Competency Score								
7. Beat Our Plan								
8. Develop Teams								
9. Grow Our Business								
10. Goals								
11. Overall Performance Score								
2011								
12. Change Mastery								
13. Customer Orientation/Positive Impact								
14. Relationship Building/Sensitivity								
15. Results Orientation/Sense of Urgency	1.00							
16. ServiceMaster Values	.36/.34	1.00						
17. Overall Competency Score	.71/.71	.68/.67	1.00					
18. Beat Our Plan	.27/.59	.18/.52	.32/.65	1.00				
19. Develop Teams	.47/.44	.18/.53	.53/.64	-.34	1.00			
20. Grow Our Business	.40/.45	.30/.41	.61/.67	.19/.19	.28/.57	1.00		
21. Goals	.41/.32	.27/.10	.43/.26	-/-	-/-	-/-	1.00	
22. Overall Performance Score	.42/.33	.28/.13	.45/.29	.74/.70	.76/.86	.70/.79	1.00/1.00	1.00

Note. Values to the left of the forward slash are correlations from the same manager group. Values to the right of the forward slash are correlations from the different manager group. Bold values are not statistically significant. Correlations with $n < 15$ are not reported.

There were no significant differences in means for the full sample of employees for any variable. When examining the mean trends for the full sample, means of variables tended to rise across the two years. The only exception was Company Values, which decreased from 2010 to 2011. There were three significant differences in the same manager group. Change Mastery ratings rose significantly from 2010 to 2011, $t(1745) = 2.04, p = .042$, Relationship Building/ Sensitivity ratings rose significantly from 2010 to 2011, $t(1745) = 2.13, p = .021$, and the Overall Competency Scores rose significantly from 2010 to 2011, $t(1745) = 2.10, p = .036$. Overall, the means in the same manager group for competency and goal ratings trended higher from 2010 to 2011. There were two significant mean differences in different manager group. There was a significant decrease in Company Values ratings from 2010 to 2011, $t(1031.3) = 2.27, p = .023$, and a significant increase in the Overall Goal Scores from 2010 to 2011, $t(36.423) = 2.37, p = .023$. When looking at mean trends, Change Mastery and Beat Our Plan goal ratings rose slightly, but all other competency and goal ratings fell across the two years.

A baseline prediction model was needed in order to determine if prediction was consistent across two years of performance ratings. Table 6 shows the regression coefficients for competencies in the 2010 performance data when they are simultaneously regressed on the Overall Goal Score in 2010.

Table 6
Baseline Prediction Model

Competency	<i>B</i>	<i>SE</i>	Beta	<i>t</i>	<i>p</i>	<i>R</i> ²
(Constant)	1.16	0.27		4.30	< .001	0.44
Change Mastery	0.09	0.07	0.11	1.21	0.23	
Customer Orientation/Positive Impact	0.09	0.06	0.14	1.47	0.15	
Relationship Building/Sensitivity	0.12	0.06	0.19	1.97	0.05	
Results Orientation/Sense of Urgency	0.17	0.06	0.26	2.94	< .001	
Company Values	0.17	0.06	0.26	2.93	< .001	

Table 7 shows the prediction models that were generated by regressing the 2011 competencies on to the four 2011 goal categories. The regressions analyses demonstrated some differentiation in prediction depending on the goal category.

Table 7
2011 Goal Category Prediction Models

Beat Our Plan	<i>B</i>	<i>SE</i>	Beta	<i>t</i>	<i>p</i>	<i>R</i> ²
(Constant)	1.58	0.40		3.99	< .001	0.20
Change Mastery	0.18	0.10	0.19	1.91	0.06	
Customer Orientation/Positive Impact	0.13	0.11	0.15	1.21	0.23	
Relationship Building/Sensitivity	0.00	0.11	0.00	0.02	0.99	
Results Orientation/Sense of Urgency	0.14	0.10	0.15	1.34	0.18	
Company Values	0.08	0.10	0.09	0.85	0.40	
<hr/>						
Develop Teams	<i>B</i>	<i>SE</i>	Beta	<i>t</i>	<i>p</i>	<i>R</i> ²
(Constant)	0.95	0.35		2.70	0.01	0.37
Change Mastery	0.19	0.09	0.20	2.16	0.03	
Customer Orientation/Positive Impact	-0.01	0.09	-0.01	-0.07	0.94	
Relationship Building/Sensitivity	0.26	0.09	0.30	2.79	0.10	
Results Orientation/Sense of Urgency	0.29	0.09	0.32	3.30	< .001	
Company Values	-0.02	0.08	-0.02	-0.24	0.81	

(table continues)

Table 7 (cont.)
 2011 Goal Category Prediction Models

Grow Our Business	<i>B</i>	<i>SE</i>	Beta	<i>t</i>	<i>p</i>	<i>R</i> ²
(Constant)	0.73	0.33		2.21	0.03	0.43
Change Mastery	0.26	0.08	0.28	3.18	< .001	
Customer Orientation/ Impact	0.19	0.08	0.23	2.31	0.02	
Relationship Building/Sensitivity	0.19	0.09	0.22	2.19	0.03	
Results Orientation/Sense of Urgency	0.10	0.09	0.12	1.23	0.22	
Company Values	0.03	0.08	0.03	0.35	0.73	
<hr/>						
Goals						
(Constant)	1.95	0.12		15.67	0.00	0.17
Change Mastery	0.08	0.03	0.08	2.47	0.01	
Customer Orientation/Positive Impact	0.13	0.03	0.15	4.37	0.00	
Relationship Building/Sensitivity	-0.07	0.03	-0.07	2.12	0.03	
Results Orientation/Sense of Urgency	0.25	0.03	0.29	9.20	< .001	
Company Values	0.04	0.03	0.04	1.11	0.27	

Path analyses were run to determine whether the baseline prediction model fit the 2011 performance data. For the fit of the baseline prediction model with the full sample of 2011 data, two opposing models were created – Model 1 set all of the paths from the 2011 competencies to the 2011 Overall Goal Score to the baseline overall prediction model regression weights (see Table 5). The Chi-square test was significant, but the other fit indices were within acceptable range, save the RMSEA fit index, $\chi^2(5) = 71.736$, $p < .001$, Goodness of fit index (GFI) = 0.981, Root mean square residuals (RMR) = 0.023, Standardized root mean square residuals (SRMR) = 0.0183, Root mean square error of approximation (RMSEA) = 0.105. Model 2 included only the significant regression weights, and the model fit was improved, $\chi^2(3) = 62.932$, $p < .001$, GFI = 0.983, RMR = 0.016, SRMR = 0.0389, RMSEA = 0.128. The change in Chi-square from Model 1 to Model 2 was significant, $\Delta\chi^2(2) = 8.804$, $p = .012$.

For the fit of the baseline prediction model with the same manager group in 2011 as in 2010, two opposing models were created. First, Model 1 set all of the paths from the 2011 competencies to the 2011 Overall Goal Score to the baseline overall prediction model regression weights. The model fit the data relatively well, $\chi^2(5) = 27.303, p < .001$, GFI = 0.988, RMR = 0.017, SRMR = 0.0358, RMSEA = 0.078. Second, Model 2 included only the significant regression weights, and the model fit was similar to Model 1, $\chi^2(3) = 24.372, p < .001$, GFI = 0.989, RMR = 0.012, SRMR = 0.0298, RMSEA = 0.099. The change in chi-square from Model 1 to Model 2 was not significant, $\Delta\chi^2(2) = 2.931, p = .231$.

For the fit of the baseline prediction model with a different manager group in 2011 as in 2010, two opposing models were created – Model 1 set all of the paths from the 2011 competencies to the 2011 Overall Goal Score to the baseline overall prediction model regression weights. The model did not fit the data well when compared to the same manager group analysis, $\chi^2(5) = 50.670, p < .001$, GFI = 0.968, RMR = 0.032, SRMR = 0.0703, RMSEA = 0.137. Model 2 included only the significant regression weights, and the model fit was improved, but still poor, $\chi^2(3) = 44.113, p < .001$, GFI = 0.972, RMR = 0.022, SRMR = 0.0561, RMSEA = 0.168. The change in chi-square from Model 1 to Model 2 was significant, $\Delta\chi^2(2) = 6.557, p = .037$.

Finally, path analysis was run to determine if there were variables that moderated the relationship between Overall goal scores for the two years. The moderation analyses were conducted in three steps. Model 1 contained all 2010 competencies moderating the relationship between the 2010 Overall goal score and the 2011 Overall goal score. The fit for Model 1 was poor, $\chi^2(11) = 37.598, p < .001$, GFI = 0.887, RMR = 0.045, SRMR =

0.1054, RMSEA = 0.160. In Model 2, competencies that did not have a significant path to 2011 Overall goal score were removed, leaving only Change Mastery and Customer Orientation/ Positive Impact in the model. The fit for Model 2 was good, $\chi^2(2) 5.472, p = .065, GFI = 0.972, RMR = 0.023, SRMR = 0.0633, RMSEA = 0.135$. In Model 3, a direct path from 2010 Overall goal score to 2011 Overall goal score was added. The fit for Model 3 was also good, $\chi^2(1) 5.020, p = .025, GFI = 0.975, RMR = 0.023, SRMR = 0.0597, RMSEA = 0.207$, but the direct path from 2010 Overall Goal Score to 2011 Overall Goal Score was not significant, $b = 0.07, p = .513$. The change in chi-square from Model 2 to Model 3 was not significant, $\Delta\chi^2(1) = 0.452, p = .501$. To maintain parsimony, Figure 3 displays the path coefficients for Model 2. A moderation model with the 2011 competencies moderating the relationship between the 2010 and 2011 Overall goal scores was tested, and was found to have poor fit, $\chi^2(11) 116.587, p < .001, GFI = 0.676, RMR = 0.113, SRMR = 0.251, RMSEA = 0.320$.

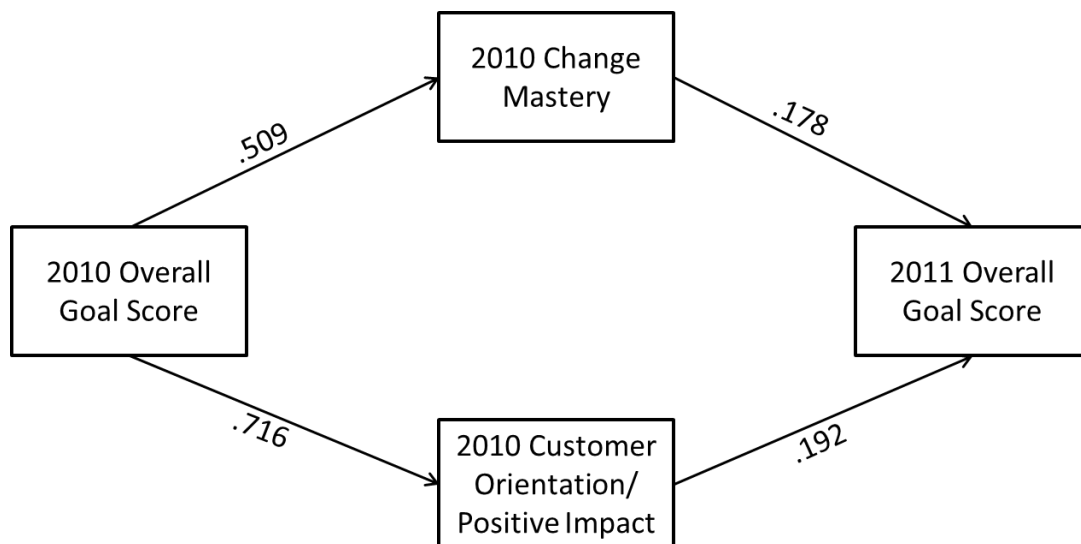


Figure 3. Moderation Model

Discussion

The means of the competency variables and goals across both years are centered in the 5-point scale (ranging from 3.34 to 3.49), with the standard deviations indicating that there is a tolerable level of variation in the ratings. The company has a suggested distribution (as opposed to a forced distribution) that managers are asked to adhere to. The variance found in the scores and the relatively normal distribution of all the variables suggests that this policy may help improve the distribution of ratings.

The correlations among the variables tend to be moderate in the 2010 and 2011 performance years, with correlations ranging from .39 - .53 in among the 2010 variables and .32 - .48 for the 2011 variables. The decreased correlations in the 2011 performance data among variables is likely due to a greater familiarity with the competencies and goals, leading to improved differentiation among the constructs. The correlations between the Overall Competency Score and the Overall Goal Score decreased from the 2010 to the 2011 performance years, and the 2011 correlation is moderate. This finding indicates that there is differentiation among the constructs being measured, and the differentiation becomes greater with familiarity. This finding is similar to the finding of Podsakoff et al. (2009). As would be expected, the correlations among the 2011 performance variables are higher for the same manager group than for the different manager group. This finding may indicate that the first ratings made by a manager for a particular employee shapes future ratings for the same employee. In other words, performance in the employees first performance year under a manager may be the most important for the employee, particularly if the employee's merit bonus is linked to performance review ratings.

The moderate correlations between matched variables in the 2010 and 2011 performance years and the t-tests results across the 2010 and 2011 performance years indicate that among the full sample, there is high degree of stability of the competency ratings. The non-significant correlations between the goal measures from the 2010 to 2011 performance years are likely due to the different goal categories in the two performance years. However, there is some evidence to suggest that competencies and performance may change over time, as the means trend upward for nearly all the variables from 2010 to 2011 performance year. The consistency of the trend across all variables, save Company Values, may be due to factors other than changes in competencies and performance, such as managers' comparison of year over year performance scores or the manager's desire to maintain the employee's merit raise.

Splitting the full sample into the same manager and different manager groups provides a clearer view of how the ratings change based on the manager. In the same manager group, there was a significant increase on the three competencies and the overall competency score from 2010 to 2011 and no change in the goal ratings or the overall goal score. This increase is likely due to the increased opportunity to observe behaviors that evidence competency possession across multiple performance years. In the different manager group, there is one significant decrease in the competency ratings and a general trend of lower competency ratings in 2011 than in 2010. This decrease is likely due to the reduced number of opportunities to observe behaviors that may indicate competency possession. The lower competency ratings in 2011 may also be due to a general feeling that an employee under a new manager should not be rated too highly so he or she has "room to improve." The significant increase in the Overall Goal Score may be explained

in two ways. First, there may be halo effect for the goal ratings. In other words, the employee may have completed one goal successfully, and the performance on one goal may influence ratings on other goals. Second, there may be a comparison bias by the manager. The manager is likely to have observed the performance of two individuals who have held the same position, leaving the manager to consider how the new employee's performance is different than the previous employee's performance.

Compiling all of the information concerning the correlations and rating stability provides an interesting set of perspectives. First, there is a lower correlation (when compared to others in the data) between the 2010 Overall Goal Score and the 2011 Overall Goal Score ($r = .29, p = .004$), indicating that although the ratings are stable, there are differences in what is being rated. This finding may be expected as goals change for each individual across each year. However, the high stability among the competencies and goals leads to questions about the accuracy of the ratings. The influence of changing the manager also casts doubt on the accuracy of the ratings. With 59% of the sample changing job titles from 2010 to 2011, one may expect to find differences in ratings due to changes in job expectations. Post-hoc analyses indicate that there was a significant increase in Change Mastery for individuals who change job titles from 2010 to 2011, $t(1153) = 1.954, p = .051$, but there was otherwise no difference in ratings from 2010 to 2011 if an individual's job title changed. These findings provide little evidence to suggest that competency ratings change based on observed behavior, as would be expected when there was a change in role.

Due to the reduced number of individuals having goals in the 2010 performance year, the baseline performance model includes 6.8% of the total sample in 2010. The

correlations among the competency variables for those included in the analysis have a wider range than those found in the full sample for the 2010 performance year, ranging from .17 - .50. The resulting prediction model indicates that Relationship Building/ Sensitivity, Results Orientation/ Sense of Urgency, and Company Values are significant predictors the Overall Goal Score. The baseline prediction model is in contrast to the prediction model created when the 2011 performance data are analyzed. The 2011 prediction model contained 86.8% of the total 2011 sample and the Overall Goal Score has Change Mastery, Customer Orientation/ Positive Impact, and Results Orientation/ Sense of Urgency as significant predictors. Despite these differences, the 2011 data had good model fit with the baseline prediction model, indicating that there is model stability over one year's time. Findings indicate the baseline prediction model did not fit as well when there was a different manager rating in 2011 than when the same manager made the ratings in 2011. The model fit for the different manager group was not out of the bounds of acceptable on a majority of the reported fit statistics, but it was less acceptable when compared to the model fit of the same manager group.

Because the 2011 data fit the baseline model, it was permissible to use the 2011 data when looking at the prediction models for the individual goal categories. Further, the increased number of individuals with goals across the 2011 performance year and the better distinction in performance goals facilitated the analysis of the goal categories.

There was some differentiation in the prediction models of the individual goal categories that differed from the overall prediction model. The regression analysis for the Beat Our Plan goal category had a significant F-test, but there were no significant regression coefficients (Change Mastery was near significance, $p = .059$). The lack of

significant coefficients is likely due to the high multicollinearity in the regression analysis sample (correlations ranged from .28 - .61). There were significant predictors for the goal categories of Develop Teams and Grow Our Business. The predictors differed slightly in the two prediction equations, with Change Mastery, Relationship Building/Sensitivity, and Results Orientation/ Sense of Urgency predicting Develop Teams and Change Mastery, Customer Orientation/ Positive Impact, and Relationship Building/Sensitivity predicting Grow Our Business. The differences in the prediction equation lend some credence to the theory that the goal categories required different competencies to complete. Further, although Company Values was a significant predictor in the 2010 prediction equation, the competency was not significant in any of the individual goal category prediction equations. This finding lends partial support to the idea that Company Values may be related to contextual performance. The correlation of 2010 Company Values competency and the 2010 Overall Goal Score was high when compared to the correlation of the 2011 Company Values competency and the 2011 Overall Goal Score ($r = .50, p < .001$ and $r = .22, p < .001$, respectively). The high correlation of 2010 Company Values competency and 2010 Overall Goal Score accounts for the significant regression weight for 2010 prediction

Finally, a better understanding of the linkage between the 2010 and 2011 Overall Goal Scores was necessary. As previously discussed, the correlation between the two variables was low, $r = .293, p = .004$, and there was no statistical difference in the mean ratings from 2010 to 2011. These findings indicate that the change in goals from one year to the next causes difference in scores. However, as the measures of goals are theoretically related, the involvement of intervening variables was suspected. Therefore,

the 2010 competency variables were included in a path analysis model and moderating variables of 2010 Overall Goal Score and the 2011 Overall Goal Score, and the model fit was poor. The 2010 Overall Goal Score variable had significant path coefficients to all 2010 competency variables, indicating that performance in 2010 is a causal variable of 2010 competencies. There were only two significant paths from the 2010 competency variables and 2011 Overall Goal Score – Change Mastery and Customer Orientation/ Positive Impact. When the competency variables with non-significant paths to 2011 Overall Goal Score were removed, model fit was significantly improved, $\Delta\chi^2(9) = 32.126, p < .001$. The fit of Model 2 lends support to the theory that competencies do moderate the overall goal scores across two years. The model of Change Mastery and Customer Orientation/ Positive Impact moderating the relationship between the 2010 Overall Goal Score and the 2011 Overall Goal Score accounted for 17.3% of the variance in the 2011 Overall Goal Score. The moderation of performance via competencies lends greater weight to the role of competencies in performance and highlights the importance of measuring competencies accurately. Further, the question arises as to the role the organization has in influencing which competencies act as moderators. There are two possible ways to influence which competencies act as moderators: (1) modify the goals set in year 2 (in the current model, the goals in the 2011 performance data), or (2) change how the moderators are measured. Changes in organizational goals would lead to a natural shift in which competencies are critical to organizational success. Changes in competency measurement may include modifying competency definitions or adding additional ratings to each competency. These changes may improve the accuracy of competency ratings but may also modify the constructs being rated. A change in

constructs could lead to a change in the competencies responsible for moderating performance from year to year.

In summary, the current study has been the first to empirically explore competencies as they commonly appear in organizations. The study's findings suggest that there is a high rate of stability in competency ratings year over year, and correlations between competencies tend to be moderate. The performance appraisal is used to ensure that accepted performance standards are achieved, and as no efforts as competency improvement across the 2010 and 2011 performance year are known, it is still unclear whether competencies are changeable or can be developed. (Maurer et al., 2003; Parry, 1998). The current study indicates that there is some differentiation between the prediction models for each of the four goal categories. This finding supports the notion that different competencies are needed to fulfill different types of tasks (Locke & Latham, 1990). Further, the lack of relationship between the Company Values competency and any of the goal categories leads to the conclusion that the competency is related to contextual performance (Motowidlo & Van Scotter, 1994). The prediction model generated using the 2010 performance data was found to fit the 2011 performance data and explained 22.8% of the variance in the 2011 Overall Goal Score. These findings support the notion that competencies are necessary for job performance (Athey & Orth, 1999; Campion et al., 2011; Klemp, 1980; McLagan, 1980; Mirable, 1999; Parry, 1998; Rodriguez et al., 2002; Spencer & Spencer, 1993).

Limitations and Future Research

The current study explores the use of competency measures in a functioning organization. Further, the study used data taken directly from an organization's

performance review study across multiple years to understand competency ratings over time. As with most applied research, there are limitations to the current study.

First, only two years of data were available. Although the data had all the necessary information for competencies, only 6.8% of employees were assigned goals in the 2010 performance year. The low number of goals in the 2010 performance data constrains the prediction model. Future research should be done to consider competency ratings across a longer time frame. Future studies could determine how long a predictive model is viable before changes override it. Also, as jobs and job duties evolve rapidly to fit the changing needs of organizations, the competency levels of individuals should also see change. That is, as a job changes, different competencies or different competency levels are necessary for successful performance. If there are no changes to an individual's competency level as job demands dictate, then there is a greater chance that there will not be successful performance.

Second, the organization's performance review process is structured such that ratings may contain noise. For instance, goal ratings and competency ratings are made concurrently. With concurrent ratings comes an opportunity for more ratings errors and confusion around what is being rated. The ratings are further confounded by their involvement in the merit process, which is openly communicated to employees. With this, performance reviews may be more related to ensuring an employee is in the appropriate pay range as opposed to ensuring that performance standards are adequately met.

The way many organizations use competency ratings lead them to suffer similar issues as performance ratings. There may be some courses of actions to take in the future

to improve the accuracy of competency ratings. For instance, if multiple ratings were made for each competency, we could utilize different statistical techniques to determine if the same construct is being measured and derive the factor structure of competency models. Another possible alternative is to determine if modification in competency definitions improves rating accuracy. That is, determining if, for example, making competency definitions more behaviorally specific to the position would improve rating accuracy when compared to ratings made on a competency with a brief, generic definition.

Finally, although there is reason to believe that the structure of this organization's performance review process is similar to other organizations, there is not currently a source of data that will provide us with information on current common practices. This data was taken from a single organization within a particular context. Therefore, the information found in the study cannot be generalized to other organizations. Having a greater understanding of common practices may create a situation where meta-analytic studies are possible to determine the best way to improve the accuracy of performance and competency ratings.

Conclusion

Competencies have been used in organizations for a number of years. The lack of consensus on the definition of competencies has led to confusion in the field. Large consulting firms have researched competencies in organizations for many years, but the lack of publicly available empirical research concerning competencies has cast doubt on the utility and validity of competencies. More research should be done to understand the constructs being measured by organizations and how the constructs relate to job

performance. Further, this research should be made available in peer-reviewed journals to ensure that organizational practices meet scientific rigor.

The current study was an exploratory study performed to better understand competency ratings as they appear in the performance appraisals of an organization. It was conducted with the hopes that more scientific light be shone on current organizational practices. In the future, more collaboration between the academic and applied communities in the area of competencies and competency modeling will be necessary to ensure that current practices meet the high scientific standards of our field.

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