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Effects of Individual Resources and Team-Member Exchange on Service Quality [1]

While workplace resources are generally viewed as positively affecting performance, some studies indicate that not all resources increase performance. This study addresses the controversial disparate effects of workplace resources on performance by exploring functionally classified workplace resources in self-managing service teams and their relative impacts on team service quality. Considering membership dynamics and consequences between members, a field experiment was conducted in a cafeteria, with data collected through a working diary for workplace resources and a customer survey to evaluate service quality. Results suggest that efficacy-resources in self-managing teams should be controlled with caution as they may adversely affect team service quality. Supporting the person-situation interactionism perspective, workplace resources interact dynamically with individual employees and with situations. Esteem-resources were found to increase team service quality, while team-member exchange (TMX) not only improved team service quality but also moderated the impact of esteem-resources on team service quality.

Keywords: team-member exchange (TMX), self-managing service team, team service quality, field experiment

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I. INTRODUCTION

In the service industries, service is often delivered by teams. Employee empowerment and self-management are regarded as tools to enhance the effectiveness of those teams across metrics like customer service, job productivity, proactivity, and satisfaction (Kirkman & Rosen, 1999; Lin, Wu, & Ling, 2017). Various measures for empowering employees have been developed, with the self-managed team concept emerging as a key means of improving effectiveness by endorsing a certain degree of autonomy and responsibility within teams (Lewis & Gabrielsen, 1998; Erez, Jeffrey, & Elms, 2002; Park, 2012; Ueno, 2008).

The membership composition of service employees frequently changes based on customer demand, labor supply, and the organizational or employees' personal situations (Ernst, Jiang, Krishnamoorthy, & Sier, 2004). Round-the-clock operating hours for hotel front desks and fluctuating flight hours on air routes are good examples of the flexibility required in service-employee schedules, making member re-composition or alteration unavoidable (Smith & Kemmis, 2010). While many service employees are designated to engage in personal interactions with customers, these employees nevertheless rely on support from their teams to add a personal touch to their service delivery (Babbar & Koufteros, 2008). Membership dynamics have thereby become an important issue for human-resource managers, as individuals and the quality of their service delivery are affected by their team members (Baek & Lee, 2016; Mathieu, Tannenbaum, Donsbach, & Alliger, 2014). Variability between subjects in the service process inevitably not only subsumes heterogeneity in the output (Chi & Gursoy, 2009) but also accelerates within-person variation (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009a).

Service quality is one of the key indicators of service-team performance, which ultimately boosts revenue for service organizations (Heskett & Schlesinger, 1994; Martinelli & Balboni, 2012). In the customer-service process, where results inextricably depend on frontline employees, fluctuating relationship quality between shifting team members may affect not only individual employees but overall team effectiveness. However, previous studies have often assumed the team to be static, primarily focusing simply on quantitative output of team performance (Humphrey & Aime, 2014; Mathieu et al., 2014; Salas, Cooke, & Rosen, 2008).

The mixed findings about certain workplace resources is a further lingering issue. Classical theories, such as the job demands and resources model (JD-R: Bakker & Demerouti, 2007; Bakker, Veldhoven, & Xanthopoulou, 2010) or job characteristics model (Hackman & Oldham, 1976), suggest that workplace resources are assets facilitating better work outcomes by decreasing the negative effects of job demand while enriching job dimensions. However, some studies have demonstrated that this is not always the case and that outcomes vary by context (Anderson, Srivastava, Beer, Spataro, & Chatman, 2006; Bandura & Locke, 2003; Langfred, 2004; 2007), necessitating further study on the effects of and interactions between different functionalities of workplace resources. This study aims to fill that gap by investigating the relationship between service-team resources and the team service quality through a field experiment on membership dynamics. Specifically, workplace resources of the self-managing service team are further classified and examined in order to find the independent and interactive impact of the resources on team service quality.

II. THEORETICAL BACKGROUND

2.1. Self-Managing Service Teams

As sensitivity to customer orientation has grown, organizations have become increasingly aware of the importance of empowering employees in the customer-service process. Teamwork, or assigning work to groups of employees, is one of the most popular ways to improve service effectiveness (Noe, Hollenbeck, Gerhart, & Wright, 2014; Hackman, 1987; Rapp, Gilson, Mathieu, & Ruddy, 2016). In this arrangement, a team should consist of individuals whose skills and responsibilities are not identical, but organizationally interconnected with shared goals. Authority within work groups can be classified into manager-led, self-managed, and self-designed levels (Hackman, 1987), with group authority being the highest in self-designing work teams and least in manager-led teams. In a self-managing team, members are responsible for monitoring and managing their own performance while executing tasks, whereas management monitors performance in a manager-led team (Goodman, Devadas, & Hughson, 1988; Hackman, 1987). From an organizational perspective, with both empowerment and management being important, the self-managed team is the best model for boosting ownership and responsibility among team members (Blakeman, 2014; Seers, Petty, & Cashman, 1995); such team models are already widespread both inside and outside of the service industries (Erez et al., 2002; Park, 2012). Seers and colleagues (1995) contrasted self-managing teams and traditional manager-led teams and found that the change in decision locus affected the quality of social exchange within the work groups. Self-managing teams are significantly associated with a higher level of cohesiveness and employee satisfaction, as well as with positive customer-service and service-quality outcomes (Cohen & Ledford, 1994; Kirkman & Rosen, 1999; Lin et al., 2017; Maynard, Mathieu, Gilson, O'Boyle, & Cigularov, 2013).

2.2. Team Service Quality

Theories underpinning the celebrated service profit chain (Heskett & Schlesinger, 1994) posit that improved service-industry performance will ultimately lead to greater profitability and customer retention. Similarly, it is widely accepted that improved service performance has a positive effect on profitability through satisfaction and loyalty of customers, in turn enhancing customer lifetime values (CLVs). Supporting this notion is a series of empirical studies providing evidence on the causal relationships between customer perceived and assessed service quality and satisfaction (Cronin & Taylor, 1992), product choice (Richard & Allaway, 1993), willingness to repurchase (Zeithaml, Berry, & Parasuraman, 1996), and positive word-of-mouth intentions (Harrison-Walker, 2001).

Customers' perceptions of service quality are the appraisal by customers of a provided service. Since service excellence has become a critical competitive advantage not only limited to service industries (Albrecht & Zemke, 2001), team service quality is studied as a reliable performance indicator in the literature (e.g., Baek & Lee, 2016; Jong, Ruyter, & Wetzels, 2005). It was in this context that Lewis and Gabrielsen (1998) emphasized the need for the empowerment of frontline employees to ensure service quality, primarily by facilitating the resolution of complicated or extraordinary situations that crop up during customer interactions. Ueno (2008) insisted that the degree of empowerment does not always correspond with the level of consequent service quality, yet it is associated with the service quality of front-line employees.

2.3. Workplace Resources in Self-Managing Service Team

In all workplaces, there are resources facilitating the achievement of organizational goals. Job resources refer to any physical, social, or organizational factors of the job supporting goal achievement or personal growth in the workplace (Bakker, Demerouti,

& Verbeke, 2004; Häusser, Mojzisch, Niesel, & Schulz-Hardt, 2010; Schaufeli & Bakker, 2004). Three traditional dimensionalities of workplace resources are task, interpersonal, and organizational aspects (Schaufeli & Bakker, 2004). Accounting for personality dispositions, however, personal resources are increasingly being integrated as a distinct dimension of workplace resources (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009b). As used here, personal resources refer to employees' psychological assets for successfully managing their job roles and maintaining resiliency (Hobfoll, Johnson, Ennis, & Jackson, 2003; Xanthopoulou et al., 2007). Job autonomy and social support are well-known attributes among job resources (Bakker et al., 2004; Yperen & Hagedoorn, 2003), while personal resources cover attributes more closely related to individual dispositions such as optimism, self-efficacy, and organizational-based self-esteem (OBSE) (Schwarzer & Jerusalem, 1995; Xanthopoulou et al., 2007). In reality, job and personal resources are reciprocal in nature—and sometimes hardly separable—especially when the resources are self-reported (Colbert, Mount, Harter, Witt, & Barrick, 2004; Xanthopoulou et al., 2007; Xanthopoulou et al., 2009a). Throughout the literature, certain workplace resources have been identified as more relevant to one another. These are perceived-autonomy and self-efficacy as effectiveness-inspiring resources (e.g., Skaalvik & Skaalvik, 2014; Wang & Netemyer, 2002), and optimism and OBSE as positive aspects of employee disposition preventing psychological ill-being (e.g., Hutz, Midgett, Pacico, Bastianello, & Zanon, 2014; Weinberg, Besser, Zeigler-Hill, & Neria, 2015). Grounded on the affiliated function of these resources, this study groups autonomy and self-efficacy into efficacy-resources, and optimism and OBSE into esteem-resources.

It is generally known that job and personal resources almost always affect job outcomes positively (Bakker & Demerouti, 2007; Häusser et al., 2010; Xanthopoulou et

al., 2007). Self-efficacy, one of the most studied personal resources, is a belief in one's capabilities to organize and execute the courses of action required to attain given objectives. This self-belief is known to influence one's choices, effort, and behavior, in that people engage more fully in their jobs when they feel competent (Bandura, 1977; Bandura & Adams, 1977). Opposing this conventional belief, however, are certain findings showing that higher levels of competency beliefs are not always linked to desired outcomes. Though it has been argued that under-confidence is no better than overconfidence, any immoderate belief about one's own capability may erode the exertive bearing that undergirds success (Bandura, 1986; Bandura & Locke, 2003). For instance, Langfred (2004) found that project performance was negatively affected by higher levels of autonomy in self -managing teams. In a laboratory experiment, Vancouver and his colleagues twice questioned the functional properties of self-efficacy from the control-theory perspective and showed that self-efficacy could debilitate performance (Vancouver, Thompson, Tischner, & Putka, 2002; Vancouver, Thompson, & Williams, 2001). Such findings suggest that overconfidence resulting from an excessive sense of competency and strong control beliefs may actually degrade team performance by attenuating team spirit and precipitating intra-group conflict. Hence the following hypothesis is suggested:

H1. Individual efficacy-resources in a self-managing service team negatively affect team service quality.

Self-esteem refers to the evaluation and judgement of one's worthiness and value as an individual. OBSE is the self-esteem of members within the work and organizational context (Pierce, Gardner, Cummings, & Dunham, 1989; Pierce & Gardner, 2004). Optimism is related to positive expectations and thus tends to increase resilience against threats (Scheier & Carver, 1985; Xanthopoulou et al., 2007). Despite

conceptual similarities, esteem-resources are different from efficacy-resources in terms of their orientation toward outcome and achievement. While efficacy-resources are context-specific, focusing on outcome effectiveness and the individual's belief in his or her ability and power in the process of achievement, esteem-resources are more involved with the general attitude of trusting the self and the environment (Bandura, 1994; Schunk, 1991). Esteem-resources embed trust in the core: self-esteem is based on the trust of self (Dyne, Vandewalle, Kostova, Latham, & Cummings, 2000), while optimism relies on the trust of others as an affective attitude (Jones, 1996). The esteem-resources of individuals thus represent their positive attitudes as employees in the workplace. The consequences of a positive attitude include higher levels of employment (Mohanty, 2010), outcome productivity (Nollen & Gaertner, 1991), and earnings (Waddle, 2006). Therefore, it is expected that an individual's esteem-resources will positively affect team service quality.

H2. Individual esteem-resources in a self-managing service team positively affect team service quality.

2.3.1. Team-member exchange (TMX)

The dyadic relationship is often explained and understood from the social exchange perspective, which relies on the economic logic of exchange and reciprocity (Blau, 1964; Emerson, 1976). From an economic perspective, people tend to behave in a way that maximizes expected returns. Returns come after give-action (investment) in a bidirectional transaction of exchange, where the norm of reciprocity and distributional justice establish is firmly entrenched (Gouldner, 1960; Molm, 1994). Developed based on this social exchange theory, team-member exchange (TMX) refers to the quality of the reciprocal relationships between members in a working group, a term adapted from

the leader-member exchange (LMX) approach that was developed ahead of TMX (Seers, 1989; Willems, 2016). The interpersonal context of job resources is a situational attribute and is appraised as a critical constituent in achieving work goals and elevating team effectiveness. According to the person-situation interactionist model (Funder, 2010; Liao, Yang, Wang, Drown, & Shi, 2013), every individual is affected by situational resources, and this interactionism can explain both between-person variability and within-person variability. The former implies that employees with different personalities may respond differently to the same circumstances, while the latter suggests that a single employee may react differently to different circumstances. Consequently, team performance is influenced by membership dynamics. The significance of compositional variation on team performance has been evidenced by several studies such as work-team personality composition (Liu et al., 2017; Neuman, Wagner, & Christiansen, 1999), personal heterogeneity (Mohammed & Angell, 2003), and team attributes (Lee, To, & Billy, 2013).

A few key variables in the social aspect that have been found to impact performance include relationship conflict (Jehn & Mannix, 2001; Langfred, 2007), team climate (Colquitt, Noe, & Jackson, 2002; González-Romá & Gamero, 2012; Menguc et al., 2016; Pirola-Merlo, Härtel, Mann, & Hirst, 2002), social networks (Sparrowe, Liden, Wayne, & Kraimer, 2001), and social exchanges between leader and member(s) (Banks, Batchelor, Seers, O'Boyle, Pollack, & Gower, 2014; Boies & Howell, 2006; Kamdar & Dyne, 2007; Menguc, Auh, Katsikeas, & Jung, 2016). Recently, several studies have shown that relationship quality in the workplace can contribute to service performance (Bornay-Barrachina & Herrero, 2017; Liu, Chen, & Holley, 2017; Menguc et al., 2016; Wang, 2016). Given that the influence of team members may be

particularly strong when the relationships are all horizontal, the following hypothesis is proposed:

H3: TMX in a self-managing team positively affects team service quality.

The quality relationship may become a driving force for changing individual attitudes or behaviors in the workplace with regard to performance excellence and team support. Paradoxically, however, some studies have suggested that a favorable social environment does not necessarily yield a better outcome when combined with other resources. Perversely, given an environment in which cohesion and intensive entrenchment make critical assessment of other members difficult, supportive interaction can harm productivity (Sundaramurthy & Lewis, 2003). Accordingly, employees perceive more controllability when they enjoy sufficient resources with fewer obstacles (Ajzen, 2002). Langfred (2004) found that trust between members precipitates negative autonomy effects on team performance due to insufficient monitoring among members. Therefore, the following hypothesis is proposed:

H4: The relationship between individual efficacy-resources and team service quality will vary depending on the degree of TMX, such that the relationship is stronger when the level of TMX is higher.

Meanwhile, a quality relationship may foster the positive effects of some individual resources. Past research has focused on the moderating effect of social relations on the relationship between negative psychological factors—such as stressors or job demands—and outcomes—such as well-being and performance (Bakker et al., 2010; Xanthopoulou et al., 2007). Yet at the same time, positive psychology can be synergized when it interacts and integrates with quality social relationships (Luthans, Youssef, & Avolio, 2007). The potency of positive resources of individual employees can lead to a greater collective performance, combined with desirable social interactions

and exchanges. In particular, the most synergic outcome is expected in the interaction between high esteem-resources and high TMX, since a highly supportive atmosphere is apt to be more appreciated by those who already have the capability to perform well with positive resources (Luthans, Norman, Avolio, & Avey, 2008). Contrarily, a low level of TMX between members will cause the apportioning of relevant jobs to team members in such a way as to minimize the interaction needed. Given the significance of interaction and collaboration within a service team, the independence of these tasks will limit their contribution to service excellence in certain complex situations involving customer demands or service failures. Accordingly, the following hypothesis has been formulated:

H5: The relationship between individual esteem-resources and team service quality will vary across the degree of a TMX, such that the relationship will be stronger when the level of TMX is higher.

/// Insert Figure 1 about here ///

III. METHODS

3.1. Experimental setting

The proposed conceptual framework for this study is illustrated in Figure 1. In order to manipulate variations in service teams to allow for membership dynamics, a field experiment stood to be one of the most effective possible approaches. Hence, an actual cafeteria operating at a university in South Korea was selected as the experiment site. Service teams were responsible for providing a service to customers at a contact point, which included greeting customers and taking orders, preparation and serving of items from the menu, and whatever service was required on an ad-hoc basis. Six service employees were recruited through a campus-recruiting announcement. The selection

criteria were consistent with the usual process of employee selection for the cafeteria except for one specific candidate prerequisite: selectees were required not to have prior experience working at a cafeteria, coffee shop, or similar establishment so that any confounding effects from prior experience would be avoided. Applications were screened in the light of motivation and sincerity, and six candidates were finally hired. A detailed job description, including employment conditions, was explained to the employees, while the research hypotheses of the study were kept confidential to control potential common method bias during the experimental period (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

The experiment ran for 20 days during October and November of 2015 for two hours per day on Tuesdays, Wednesdays, and Thursdays. Since this study utilized a business site operated during business days for its experiment, experimental manipulation was only applied to the employee-side (the member composition of the service team and the work schedule). Three employees were arranged on each team with mutual exclusivity, and consequently, all possible combinations (${}_6C_3 = 20$) of the teams were randomly assigned to each day. Training was provided equally to all employees before they started working. Without a separate supervisor or manager, the teams were self-managed with a parallel hierarchy of all employees and with empowerment in executing tasks. Daily conditions, including job description and job authority, remained consistent throughout the experimental period. No intervention was associated with customers, save asking for their participation in the feedback survey.

/// Insert Figure 2 about here ///

/// Insert Figure 3 about here ///

3.2. Measures

Customer questionnaires and employees' working diaries were developed based on an extensive review of the relevant literature. Scales validated in previous studies were identified and modified for the study at hand. For the dependent variable, team service quality was limited to customer-provider interactive service quality to focus on the variation caused by service employees, and the items were adopted from SERVQUAL (Brady & Cronin, 2001; Parasuraman, Zeithaml, & Berry, 1988). For the independent variables, individual resources and TMX were measured on a daily basis through the working diary. For the individual resources of service employees, eight items were adopted: two for autonomy (Bakker et al., 2004) and two for self-efficacy (Schwarzer & Jerusalem, 1995)—jointly constructing efficacy-resources—with two more items for optimism (Scheier, Carver, & Bridges, 1994) and two for OBSE (Pierce, Gardner, Cummings, & Dunham, 1989)—constituting esteem-resources. Although objective autonomy was preserved consistently throughout the experiment, autonomy was assessed using the same logic that has credibly been suggested for measuring psychological empowerment (Rapp et al., 2016).

Considering the nature of tasks in the cafeteria and the relatively short duration of work hours for each day of the experiment, six relevant items based on Ford, Wilkerson, Seers, and Moormann (2014) and Seers (1989) were applied to measure TMX. These items were constructed to cover reciprocity in the relations among team members adequately by asking about each one's contribution and support receipt. Two items on the general sense of non-directional relationship quality were also included. All the scale items were carefully adapted to measure each construct accurately while simultaneously minimizing respondent fatigue, especially in consideration of the repeated measures design of the working diary.

For control variables, employees' demographic characteristics (gender and age), workload (Fritz & Sonnentag, 2006), and working days (Hays & Hill, 2001) were included in the analysis to ensure the robustness of the findings (Bolino, Hsiung, Harvey, & LePine, 2015; Fritz & Sonnentag, 2006; Kamdar & Dyne, 2007). Taste and service quality have been shown to be highly correlated with customer satisfaction in restaurants (Ha & Jang, 2010). The choice by customers was neither identical nor controllable in the experiment, and thus customer assessment on the taste of each menu item was also controlled. Table turnover rate per day was taken as a proxy of the workload, and the total number of working days accumulated by each member was used to control the learning effect. The ranges of all of the survey items were gauged using 7-point Likert scales ranging from 1 (strongly disagree) to 7 (strongly agree). Hospitality academicians and experts in industry reviewed the questionnaire before finalization so that content validity was assured.

3.2.1. Techniques against potential bias

As reliance on the mono-method may lead to potential biases (Donaldson & Grant-Vallone, 2002; Podsakoff, MacKenzie, Lee, & Podsakoff, 2003), this study adopted measurement methods with variations in the locations, source of respondents, and time. First, the dependent variable (team-level service quality) was measured daily through an on-site customer survey. Second, the workplace resources, including TMX, were rated by the employees in the form of a working diary every day after the cafeteria's closing. Third, TMX correspondence with individual-level resources was imported from TMX assessed by team members who worked on the same shift with the employee involved in the study. This treatment precluded not only the covariance produced by common respondents but also the potential collinearity between TMX and other resources.

Anonymity was fully guaranteed for all customer responses by blocking personal interactions in the process of data collection. Customers were asked to complete, fold, and insert the questionnaires anonymously into a box near the entrance/exit, minimizing any social-desirability bias. Likewise, the working diaries of the employees were kept secure from other employees and were accessible only to the researchers.

3.3. Analysis

Measurement items, references, and the raters for variables are summarized in Table 1. After the removal of unusable responses and data screening, a total of 186 customer responses assessing daily team service quality were analyzed (an average of 9.3 per day). Working diaries measuring the independent variables, individual resources, and TMX comprised 60 responses by six employees across 20 different team combinations.

For data analysis, the reliability and validity of the data were checked first. Cronbach's alpha was used to check the reliability of the study measurement. Confirmatory factor analysis was performed to test the measurement model in terms of scale items composition and the fit with empirical data. Next, hypotheses were tested through regression analyses. In step 1, control variables (gender, age, working days, workload, and taste) were inputted. In step 2, individual resources were added, and in step 3 so was TMX. In step 4, the interaction terms of TMX with the individual resources were inserted into the model to test the direct and the moderating effects of TMX in the presence of individual resources on team service quality.

/// Insert Table 1 about here ///

IV. RESULTS

4.1. Results of preliminary analysis

4.1.1. Reliability and validity of results

In order to ensure measurement reliability, Cronbach's alpha for each variable was first calculated. The Cronbach's alpha of the final measurements ranged from .73 to .92, exceeding the minimum reliability criteria of .70 (Nunnally & Bernstein, 1994). Secondly, adequacy of the classification of individual resources was examined through exploratory factor analysis. Principal component analysis with orthogonal rotation indicated that the resources were successfully divided into two components: two autonomy and two self-efficacy items into one factor (i.e., efficacy-resources), and two team-based self-esteem and two optimism items into the other (esteem-resources). The data was deemed appropriate for factor analysis with a .87 in Kaiser-Meyer-Olkin (KMO) and $p < .00$ for Bartlett's test of sphericity, with communalities in the range of .65 to .88 (Hair, Black, Babin, & Anderson, 2014). Lastly, confirmatory factor analysis with maximum likelihood estimates was conducted, and the results suggested that the model fit, with the inclusion of the two individual resources being acceptable (Hair et al., 2014) with $\chi^2 = 151.11$, $df = 11$, $p < .01$, $\chi^2/df = 1.34$, RMSEA = .08, CFI = .93, IFI = .94, and TLI = .91. The standardized factor loading of scale items and their significance level are included in Table 1. The composite reliability (CR) of each construct was higher than .95, with the average variance extracted (AVE) ranging between .55 and .67, all supporting convergent validity (Bagozzi & Yi, 2012; Hair et al., 2014) and all shown in Table 2. All the square roots of the AVE values between each pair of constructs exceeded the correlation coefficient, ratifying its discriminant validity (Fornell & Larcker, 1981).

/// Insert Table 2 about here ///

4.1.2. Data aggregation

This study adopted different levels of measurement. Resulting from the asymmetries, colleague-level (TMX) and team-level (customer perceived service quality) data had to be aggregated to match with individual-level (individual resources) data, with the aggregation having been empirically justified earlier through the testing of the $r_{WT(k)}$ coefficient and the intra class correlation (ICC) coefficient (Jong et al., 2005; James, 1982). $r_{WT(k)}$ represents within-team variance in all sample team members across the sample of k teams, while the ICC coefficient represents between-team variance divided by total variance. $r_{WT(k)}$ and the ICC coefficient were calculated for taste ($r_{WT(k)}$ = .99, ICC =.02), TMX ($r_{WT(k)}$ = .80, ICC =.03), and team service quality ($r_{WT(k)}$ =.89, ICC =.03). An $r_{WT(k)}$ coefficient above .70 indicates high consistency in ratings among the members or the customers within each team. ICC coefficients above 0 but not exceeding .30 indicate the existence of between-team variance. Although the ICC values were not strong, data aggregation from a larger number of respondents per team into smaller unit team-level has been reported as acceptable (Bliese, 2000; Jong et al, 2005), with TMX by employees and taste and team service quality by customers distinguished from team-level. Thus, the data aggregation of the variables to the team-level was justified. In order to unify the units of analysis, as well as to handle potential multicollinearity, mean-centered scores for each variable were used for further analysis.

4.1.3. Model specification

Since the data collected from the six employees and 20 different team combinations repeatedly included both cross-sectional and longitudinal information, the next step involved the decision as to how the data should be treated. Presumably explained by the

relatively short experiment period and the difference in the source of respondents, the result from Breusch and Pagan LM test (1980) robustly confirmed that the data were effectively analyzed in the pooled model ($\chi^2 = 0$, $p = 1$). Therefore, the data were treated as pooled, with the description of the final model as follows:

$$Y = \alpha + \beta_1 \cdot \text{Efficacy}_i + \beta_2 \cdot \text{Esteem}_i + \beta_3 \cdot \sum \text{TMX}_j + \beta_4 \cdot \text{Efficacy}_i \sum \text{TMX}_j + \beta_5 \cdot \text{Esteem}_i \sum \text{TMX}_j + \varepsilon,$$

where Y is the team-level service quality appraised by customers, α is the regression intercept term, Efficacy_i and Esteem_i are efficacy-resources and esteem-resources perceived by individual employee *i* respectively, TMX_j is team-member exchange assessed by *i*'s team members (*j*) in the same work shift, and $\text{Efficacy}_i \sum \text{TMX}_j$ and $\text{Esteem}_i \sum \text{TMX}_j$ are the interaction terms between TMX and efficacy and esteem resources, respectively. β_1, β_2, β_3, β_4, and β_5 are parameters to be estimated and ε is the random error term.

Magnitudes of the variance inflation factor (VIF) did not exceed 2, suggesting multicollinearity was not a serious issue in the analysis (Gujarati, 2014). However, the Breusch-Pagan test (1979) rejected the null hypothesis that the residuals were homoscedastic, diagnosing heteroscedasticity among residuals in the significance level of 5% ($X^2 = 4.85$, $p < .05$). Therefore, the weighted least squares (WLS) regression alleviating heteroscedasticity was adopted for testing the hypotheses.

4.2. Hypotheses testing

Table 3 summarizes the results of the WLS hierarchical regression. In step 1, total accumulated working days of individual workers (+), daily workload (-), and customers' evaluation on product taste (+) affect customer-perceived team service quality among the control variables, as expected a priori. In step 2, testing Hypothesis 1

and 2, both attributes of individual resources were found significantly to affect team service quality directly. These results indicate that a higher level of esteem-resources perceived by individual employees in a self-managing service team produced better customer service at the team-level, supporting H1 (β =.10, p < .001). At the same time, a higher level of efficacy-resources perceived by individual employees in a self-managing service team deteriorates customer service at the team level, supporting H2 (β = -.11, p < .001).

In step 3, testing Hypothesis 3, TMX showed a significant and positive effect on the quality of team service. This suggests that a higher exchange quality among members increases customer service at the team level, supporting H3 (β =.13, p < .001). It was noted in step 3 that the significance of the negative effect on team service quality largely decreased when TMX was added as an additional regressor with individual resources. This corresponds with the existing organizational literature arguing that workplace resources counteract demands or strains in the workplace, hence reducing physical and/or psychological costs (Bakker & Demerouti, 2007; Doef & Maes, 1999; Häusser et al., 2010). The negative relationship between efficacy-resources and team service quality corresponds with Langfred (2004) and Vancouver et al. (2001; 2002), who reported that efficacy-resources deteriorated work performance.

/// Insert Table 3 about here ///

Interaction terms between individual resources and TMX were estimated in step 4 of the analysis. As a result, only the interaction term for esteem-resources and TMX was significant, whereas a significant interaction effect was not found for efficacy-resources and TMX (β = .029, p = .19). Furthermore, the result was qualitatively the same when each interaction term was tested separately, showing robustness in the

finding. (Results of this procedure are appendicized.) H4 was not supported, indicating that that the negative effect of individual efficacy-resources on team service quality is not precipitated by quality relationships exchanged by members. These findings countenance the organizational effort to foster and encourage quality relationships between members, relieving the concern about the negative interaction effect along with other potentially negative resources.

On the other hand, the relationship between individual esteem-resources and team service quality was found to be moderated by TMX. This result indicates that high TMX reinforces a positive relationship between esteem-resources and team service quality, and the interaction effect is far stronger when TMX is high, supporting H5. For the low TMX group, the slope between esteem-resources and team service quality is almost flat. In contrast, the slope becomes evidently positive for the high TMX group, which implies esteem-resources are particularly effective for quality team service when there is a high exchange quality between team members. Therefore, H5 was supported (β =.12, p < .01) with a sharp increase in both R^2 and F-value (ΔR^2 = .14, ΔF = 20.47). R^2 decreased in this step, unlike ordinary least squares. This occurs because R^2 in WLS is the coefficient of determination regarding the transformed variables, appropriately weighted in order to counteract the heteroscedasticity (Willet & Singer, 1988). The interaction was graphically plotted and addressed the regression slope for low (-1 SD) and high (+1 SD) levels of TMX. Figure 4 illustrates the interaction between TMX and individual esteem-resources.

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V. CONCLUSION

Industries have adopted self-managing service teams for their effectiveness in team

governance. Due to their nature, service teams undergo more dynamic interpersonal interactions, which induces both between- and within-person variation. This study took that dynamic into account and investigated the direct and interaction effects of workplace resources in a self-managing service team and the classified resources represented by efficacy- and esteem-resources and TMX on team service quality. Using empirical data collected through field experiments and employees' working diaries, the current study has delineated workplace resources in a self-managing service team—efficacy-resources, esteem-resources, and TMX—and confirmed the positive impact of employee' esteem-resources and TMX in a self-managing service team on customer-perceived team service quality. Positive dispositional resources such as optimism and self-esteem were found to improve service quality at the team-level, whereas efficacy-resources of individual employees rather degraded team service quality in a self-managing team. The result also certified that quality social exchange between members strengthened the positive relationship between individual esteem-resources and team service quality. The interaction effect was more obvious when TMX was high. Taken together, this study suggests that workplace resources should be treated with caution since workplace resources are not consistent in terms of their direct and interactive effects given the context of the job and the workplace.

5.1. Theoretical implications

This study contributes to the current literature in two major respects. First, from the person-situation interactionism perspective, perceived workplace resources by employees vary, and their corresponding effects may differ (Liao et al., 2013). This is the first experimental study on a service team capturing its membership dynamics and investigating situational effects on service quality. Membership dynamics materialized

with fixed individuals in different combinations of service teams during the experiment, through which this study showed concretely the within-person variability of perceived resources by individual employees in response to the dynamics of team membership.

The relationship change, in turn, affected the quality of team-level service. Since causality is best demonstrated through an experiment (Spencer, Zanna, & Fong, 2005), the impact of workplace resources on team service quality is more explicitly supported in this study than in past research. The methodologies for data collection and the analysis data are additional values to be derived from the current study.

Second, this study addresses the controversial effect of some workplace resources on work performance by exploring the functionally of classified workplace resources in a self-managing service team and their relative impact on team service quality. Inquiry into service quality in service organizations has been longstanding, yet its major findings have remained limited to the relationships among latent constructs that lead to service quality (Mathieu, Maynard, Rapp, & Gilson, 2008). Two attributional dimensions of individual resources of service employees are herein identified: efficacy-resources and esteem-resources, along with TMX, as interpersonal resources in service teams. Although classical expectations toward workplace resources are mostly positive on work outcomes (Bakker & Demerouti, 2007; Bakker et al., 2010), there is some controversy about the role and the degree of efficacy-resources (Anderson et al., 2006; Bandura & Locke, 2003; Langfred, 2004; 2007). Therefore, another significance of this study is that it has examined the influence of respective workplace resources on service quality with specific consideration of situational dynamics and interactions within service teams.

5.2. Managerial implications

This study's implications for the practitioner audience are straightforward in two significant terms. First, the findings speak to the necessity of managerial monitoring for self-managing service teams in order to balance the level of employee empowerment and efficacy perception on the quality of service provided. Regardless of their wide functionality and suitability in the service industries, there is a paucity of empirical research on self-managing service teams. This study adds to the current knowledge base by revisiting the self-managing team in the service context and suggesting helpful strategies for managing teams without leaders. Although employee empowerment shows multifarious benefits (Kirkman & Rosen, 1999; Ueno, 2008), the results of this study suggest that efficacy-resources in a self-managing team should be controlled with caution as they may inversely affect team service quality, calling for a future in-depth study on the optimal level of perceived resources among employees.

Second, as esteem-resources and TMX are the resources found to be beneficial to team service quality, considering compatibility between team members as well as the personal disposition of individuals when hiring and scheduling a self-managed service team is recommended. By considering service quality as an indicator of team performance, this study derives meaningful suggestions to strengthen the competitive advantage for the success of service organizations, without adding costs for additional employment or training. During the rostering and scheduling of employees, the focus has been rather limited to satisfying the labor demand as it varies through cycles and seasons, minimizing labor costs, and complying with various employment laws and regulations to which organizations are subjected (Bard & Binici, 2003). As it has been proven to contribute to better customer service at the team-level, quality exchange between team members can be improved through managerial or organizational effort by

considering member support or extra-role performance. The current results also confirm that positive dispositional resources are desirable for customer service, and that their impact is more robust when TMX is high. In addition, as an antecedent of team service quality, the dispositional resources of service employees are recommended as an observable factor in the process of personnel selection in the service industries. Human-resource practices and leadership cultivating a positive service climate are also encouraged (Hong, Liao, Hu, & Jiang, 2013).

5.3. Limitations and avenues for future research

One noted limitation in this study is the size of the sample. The reliability and generalizability of the findings from twenty experiments with six employees resulting in 60 sets of employee data and 186 sets of customer data might be open to reasonable dispute. While the quality data was collected from a field experiment prudently controlling possible exogenous variables or biases, and while the analysis technique was also equipped to counteract biases, limitations remain. This field experiment in an actual cafeteria worked to strengthen the internal validity, but the physical restrictions may have limited external validity at the same time. Therefore, the findings should be interpreted with caution and should be applied while considering the context of this particular workplace.

Another issue stems from the type of employees recruited and the level of task interdependence in the experiment. The employees recruited for this study were not full-time workers and thus had a tentative contract period with relatively short working hours. However, it is noteworthy that the conditions in this study are not dissimilar from those in the service industries, where the uptake and rostering of part-time staff is a common occurrence necessitated by seasonality and fluctuating demand (Ernst et al.,

2004). Task interdependence was reported to be closely related to autonomy (Langfred, 2005), alluding to the possibility of dissimilar results for different jobs or contextual settings. Therefore, replications of this experiment in various circumstances are recommended for cross-validation of the results from this study.

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/// Insert Appendix (table) about here ///

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Table 1. Measurement items, standardized factor loadings, and sources

Measurements	Factor loadings	Sources
Team service quality[a]		
Staff member(s) provided prompt and quick service.	.80***	Brady & Cronin (2001); Parasuraman et al. (1988)
Staff member(s) made you feel comfortable and confident in service.	.71***	
There were personnel who seemed well trained and competent.	.70 ***	
Efficacy-resources[b]		
Today while at work,		Bakker et al. (2004); Schwarzer & Jerusalem (1995)
I could decide myself on the pace of executing my job.	.84 ***	
I could decide myself how to execute my job.	.78***	
I felt I could deal efficiently with unexpected events.	.91***	
I felt I could handle every problem that came my way.	.94***	
Esteem-resources[b]		
Today while at work,		Pierce et al. (1989); Scheier et al. (1994)
I felt that more good things would happen to me than bad.	.91***	
I felt very optimistic about my future.	.73***	
I felt valuable for the company.	.80 ***	
I felt important for the company.	.87***	
TMX[c]		
Today while at work,		
I volunteered to help out when other members were busy.	.68***	Ford et al. (2014); Seers (1989)
I provided support and encouragement to other team members.	.34*	
Other members volunteered to help me out when I was busy.	.91***	
Other members provided support and encouragement to me.	.49***	
There was a very good working atmosphere.	.67***	
I had a nice time with my colleagues.	.69***	

[a] Customer-rated
[b] Individual employee (*i*)-rated
[c] *i*'s team members (*j*)-rated
* p < .05, *** p <.001

Table 2. Means, standard deviations, and correlations, and Cronbach's alpha

Variable	M	SD	Days	WL	Taste	EFC	EST	TMX	TSQ	CR	AVE
Gen	.50	.50									
Age	23.17	1.08									
Days	5.50	2.90	-								
WL	9.30	3.55	.28*	-							
Taste	5.83	.55	-.02	-.51**	-						
EFC	5.80	1.05	.56**	.31**	-.02	(.93)				.96	.67
EST	5.90	.87	.56**	.25	-.07	.62**	(.89)			.96	.67
TMX	6.04	.50	.31*	.01	.05	.28*	.23*	(.75)		.99	.55
TSQ	6.36	.30	.33*	-.31**	.51**	-.02	.21*	.27*	(.73)	.96	.67

Note. N=60. Cronbach's alpha is presented in parentheses on the diagonal.
Gen= gender: 0= female, 1=male
WL= workload, EFC= efficacy-resources, EST= esteem-resources
TMX= team-member exchange, TSQ= team service quality
* $p < .05$, ** $p < .01$

Table 3. Hierarchical regression results

Predictors	Dependent variable: *Team service quality*			
	Step 1	Step 2	Step 3	Step 4
Control variables				
Gender[a]	.02	-.01	-.03	-.04
Age (year)	-.02	-.00	-.01	-.01
Working days	.04***	.05***	.04***	.03***
Workload (hour)	-.02*	-.02*	-.01	-.01
Taste	.20***	.24***	.26***	.23***
Independent variables				
Efficacy-resources		-.11***	-.13***	-.12***
Esteem-resources		.10***	.12***	.10***
TMX			.14***	.15***
Interaction effects				
Efficacy × TMX				.03
Esteem × TMX				.13**
R^2 (Adj. R^2)	.72 (.70)	.84 (.82)	.83 (.802)	.98 (.97)
ΔR^2	-	.12	-.014	.15
F	28.37***	39.97***	30.85***	213.90***
ΔF	28.37	11.60	-9.12	173.93.

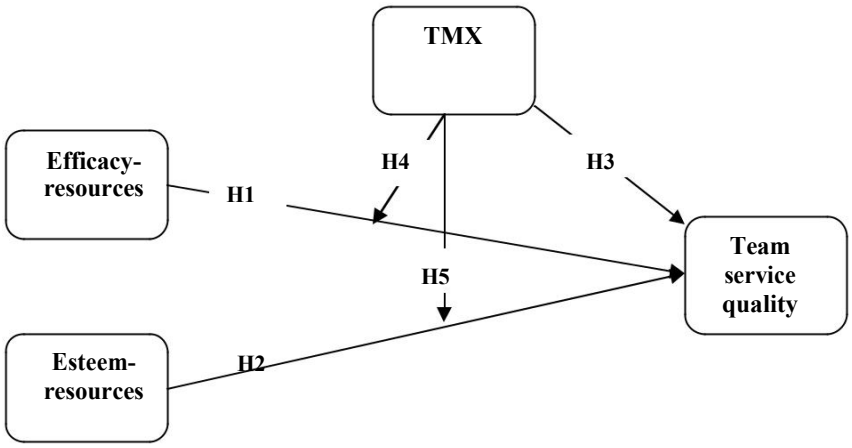
Note: Data are standardized regression coefficients.
TMX = team-member exchange, Adj.= adjusted
[a] Gender: 0= female, 1=male *p < .05, **p < .01, ***p < .001

Appendix. Results of the additional steps in the hierarchical regression analysis

Predictors	Dependent variable: *Team service quality*			
	Step 1	Step 2	Step 3	Step 4
Control variables				
Gender[a]	-.03	-.05	-.02	-.04
Age (year)	-.01	.00	-.01	-.01
Working days	.04***	.03***	.04***	.03***
Workload (hours)	-.01	-.01***	-.01***	-.01
Taste	.26***	.26***	.22***	.23***
Independent variables				
Efficacy-resources	-.13***	-.11***	-.13***	-.12***
Esteem-resources	.12***	.10***	.12***	.10***
TMX	.14***	.17***	.13**	.15**
Interaction effects				
Efficacy × TMX		.06		.03
Esteem × TMX			.14**	.13**
R^2 (Adj. R^2)	.83 (.80)	.83 (.81)	.83 (.80)	.98 (.97)
F	30.85***	28.09***	27.61***	213.90***

Note: Data are standardized regression coefficients.
TMX = team-member exchange, Adj.= adjusted
[a] Gender: 0= female, 1=male *p < .05, **p < .01, ***p < .001

Figure 1. The proposed research model



Note: TMX stands for Team-Member Exchange. Employees rated items of efficacy-resources, esteem-resources, and TMX. Customers assessed the level of team service quality.

Figure 2. Field experiment: Site overview

Figure 3. Snapshot of a working employee

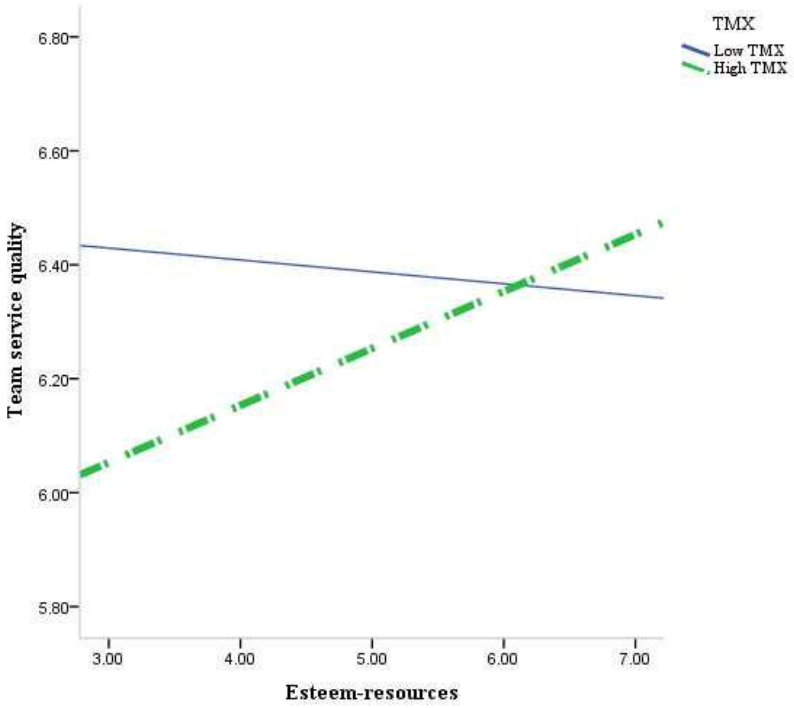


Figure 4. Moderating effect of team-member exchange (TMX) for individual esteem-resources and team service quality

论个人资源及团队成员交换对服务质量的影响 [1]

人们普遍认为工作场所资源对绩效有积极的影响，但一些研究表明并非所有的资源都能够提升绩效。本论文通过探究在自我管理服务团队中依照职务功能分类的工作场所资源及它们对团队服务质量的相对影响，讨论了某些工作场所资源对绩效的影响中存有争论的部分。本研究采用现场实验的方法，在一家自助餐厅进行，实验设计考虑了成员之间的动态流动和相互影响可能产生的结果，并选择了有关工作环境资源的工作日志以及客户服务质量调查作为研究数据。研究结果表明，自我管理服务团队中，与效能有关的资源应得到谨慎地控制，因为它可能对团队服务质量产生消极影响。工作场所资源能够动态地与员工个人及情境产生相互作用，这支持了人境互动论的观点。研究中还发现，与尊重有关的资源有助于提升团队服务质量, 并且，团队成员交换(TMX) 不仅能提高团队服务质量，在与尊重有关的资源和团队服务质量的影响关系中还起到了调节作用。

关键词: 团队成员交换(TMX), 自我管理服务团队, 团队服务质量, 现场实验

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