

## Linking customer-employee exchange and employee innovative behavior

### Abstract

Employee innovative behaviors lay the foundation for organizational innovation and are of importance to business success, especially for service firms. Although these innovative behaviors are performed at the individual level, employees still need to have frequent exchanges with others, such as customers. As there is little research investigating customer-employee exchange (CEX) and its influence on employee innovative behavior in services, this study aims to fill this gap in a hotel context. The results of a survey with 180 respondents indicate that both the solidarity and harmonization components of CEX have positive effects on employee innovative behavior, yet the information exchange between customers and employees does not significantly influence employee innovation. Also, higher level of CEX leads to higher level of perceived social psychological climate for innovation. The mediating effect of social psychological climate in the relationship between CEX and employee innovative behavior is partially supported. The findings contribute to the understanding of the role of social exchanges in facilitating employee innovative behavior and provide implications for the management of employee innovative behavior in hospitality firms.

**Keywords:** Customer-employee exchange; Employee innovative behavior; Social psychological climate; Solidarity; Harmonization; Information exchange

### 1. Introduction

The importance of employee innovative behavior to hospitality firms is widely accepted. As a foundation for organizational innovation, employee innovative behavior is a key factor for

service firms' performance and long-term survival (Campo et al., 2014; Tajeddini and Trueman, 2012). It brings about new products for restaurants (Ottenbacher and Harrington, 2007), improves hotels' service processes (Orfila-Sintes and Mattsson, 2009), and enhances service quality and even customer satisfaction (Pivcevic and Petric, 2011). Although not innovation oriented traditionally, hotels nowadays highlight innovation as countermeasures to growing competition (Campo et al., 2014; Pivcevic and Petric, 2011). Most innovation of hotels is service-oriented or based on technology application (Su, 2011). Thus, compared with manufacturing firms, innovation in hotels relies more on employees (especially customer-contact employees) than professionals in the research and development department (Ottenbacher, 2007). Generally, compared with manufacturing companies, service firms suffer from difficulties in applying for patents and identifying infringement of intellectual property rights (Hipp and Grupp, 2005). These problems could be solved by employee innovative behaviors, which may erect barriers to duplication by competitors and maintain competitive advantage over others for hospitality firms (Ottenbacher, 2007).

Employee innovative behavior by its nature requires employees' exchanges with others. Employee innovative behavior brings actual benefits to hospitality firms because it is required to result in final outputs (Kim and Lee, 2013). This final output requirement is one of the differences between innovative behavior and creativity. Creativity refers to development of novel ideas, while innovative behavior involves not only idea generation but also idea implementation (Kim and Lee, 2013). To implement new ideas, employees must seek support and resources from others. Thus, although employee innovative behavior is a type of individual innovation, it still requires certain resources from others (Foss et al., 2011). As a result, frequent information and emotion exchanges run through the process of idea implementation (Scott and Bruce, 1994). From a social perspective,

creativity is an individual-level construct bringing about novel ideas, thus it is usually adapted to weak social ties as weak ties foster autonomy, allowing employees making decisions that may be different from the approaches and views of their contacts (Perry-Smith, 2006). Yet weak ties do not foster innovative behavior because of the importance of support from others in idea promotion and realization (Janssen, 2000). In other words, employees' exchanges with others are important factors influencing their innovative behaviors.

Exchanges with others may be potential innovation facilitators for employees because of the social network opportunities. Research found that employee innovative behavior is influenced by not only individuals' cognitive skills, but also social capital, which refers to the potential benefits employees receive from the relationships with others (Shalley and Gilson, 2004). Employees' cognitive skills facilitate innovative behaviors by discovering the connections among various similar yet different concepts, flushing out the old approaches or ideas and creating different responses to a single problem (Perry-Smith, 2006). Social capital, as opportunities for employees' learning from others, would make this innovative cognitive process more successful because of the diversity of ideas and information provided by their social relationships (Zhou et al., 2009). Thus, much research has explained the impact of employees' relational exchanges on their innovative behaviors, such as leader-member exchange (LMX) and co-worker exchange (Scott and Bruce, 1994; Sparrowe, 1995). For example, Volmer et al. (2012) found that as long as job autonomy is provided, the higher level of LMX would lead to more innovative behaviors. To date, LMX and its influence on employee innovation in hospitality firms have been well studied (Sparrowe, 1995; Volmer et al., 2012). However, little research has been conducted to investigate the impact of customer-employee exchange on employee innovative behavior in services. This study attempts to fill this gap.

Customer-employee exchange (CEX) may influence employee innovative behavior differently from other exchanges (e.g., LMX). Customer-employee exchanges are essential parts of the services because of the inseparability of service production and consumption (Ma and Qu, 2011). They could enrich the service experience of customers and subsequently enhance customer satisfaction (Namasivayam and Mattila, 2007). In this way, customer-employee exchanges are important to hospitality firms who find themselves increasingly difficult to meet the expectations of customers with escalating demand (Lee et al., 2006). However, although customers are increasingly actively involved in services and become collaborators with employees, their exchanges with employees are different from that of employees' leaders and co-workers. Customer-employee exchanges in hospitality services are indispensable, but also characterized by temporal duration of interaction (Solnet, 2007). Unlike leaders and co-workers, the customers employees serve may be constantly changing. This makes customer-employee relationships relatively unstable. Employees may thus behave differently (from that to leaders or co-workers) as responses to customers (Sierra and McQuitty, 2005). In addition, leaders tend to dominate the LMX and influence employees through management actions and role expectation, essentially for Chinese culture, where employees are accustomed to following their leaders (Scott and Bruce, 1994; Shao and Skarlicki, 2014). In contrast, CEX is more based on emotions and both parties exert influence on the exchange, sharing some responsibilities (Solnet, 2007). For example, restaurant employees in China may take managers' casual advice as orders, while they may share their personal experiences and emotional feelings with customers because customers do not determine their income (tipping practice is unusual in China). Therefore, using the results based on LMX to explain the effect of CEX may be inappropriate. Furthermore, much research indicates that customers are becoming external resources for hospitality firms and they exert beneficial

influence on service innovation (Duverger, 2011; Sjödin and Kristensson, 2012). These studies tend to regard customers as innovators or contributors to innovation directly. However, whether customers' exchanges with employees could be facilitators for employees' innovative behaviors still remains unexamined.

To examine the effect of CEX on employee innovative behavior, the climate for innovation cannot be ignored. Climate describes employees' perceptions of service settings where they work in terms of psychological interpretation (Schneider et al., 1996). It is found to mediate the relationship between LMX/co-worker exchange and employee innovative behavior, as high quality of LMXs/co-worker exchanges makes employees perceive that they are in a positive and supportive climate, which may further encourage employees' innovative behaviors (Schneider et al., 1996; Scott and Bruce, 1994). This climate involves support for innovation and resources supply (Scott and Bruce, 1994). Similarly, customer-employee exchanges involve interdependence between the two parties and may thus result in closer relationships between them (Kim and Cha, 2002). Better relationships make employees perceive that their decisions and behaviors are more likely to be supported by customers (Sigala, 2005). The support for innovation and resources provided by customers are important as customers are the final evaluators of some innovation outcomes (such as new services). However, climate for innovation created by customers receives little attention from researchers. Thus, this study adopted psychological climate, which was originally used for firms, to investigate the role of support and resources from customers in the relationship between CEX and employee innovative behavior. Based on the aforementioned analysis, two objectives were set for this study: to examine the effect of CEX on employee innovative behavior and to investigate the role of social psychological climate in the influence of CEX on employee innovative behavior.

## **2. Theory and hypothesis development**

### **2.1 Customer-employee exchange and employee innovative behavior**

Customer-employee exchange (CEX) relates to employees' behaviors essentially. CEX involves both information and emotional interactions between the two parties (Ma and Qu, 2011). It defines how a service is transacted, which is very important for customers' service perceptions as well as employees' well-being (Groth and Grandey, 2012). Hospitality services are highly interactive and it is the main job of employees to serve customers (Victorino et al., 2005). The process involves frequent exchanges, which are found to influence employees' job stress, job satisfaction and turnover intentions (Karatepe, 2009). Customers are external to hotels, thus their exchanges with employees may exert influence outside the service setting and also affect employees' extra-role behaviors such as organizational citizenship behavior (Groth and Grandey, 2012; Ma, 2013). Customers as external factors and employee turnover make customer-employee exchanges in hotels dynamic (Duverger, 2011) Yet hotels are increasingly paying attention to customer loyalty as retaining existing customers costs much less than finding new customers (Agarwal et al., 2003), and customer-employee exchanges in hotel services are expected to be more stable with loyal customers (Agarwal et al., 2003). On the other hand, customers nowadays are no longer passive service recipients. They more actively participate in hotel services and are viewed as partial employees (Bendapudi and Leone, 2003). Therefore, although CEXs are more unstable than LMXs and co-worker exchanges, their influence on employees' behavior should not be underestimated.

CEX may stimulate employees' motivation and provide inspiration for innovative behaviors. Frequent customer-employee exchanges in hospitality service transactions may improve the

relationships between the two parties (Ma and Qu, 2011). The emotional components of CEX, such as the politeness of the two parties, not only play an important part in creating a successful experience, but also make each party have more reliance on the other (Lerman, 2006). According to the social exchange theory, employees who receive benefits from customers have great intentions to return back (Lawler, 2001). Employee innovative behaviors, most of which are related to customers' experience in hospitality firms, may thus be driven to improve service efficiency and effectiveness for customers (Chen, 2011). In addition, the interdependence between customers and employees caused by CEX may bring about information sharing and knowledge transfer, which are facilitators for employee innovative behaviors (Foss et al., 2011; Teece, 1994). Customer-employee exchanges may be favorable for employee innovative behavior because employees may capture customers' internal demand, information and knowledge through frequent exchanges (Grisseemann et al., 2013). These exchanges show in technical quality (what is being exchanged) and functional quality (the way it is being exchanged) (Gremler and Gwinner, 2000). If the technical quality of CEX is high, more information is exchanged between customers and employees. This information could be outward resources for employees, influencing their views and innovative behaviors (Sridhar and Srinivasan, 2012). Social influence due to exchanges is unavoidable and employees may combine their opinions and the views and information from others in their decision-making and innovation processes (Sridhar and Srinivasan, 2012). Similarly, high functional quality of CEX may build employee confidence, with which they are more likely to exhibit risk-taking behaviors (Ali and Ndubisi, 2011). Essentially, customers share some responsibilities in their exchanges with employees, and this tends to reduce the risk of employees' proactive behaviors and encourage innovative behaviors (Lawler, 2001). Therefore, the following hypothesis is proposed.

Hypothesis 1. Customer-employee exchange is positively related to employee innovative behavior.

CEX involves three aspects including solidarity, harmonization and information exchange, according to an influential study by Keith et al. (2004). Solidarity of CEX refers to the extent to which an exchange is considered as important and ongoing (Keith et al., 2004). It indicates the degree to which customers and employees expect the relationships to continue in the long term and to remain beneficial for both parties (Keith et al., 2004). Harmonization describes the level of trust between the two parties and the ability to resolve conflict based on the relationship, while information exchange involves information contents in the exchanges (Castellanos-Verdugo et al., 2009; Keith et al., 2004). The three dimensions of CEX are also widely accepted, and cited with high frequency in academic publications. Additionally, this three-dimensional construct well reflects the interaction between customers and employees in hospitality services: high quality of exchanges are characterized by beneficial to each party, sustainable, and involving much information and knowledge exchanges (Chathoth et al., 2013). Thus, this study adopts the three factors of CEX to more specifically investigate Hypothesis 1. Such sub-hypotheses testing is commonly used in hospitality innovation research (e.g., Nieves et al., 2014).

The three factors of CEX by Keith et al. (2004) may also have impact on employee innovative behavior. Customer-employee exchanges involve reciprocity, where both customers and employees benefit from each other and feel obliged to return good deeds to the other party (Blau, 1964). If the results of customer-employee exchanges make employees see their relationships with customers as important (i.e., solidarity), they tend to give customers their good deeds (Blau, 1964). Driven by the desire to return back the benefits to the customers, employees are more likely to exhibit innovative behaviors (Ottenbacher, 2007). In addition, employee innovative behaviors are

risk-taking behaviors that may fail without support from others (Clegg et al., 2002). If employees perceive their relationships with customers as reliable and can be relied on (i.e., harmonization, with high level of trust), they may exhibit high level of creative self-efficacy and perceive risk level as low, which may lead to more innovative behaviors (Clegg et al., 2002; Tierney and Farmer, 2011). Furthermore, information exchange between employees and customers is important external resources for employees (Keith et al., 2004). It may not only bring about creative new ideas in the “opportunity exploration” stage of innovation, but also lead to employees’ better understanding of customers’ needs and the services, which facilitates employees’ idea application (Foss et al., 2011; Kleysen and Street, 2001, p.285). Based on the analysis above, Hypothesis 1 can be further divided into the following:

Hypothesis 1a. Solidarity is positively related to employee innovative behavior.

Hypothesis 1b. Harmonization is positively related to employee innovative behavior.

Hypothesis 1c. Information exchange is positively related to employee innovative behavior.

## **2.2 Customer-employee exchange, social psychological climate, and employee innovative behavior**

Researchers have traditionally investigated climate for innovation when examining the effect of contextual factors on employee innovative behavior. Climate refers to employees’ collective perceptions of their work (intangible) environment and service settings in terms of facilitating quality, rewards, support and encouragement of excellence (Andrews and Rogelberg, 2001). It is a type of employees’ perceived psychological condition reflecting their workplace (Ahmed, 1998). Scott and Bruce (1994) argued that the climate for innovation included two dimensions as support for innovation and resources supply from organizations; they also tested the mediating role of

climate in the relationship between LMX/co-worker exchange and employee innovative behavior. The climate by Scott and Bruce (1994) is actually organizational psychological climate. Another type of climate for innovation is social climate (Ahmed, 1998). While organizational climate is inferred by members through organization practices, social climate reflects more about the emotional perceptions of employees' other external social relationships (Ahmed, 1998). Thus, the support and resources employees need for innovation could be also provided by customers outside of service firms. These support and resources may relate to employees' innovation objectives, participative safety (low risk of innovation), task orientation (concern for excellence) and support for innovation (Mathisen et al., 2004). The current study focuses on social psychological climate for innovation, describing employees' collective perceptions of the service environment related to customers in terms of customers' challenging requirements, support for risk-taking behaviors for service improvement and potential resource supply.

It is reasonable to propose that social climate for innovation may mediate CEX and employee innovative behavior, as organizational climate has been found mediating LMX/co-worker exchange and employee innovative behavior (Scott and Bruce, 1994). Customers are regarded as the primary social influence for employees in services and employees tend to form their perceptions of the social climate according to customers' ideas, attitudes and actions through CEXs (Kulviwat et al., 2009). As a matter of fact, a probable result of high level of CEX is the high quality customer-employee relationship, which is characterized by mutual obligation and emotional commitment (Kanagal, 2009). In a relationship with mutual trust, employees are more likely to obtain support or necessary resources from customers. That means high level of CEX is likely to lead to high level of social psychological climate. Studies such as Foss et al. (2011) have found that employees perceive the environment as more supportive when customers are more

willingly to interact with them. Thus, the following hypothesis is proposed.

Hypothesis 2. Customer-employee exchange is positively related to social psychological climate.

Same as Hypothesis 1, Hypothesis 2 is divided into three sub-hypotheses:

H2a. Solidarity is positively related to social psychological climate.

H2b. Harmonization is positively related to social psychological climate.

H2c. Information exchange is positively related to social psychological climate.

The importance of social psychological climate to employee innovative behavior has been recognized by researchers. Climate is the result of customers' expectations, from which employees may predict how customers would respond to their behaviors (Ottenbacher and Gnoth, 2005). Because of the emotional commitment caused by CEX, customers' expectations may shape employees' self-expectations and then motivations, similar to the Pygmalion effect (Hammond et al., 2011). Employees respond to social climate by altering their behaviors so as to achieve psychological balance and self-assessment outcomes (Scott and Bruce, 1994). Psychological climate for innovation thus becomes one of the determinants for innovative behaviors (Ahmed, 1998). In addition, innovative behaviors are risk-taking behaviors, which may encounter other people's resistance to the outcomes because of the challenges caused by innovation (Clegg et al., 2002). This resistance or risk results from poorer performance or idea conflicts (Hammond et al., 2011). The prospect theory indicates that people are more sensitive to loss than to gain (Latham and Braun, 2009). Social climate for innovation resulted from CEX, however, could reduce the uncertainty of the innovation outcomes and relieve the tension caused by potential conflicts (Dorenbosch et al., 2005), thus may reduce resistance to innovation and encourage employees to innovate. Besides employees' intention to innovate, they need to have the abilities to turn new

ideas into reality. The resources provided by customers, such as time, demand information and advice, are significant to employees' idea realization (Shalley and Gilson, 2004). Based on these, this study proposes the following hypothesis.

Hypothesis 3. Social psychological climate is positively related to employee innovative behavior.

Both customers and employees exchange with each other with the expectations of reward (Blau, 1964). Customers' expectations intrinsically shape employees' perceptions of external social climate (Somech and Drach-Zahavy, 2013). The four aspects of climate – vision, participative safety, task orientation, and support for innovation – are found to influence employees' innovative behaviors, on the condition that employees expect receiving improvement or excellence from innovation (Somech and Drach-Zahavy, 2013). And these expectations are common in the exchanges between customers and employees (Ma and Qu, 2011). In services, the quality of CEX is central to customers' evaluation and future behaviors, thus important to employees' decision-making or behaviors (Gremler and Gwinner, 2000). CEX is bidirectional; if customers trust employees in their relationship development, employees may also trust customers (Keith et al., 2004). Thus, if employees perceive customers as supportive (positive social psychological climate), they are more likely to turn customers' input and resources caused by CEX into innovative behaviors (Ulwick, 2002). In this way, higher level of CEX and social psychological climate together may lead to more employee innovative behaviors. Based on this, and Hypotheses 2 and 3, the following hypothesis is proposed.

Hypothesis 4. Social psychological climate mediates the relationship between customer-employee exchange and employee innovative behavior.

This hypothesis is further divided into three sub-hypotheses (see Figure 1).

Hypothesis 4a. Social psychological climate mediates the relationship between solidarity and employee innovative behavior.

Hypothesis 4b. Social psychological climate mediates the relationship between harmonization and employee innovative behavior.

Hypothesis 4c. Social psychological climate mediates the relationship between information exchange and employee innovative behavior.

(Insert Figure 1 Here)

### **3. Methods**

#### **3.1 Questionnaire development**

Employee innovative behavior is treated as the endpoint of the current study; thus it is important to have a baseline understanding of the extent of innovativeness of the hotels where target employees work. If employee innovative behavior is not regarded as important in a hotel, surveying employees in the hotel is meaningless. Thus, three screening questions were designed to enquire about the importance of innovation, support for new ideas and treatment of risk-taking behaviors in the target hotels (Shalley and Gilson, 2004). Respondents were asked to rate the degree of their agreement on these three statements, from strongly agree (7) to strongly disagree (1). If the mean scores of the three questions based on participants in a hotel are all higher than 5 (=“Slightly agree”), innovative behaviors are regarded as important in the hotel. Otherwise, the questionnaires collected from the hotel would be removed.

Employee innovative behavior was measured by the scale developed by Janssen (2000), which is widely accepted and has been confirmed in a hotel context (Janssen, 2005; Slåtten and

Mehmetoglu, 2011). The scale involves 3 factors as idea generation, idea promotion and idea realization; each factor includes 3 items. Respondents were asked to assess how often they perform innovative behaviors from “7=always” to “1=never”. In previous studies, employee innovative behaviors were rated by either supervisors or employees and the scale was found reliable in both circumstances (Janssen, 2005). Thus, the measurement scale was assessed by employees in this study, because surveying managers would require employees to reveal their identity, which may influence their responses, although ideally surveying both supervisors and employees could help alleviate potential common method bias.

Although the importance of CEX in services is widely accepted, not many studies have empirically tested the measurement of this construct. Among them, Keith et al. (2004) developed a 15-item scale based on previous research. This measurement scale involves three dimensions (solidarity, harmonization and information exchange), with each dimension including 5 items. This scale was confirmed with high reliability and validity ( $\alpha=0.8495$ ,  $AVE=0.5857$ ) (Keith et al., 2004). Meanwhile, the scale was accepted by many other researchers and could be adopted in the hospitality context (Chathoth et al., 2013; Damp erat and Jolibert, 2009). In hotels, customers need to build at least a temporary relationship with employees for service transactions to be completed (Ma et al., 2013), which makes the scale provided by Keith et al. (2004) appropriate for the present study. As many customers may have only temporal exchanges with employees, it is more appropriate to survey employees, who have more accumulative customer-employee interactions than individual customers. Thus, some minor adjustments were made for the CEX measurement based on employees’ perspectives. Actually, Keith et al. (2004) mentioned the necessity of revising the measurement scale for other studies in the final section of their paper. After the item adjustments, a 7-point Likert-type scale was used, with 7 representing “strongly agree” and 1

“strongly disagree”.

The social psychological climate for innovation was measured using Scott and Bruce’s (1994, p.593) scale, originally for measuring organization’s (including staff members’) support and resources, with some adjustments, as social psychological climate is a parallel concept to organizational psychological climate (Ahmed, 1998). Employees may form general impression of customers through constant exchanges with different customers, although customers may be changing (Chathoth et al., 2013). In addition, the participative customers as “partial employees” share some characteristics with organization members (Bendapudi and Leone, 2003). Thus, this scale adoption is reasonable; only some items need to be revised so that they can be used in the customer context. Items such as “this organization can be described as flexible and continually adapting to change” and “personnel shortages inhibit innovation in this organization” were removed, with 14 items remaining. Others are adjusted if necessary for this study. For example, the original item “creativity is encouraged here” is replaced by “innovation is encouraged by my customers”. These items were also measured with a 7-point Likert-type scale where 7=strongly agree and 1 = strongly disagree. All the measurements adopted from previous studies were designed in English. As the target respondents are Chinese, the questionnaire was translated into Chinese using the back-translation technique to make sure that the Chinese version of the questionnaire is comparable to the English version in meaning.

### **3.2 Pilot study**

A pilot study was carried out in Shenzhen, China, to test the content validity and reliability of the survey instrument as well as to evaluate the readability and translation adequacy. A convenience sample of customer-contact employees in three hotels (Kempinski, InterContinental

and Ritz-Carlton) was recruited and a total of 70 questionnaires was collected. Some items in the scales of CEX and social psychological climate were negatively worded, such as “The information provided to me by customers is often inadequate”. Before the data analysis, scores of these items were reversed (e.g., the original 2 was replaced by 6). After that, exploratory factor analysis (EFA) was conducted for the three constructs to investigate the underlying factors. The reliability statistics and correlation analysis were also conducted to refine the measurements. The variables with factor loadings lower than 0.6 were to be removed, as the scales were previously developed with high reliability and validity (Hair et al., 2009). The Cronbach’s  $\alpha$  of a construct should be higher than 0.7 and the mean inter-item correlations be more than 0.4 (Cortina, 1993). An item was to be removed if its corrected item-total correlation (CITC) was lower than 0.3 and deleting the item can increase the reliability of the measurement (Cortina, 1993). Actually, the  $\alpha$  values of all constructs were higher than 0.7 and CITC of all items were higher than 0.3.

EFA on CEX showed that three factors had eigenvalues greater than 1 and the total variance explained was higher than 63%. The three factors were consistent with the original scale developed by Keith et al. (2004). Two items (“Customers and I want to cultivate a good working relationship” and “I expect my relationship with customers to last a long time”) that loaded on Factor 1 (“solidarity”) with factor loadings lower than .6 (0.527 and 0.574, respectively) were removed. The removal was supported by Solnet (2007) that working relationships and long-lasting relationships are not common in customer-employee exchanges, which are characterized by the temporary interaction for service transaction and constant adjustments to different customers. Also removed was another variable (“Customers keep me informed to help me plan for their needs”) loaded on Factor 3 (“information exchange”) because of the low factor loading (.569). This item partly measures the exchange before the services, which may not reflect the meaning of CEX in

the present study. After the three items were removed, EFA was conducted again. The results showed that the number of factors and the items loaded on them did not change. In addition, after these three items being removed, the Cronbach's  $\alpha$  of solidarity and information exchange became higher (solidarity: from 0.82 to 0.84; information exchange: from 0.84 to 0.85). Thus, it is reasonable to remove these items and the refined scale was used in the main survey.

The EFA on employee innovative behavior (KMO=0.952, Bartlett's test  $p < 0.001$ ) did not support the three-factor structure (idea generation, idea promotion and idea realization) by Janssen (2000) and suggested only one factor, with eigenvalue of 7.42, and 82.44% of the variance explained. Thus, this study treated employee innovative behavior as a unidimensional construct. As for social psychological climate, the two-factor structure ("support for innovation" and "resource supply") was also not supported. The data showed good fit for the factor analysis (KMO=0.980, Bartlett's test  $p < 0.001$ ), yet the EFA results suggested only one factor. Thus, customer related climate for innovation was regarded as a unidimensional construct. Meanwhile, two items of social psychological climate ("Customers give me positive responses to encourage innovation" and "Customers enjoy some flexibility and continually adapt to change") were removed because of the low factor loadings (0.532 and 0.511, respectively) and removing them increased the reliability of the construct.

### **3.3 Sample and procedure**

The main survey was carried out in Shenzhen, China, from February to March in 2015. The hotels in Shenzhen are regarded as serving customers well and also innovative, and employees of these hotels come from diverse areas of China (China Tourist Hotel Association, 2014), thus surveying hotel employees in Shenzhen may provide implications for other areas of China. The

researchers contacted the managers of Front Office (FO) and/or Food and Beverage (F&B) departments in ten four- and five-star hotels, which are regarded as more innovative than lower-star hotels (China Tourist Hotel Association, 2014). Managers from seven hotels agreed to support this study and arranged for the data collection. Convenience sampling was used to select employees who were available for the survey, with a plan to recruit half of the respondents from FO and half from F&B departments. Questionnaires were distributed to employees face-to-face. The researchers are unacquainted with all the respondents. During the survey process, the researchers were not present while respondents completed the questionnaires (we distributed the questionnaires, left enough time for employees to fill out the questionnaires, and collected the questionnaires at a later time) to avoid social desirability issues. Respondents were asked to return the questionnaires to the designated service counter in their hotels.

Altogether 200 questionnaires were distributed. The sample size was determined following the rule-of-thumb of 5, where the sample size is based on 5 times the number of variables ( $33 \times 5 = 165$ ) (Westland, 2010). Of the 189 questionnaires collected, 9 were discarded because there are too many missing values. Thus, 180 questionnaires were retained, involving 76 frontline employees from FO and 104 customer-contact employees in F&B departments. A total of 42 missing values was found among the 33 variables of the construct measurement, accounting for less than 1% of all values. Thus, missing values were replaced with the mean values of each variable (Hair et al., 2009). Tests of data normality were conducted for all variables and results showed that all variables were approximately normally distributed. Descriptive statistics were analyzed for all survey items with IBM SPSS Statistics 20.0. AMOS version 20.0 was employed to conduct confirmatory factor analysis (CFA) for the measurements and structural equation modelling (SEM) for the hypotheses testing (Hair et al., 2009).

Measures were taken to reduce the common methods bias in data collection process, such as making sure that respondents are anonymous, separating the different constructs on three separate pages and not indicating any relationships among the constructs in the survey instruction. After the data collection, Harman's one factor test (in factor analysis) was conducted in SPSS and the result shows that the percentage of variance explained by one factor is lower than 50% (41.25%). The intraclass correlation coefficients of the scales (all higher than 0.7) indicate higher interrater reliability. Thus, common method bias is not a problem (Podsakoff et al., 2003).

#### **4. Results and discussion**

Among the 180 respondents, 56.1% were females and 38.3% were males, with 5% unknown (see Table 1). Respondents aged 18-25 accounted for 43.9% of the sample, followed by the age of 26-35 (37.8%). Less than 3% of the respondents were over the age of 45, and the other 8 were missing values. Most respondents had a bachelor's degree or higher (59.4%) and 31.7% completed education in secondary/high schools. The monthly income of respondents mainly ranged from ¥2,000 to 2,999 (32.2%) and from ¥3,000 to 3,999 (36.1%).

(Insert Table 1 Here)

Most respondents agreed that their hotels regarded employee innovation as important (Mean=5.82, see Table 2). Meanwhile, managers in the hotels rewarded those who brought new ideas to work (M=5.57) and showed understanding of failure in their risk-taking behaviors (M=5.26). Therefore, the importance of employee innovative behaviors is well accepted in the participating hotels. Means and standard deviations of all construct measurement items are also reported in Table 2.

(Insert Table 2 Here)

#### 4.1 Reliability, validity, and measurement model

CFA was carried out to assess discriminant validity of the constructs. As shown in Table 3, the Cronbach's  $\alpha$  values representing the composite reliability of the multi-item scales all exceed 0.7, the recommended cut-off point (Tavakol and Dennick, 2011), indicating an acceptable level of reliability for each construct. In addition, all average variance extracted (AVE) of the constructs are higher than 0.5, suggesting high convergent validity (Fornell and Larcker, 1981). Discriminant validity is further confirmed by the fact that AVE of each construct is higher than its squared correlation coefficients for inter-constructs (Fornell and Larcker, 1981). For example, the highest squared correlation coefficient of employee innovative behavior is .648 ( $=.805^2$ , see Table 4), lower than AVE value (.67, see Table 3). Also, CFA results showed that the factor loadings for indicators are significant, with  $p < 0.01$ . Therefore, the reliability and validity of the constructs were acceptable.

(Insert Table 3 Here)

(Insert Table 4 Here)

Meanwhile, the goodness-of-fit indices from the CFA model were obtained. The values of  $\chi^2$  ( $= 872.8$ ) and degrees of freedom ( $= 485$ ) in the model indicated significance at 0.01 level of probability. Both NNFI ( $= .94$ ) and CFI ( $= .95$ ) were higher than 0.9, the suggested cut-off point by Kline (2011). RMSEA ( $= .067$ ) lay between 0.05 and 0.08, suggesting acceptable fit (Kline, 2011). All these indices show that the CFA model fits the data well. Therefore, the measurement

model was confirmed. As the overall measurement model turned out to be reliable and valid, the structural models were tested and the main results are shown in Figure 2, which will be further analyzed in the next section.

(Insert Figure 2 Here)

## 4.2 Hypotheses testing

First-order SEM models were used to test the hypotheses (Kline, 2011). In other words, three factors of CEX were analyzed separately. To test the mediating effect of social psychological climate, three models were tested with the regressions from predictor to outcome (Model 1), from predictor to mediator and from mediator to outcome (Model 2), and from both predictor and mediator to outcome (Model 3) (Baron and Kenny, 1986). The model fit indices of the three models are listed in Table 5 (RMSEA= .067< .08, NNFI= .94 > .9, CFI= .95> .9). They indicate that Model 2 and Model 3 have good model fit, while Model 1 fits the data relatively poorer. The RMSEA for Model 1 (=0.083) is slightly higher than 0.08, but far below 0.1, suggesting mediocre fit (Kline, 2011). NNFI (= .898) is slightly lower than 0.9. Considering the relatively small sample size of this study (n= 180< 200), the authors regard Model 1 as acceptable (Hair et al., 2009). Meanwhile, the R squares for the three models are .532, .730 and .743, respectively, indicating significant relationships (Hair et al., 2009).

Model 1 indicates that both solidarity and harmonization of CEX positively influence employee innovative behavior, while there is no significant relationship between information exchange and employee innovative behavior (see Table 5). Thus, Hypothesis 1 is partially supported, with H1a and H1b being supported but H1c not. As information exchange does not

significantly affect employee innovative behavior, Hypothesis 4c (the mediating role of social psychological climate between information exchange and employee innovative behavior) is not supported.

Model 2 shows that the paths to social psychological climate from both solidarity ( $\beta = .42$ ,  $t = 5.28$ ) and harmonization ( $\beta = .43$ ,  $t = 5.77$ ) are significant, but from information exchange ( $\beta = .11$ ,  $t = 1.70 < 1.96$ ) is not. Thus hypotheses H2a and H2b are supported, while H2c is not. Meanwhile, social psychological climate positively and significantly affect employee innovative behavior ( $\beta = .87$ ,  $t = 12.01$ ). Therefore, Hypothesis 3 is supported.

As indicated by Models 1 and 2 (see Table 5), solidarity of CEX is significantly associated with employee innovative behavior ( $\beta = .36$ ,  $t = 4.01$ ) and social psychological climate ( $\beta = .42$ ,  $t = 5.28$ ). However, in Model 3, when both CEX and social psychological climate are regarded as predictors of employee innovative behavior, solidarity no longer significantly affects employee innovative behavior ( $\beta = .06$ ,  $t = .78$ ). As both the paths from solidarity to social psychological climate and from social psychological climate to employee innovative behavior are significant, this suggested that social psychological climate is a perfect mediator of the solidarity-employee innovative behavior relationship. Sobel test results confirmed that social psychological climate mediated the effect of solidarity on employee innovative behavior ( $z = 4.61$ ,  $p < .01$ ). Therefore, Hypothesis 4a is supported.

(Insert Table 5 Here)

Results also show that the harmonization dimension of CEX significantly influences employee innovative behavior, in both Model 1 ( $\beta = .46$ ,  $t = 5.25$ ) and Model 3 ( $\beta = .16$ ,  $t = 2.35$ ). Nevertheless, this effect is weaker in Model 3 (when social psychological climate is included in

the regression analysis) than in Model 1 (both  $\beta$  and  $t$  decrease). In addition to the findings that both the effect of harmonization on social psychological climate and the impact of social psychological climate on employee innovative behavior are significant and positive, it can be concluded that social psychological climate mediates the relationship between harmonization and employee innovative behavior (Sobel test  $z = 4.35$ ,  $p < .01$ ). As a result, Hypothesis 4b is also supported.

## **5. Conclusion and implications**

This study attempts to link CEX and employee innovative behavior in a hotel context, bringing a multidisciplinary contribution to service marketing and innovation research. The results indicate that higher level of CEX (solidarity and harmonization) may lead to more employee innovative behaviors, although information exchange does not significantly affect employee innovation. Also, social psychological climate for innovation is found as an important facilitator for employee innovative behavior. In addition, climate mediates the relationship between solidarity/harmonization of CEX and employee innovative behavior. The findings could provide some implications theoretically and practically.

### **5.1 Theoretical implications**

This study adopted the measurement scales from previous studies and refined them in a hotel context. The scale of employee innovative behavior developed by Janssen (2000) was found valid and reliable in the hospitality service context. Nevertheless, although employee innovative behavior is viewed as a multiple-stage process consisting of idea generation, idea promotion and

idea realization (Janssen, 2000; Kleysen and Street, 2001), the data from hotel employees in Shenzhen only supported a unidimensional construct. A possible reason could be that the boundaries among stages of employee innovation in hotels are blurred (Martínez-Ros and Orfila-Sintes, 2009), so that one underlying factor is sufficient to explain the construct.

Another key construct is customer-employee exchange. From the service point of view, CEX is an important part of service production and delivery, and these exchanges involve more than just transaction of services (Grandey et al., 2012). The exchanges between customers and employees may not only affect customer related outcomes such as service quality and experience (Gremler et al., 2001), but also facilitate employee innovative behavior. Three aspects of CEX in hotels are confirmed in this study. High level of customer-employee exchanges in hotel services is characterized by both parties' viewing the relationship as important and resolving the potential conflicts on their own, by involving mutual commitment and the exchange of various forms of information.

This study contributes to the understanding of employee innovative behavior formation and the role of customers' influence. Previous research examined the impact of employees' personality, leadership and organization climate on employee innovative behavior (Shalley and Gilson, 2004); however, much fewer studies focused on customer-related factors. This study confirmed the link between CEX and employee innovative behavior. Customers may not only directly bring innovation to hotels (Tajeddini and Trueman, 2012), but also influence employees' innovative behaviors via their exchanges with employees, as found in the current study. Of course, the three factors of CEX have different effect on employee innovative behavior. Harmonization of CEX positively influences employee innovative behavior; solidarity affects employee innovative behavior via social psychological climate; but information exchange does not relate to employee

innovation. This conclusion is different from the results of the parallel studies on leader-member exchange (LMX), the dimensions of which all have significant and direct effect on employee innovative behavior (Sparrowe, 1995). The possible reasons may lie in the differences between CEX and LMX. For example, LMX may involve management actions and constant feedback, while CEX highly focuses on service experience (Ma and Qu, 2011; Scott and Bruce, 1994). Of course, the exact reasons need further investigation, such as examining the effect of LMX and CEX on employee innovative behavior at the same time in a hotel context.

Information exchange, one component of CEX, was found not to be significantly associated with employee innovative behavior, which means that CEX facilitates employee innovative behavior through emotional engagement rather than through technical information sharing. The information or even ideas provided by customers, as argued by Ulwick (2002), may be nothing new and just based on their experiences in other firms or their personal needs. Therefore, the importance of customers to employee innovative behavior lies in developing deeper emotional bonds and goodwill to enhance employee motivation to innovate and creative self-efficacy instead of simple information sharing during their exchanges with employees. Even with supportive psychological climate, the effect of information exchange on employee innovative behavior is still not significant (see Model 3 in Table 5). One possible reason could be that the measurement items of information exchange reflect more about the amount of the information (e.g., “frequently”, “inadequate”) than the quality, as the effect turns negative in Model 3 (Table 5). The quality of information needs to be considered in future research.

Finally, the mediating effect of social psychological climate has been partially supported in this study, which enhanced the understanding of the influence mechanism of customer-related factors on employee innovation. Solidarity and harmonization of CEX were found positively

related to psychological climate. Meanwhile, the positive relationship between social psychological climate and employee innovative behavior has been confirmed. The mediating role of social psychological climate indicates that customer support and resource supply for innovation are also important for employee innovative behavior in hospitality firms. This expands the meaning of climate for innovation to include factors outside of the organizations.

## **5.2 Managerial implications**

Relational exchanges between customers and employees should be valued and encouraged in service firms. Among the three aspects of CEX, the harmonization of exchange is a key factor in fostering employee innovative behavior. In other words, if employees and customers have trustworthy relationships and they could resolve any conflict or problem based on their relationships (Keith et al., 2004), employees are likely to exhibit more innovative behaviors. Thus, service firms should emphasize the value of the exchanges between customers and employees, create positive environment for the development of mutual trusting relationships between customers and employees, and give employees more autonomy to deal with service and customer related issues, which lead to high level of relational exchange (Keith et al., 2004). Harmonization of CEX also affects employee innovative behavior partially via psychological climate. In addition, results of the study showed that high level of solidarity of CEX could result in more employee innovation indirectly, through the mediation of social psychological climate. Thus, high level of solidarity may represent high relationship quality, but it does not inevitably lead to employee innovative behavior, unless social psychological climate exists. In practical terms, to facilitate employee innovative behavior, hotels could nourish psychological climate, an even more direct approach (than CEX), by involving more customers in some participative programs (e.g., tea

ceremony or cooking classes).

Creating social psychological climate is utmost important for employee innovative behavior in hotels, as social psychological climate has a stronger effect on employee innovative behavior than CEX (see Table 5). Therefore, hotel managers need to provide some incentives to customers for employees to obtain customers' support and resources for innovation. For example, in hotel restaurants, customers can be offered newly developed menu items on a complementary basis to solicit their views and provide opportunities for employees to interact with them. Hotels could also develop customer engagement activities, such as games and competitions relating to creativity, to cultivate customers' openness to new ideas. Encouraging customers to more actively participate in service production and delivery is another way to gain some resources from customers (Victorino et al., 2005), although some of these resources may not be directly related to innovation. Social psychological climate reflects customers' innovation expectations for employees. Thus, hotels could encourage employees to enquire about customers' requirements (e.g., short questionnaire) and establish feedback systems so that these expectations can be passed on to employees and even result in employees' self-expectancy. Customers could also be invited to nominate employees who have engaged in innovative behaviors so that customers are aware of the innovative culture of the organization. These activities encourage more exchanges between customers and employees as well as gain support from customers for innovation. These deeper relationships and understanding could eventually derive innovative behaviors of employees. Some of the suggestions to managers could be challenging; however, those who can conquer these challenges will earn their competitive advantages and outperform others in the crowded marketplace.

### **5.3 Limitations and future research directions**

There exist several limitations in this study, which also pave ways for future research. First, the sampling in only four- and five-star hotels and in Shenzhen may weaken the generalizability of the research findings. The results based on employees in Shenzhen may not be applicable to the less developed areas of China. Also, other types of hotels such as economy hotels, which develop quickly in China, allow customers to perform some services themselves and are regarded as leaders for hotel innovation in recent years, could be the focus in future research. Another limitation on sampling is the small sample size ( $n=180$ ). Some results may be different if more questionnaires were collected. In future research, a larger sample size could be adopted (e.g., based on rule of 10) to improve the measurement scales as well as the models in a hospitality context.

Secondly, this study examined the customer-employee exchange only from the perspective of employees. Meanwhile, social psychological climate was also assessed by employees only and there may be gaps between employees' perceptions and the actual behaviors of customers. Future research could involve customers as respondents and measure the impact of CEX on employee innovative behavior using experimental design, where customers and employees are matched. The data collection could also be extended over a longer period of time as innovative behaviors are not daily activities.

Information exchange is found not significantly associated with employee innovative behavior. This seems to contradict with the observations that information and knowledge sharing in hospitality firms lead to employee innovative behavior (Hu et al., 2009). One possible reason could be that the quality of the information exchanged was neglected in the present study. Future research could specifically investigate customer-employee information exchange in terms of amount and contents.

Social psychological climate could vary largely among diverse characteristics of customers, such as different personality types and frequencies of visit (first time customers vs. repeat customers), which were not considered in the current study. Future research could test the influence of personality or characteristics of customers on the relationship between CEX and employee innovative behavior.

Service transactions involve more than just the exchanges between customers and employees. Future research could also investigate the effect of other customer-related constructs, such as customer participation in service production and delivery, and customers' feedback on employee innovative behavior. Co-innovation of customers and employees in service settings may also be a direction for future research.

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**Table 1. Profile of the participants (n=180)**

<b>Demographic variables</b>	<b>Value</b>	<b>Number of responses</b>	<b>Percentage (%)</b>
<b>Gender</b>	Male	70	38.3
	Female	101	56.1
	Missing values	9	
<b>Age</b>	18-25	79	43.9
	26-35	68	37.8
	36-45	21	11.7
	46 or older	4	2.2
	Missing values	8	
<b>Education</b>	Primary/elementary school	6	3.3
	Secondary/high school	57	31.7
	College/university	104	57.8
	Postgraduate	3	1.6
	Missing values	10	
<b>Monthly income</b>	Less than ¥2,000 <sup>a</sup>	12	6.7
	¥2,000-2,999	58	32.2
	¥3,000-3,999	65	36.1
	¥4,000-4,999	28	15.6
	¥5,000 or more	9	5.0
	Missing values	4	

<sup>a</sup> 1USD is approximately 6.12 ¥ as of August 2015. ¥2,000 =~ 328 USD

**Table 2. Descriptive statistics for variables in the survey (n=180)**

	Variables	Mean <sup>a</sup>	SD
Q1	Innovation is regarded as important in your hotel.	5.82	1.17
Q2	Managers in the hotel reward those who suggest new products/services or bring new ideas to work.	5.57	1.34
Q3	Managers in the hotel show understanding and forgiveness for the failure in trying new things for the benefit of customers/the hotel.	5.26	1.41
S1	Customers and I are committed to the preservation of a good relationship.	4.51	1.68
S2	Customers and I think it is important to continue our relationship.	4.46	1.80
S3	Customers and I consider the preservation of our relationship to be important.	4.25	1.62
H1	Customers and I are generally able to resolve disagreements to both parties' satisfaction.	4.45	1.63
H2	Customers and I use a neutral, third party to resolve disputes between us. *	4.22	1.63
H3	Customers and I are very conscientious about maintaining a cooperative relationship.	4.32	1.55
H4	The high level of mutual trust between customers and me enables us to settle our disagreements to both of our satisfaction.	4.59	1.60
H5	Both parties try to resolve any disagreements that arise between us in good faith.	4.62	1.60
IE1	Customers and I keep each other informed about events or changes that may affect the other party.	4.62	1.67
IE2	The exchange of information in my relationships with customers takes place frequently and informally.	4.10	1.73
IE3	In my relationships with customers, any information that might help the other party is provided.	4.36	1.50
IE4	The information provided to me by customers is often inadequate. *	4.63	1.71
SPC1	Innovation is encouraged by my customers.	4.44	1.59
SPC2	My ability to behave innovatively is respected by customers.	4.51	1.67
SPC3	I can get into a lot of trouble by being different. *	4.36	1.61
SPC4	I am expected by customers to deal with problems in the same way as always. *	4.41	1.64
SPC5	Customers are open and responsive to change.	4.46	1.58
SPC6	Customers recognize employees who are innovative.	4.41	1.74
SPC7	Customers seem to be more satisfied with status quo than with the change. *	4.40	1.72
SPC8	I can't do things that are too different around here without provoking anger. *	4.31	1.72
SPC9	Assistance from customers in developing new ideas is readily available.	4.34	1.63
SPC10	Customers are willing to spend some time if needed for me to pursue innovative ideas.	4.43	1.43
SPC11	Customers provide necessary resources for my innovation.	4.36	1.43
SPC12	Customers are willing to help me if I cannot apply the new ideas all by myself.	4.39	1.49
EIB1	Create new ideas for difficult issues.	4.37	1.46
EIB2	Search out new working methods, techniques, or instruments.	4.38	1.52
EIB3	Mobilize support for innovative ideas.	4.38	1.41
EIB4	Generate original solutions for problems.	4.43	1.45
EIB5	Acquire approval for innovative ideas.	4.37	1.46
EIB6	Make important organizational members enthusiastic about innovative ideas.	4.40	1.45
EIB7	Transform innovative ideas into useful applications.	4.40	1.47
EIB8	Introduce innovative ideas into the work environment in a systematic way.	4.40	1.50
EIB9	Evaluate the utility of innovative ideas.	4.41	1.46

<sup>a</sup> 7 being the highest and 1 being the lowest

\* Items were reverse-coded.

**Table 3. Results of confirmatory factor analysis**

<b>Constructs /Factors</b>	<b>Factor loadings</b>	<b>t-value</b>	<b>Cronbach's <math>\alpha</math></b>	<b>AVE</b>
Solidarity			.80	.58
S1	.71	8.93		
S2	.74	9.19		
S3	.83	NA		
Harmonization			.90	.64
H1	.71	11.68		
H2	.64	10.03		
H3	.81	14.87		
H4	.92	NA		
H5	.89	18.32		
Information exchange			.84	.56
IE1	.76	9.83		
IE2	.67	8.65		
IE3	.80	NA		
IE4	.76	9.75		
Psychological climate			.96	.70
SPC1	.88	13.90		
SPC2	.84	13.49		
SPC3	.84	12.66		
SPC4	.91	14.09		
SPC5	.84	13.67		
SPC6	.79	11.01		
SPC7	.80	11.37		
SPC8	.84	12.89		
SPC9	.84	13.91		
SPC10	.84	13.63		
SPC11	.79	11.03		
SPC12	.84	NA		
Employee innovative behavior			.95	.67
EIB1	.72	NA		
EIB2	.73	9.61		
EIB3	.80	10.67		
EIB4	.85	11.28		
EIB5	.91	12.06		
EIB6	.89	11.89		
EIB7	.88	11.73		
EIB8	.82	10.87		
EIB9	.76	10.07		

**Table 4. Correlations among the constructs**

	Solidarity	Harmonization	Information exchange	Psychological climate	Employee innovative behavior
Solidarity	1				
Harmonization	.522**	1			
Information exchange	.355**	.456**	1		
Psychological climate	.622**	.638**	.437**	1	
Employee innovative behavior	.563**	.618**	.396**	.805**	1

\*\*p<.01

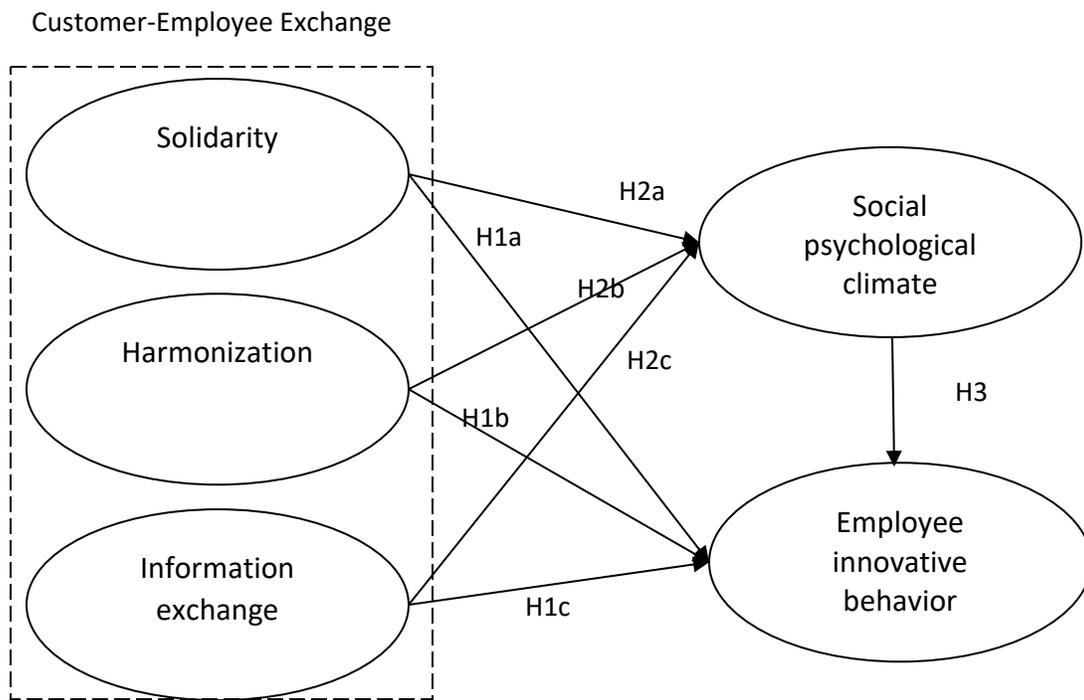
**Table 5. Fit results and path coefficients of structural equation models**

	Model 1	Model 2	Model 3
<b>Model fit indices</b>			
X <sup>2</sup>	507.7***	880.1***	872.8***
Df	183	488	485
RMSEA	.083	.067	.067
NNFI	.898	.94	.94
CFI	.90	.95	.95
<b>Standardized path coefficients (and t-values)</b>			
Solidarity → EIB	.36 (4.01**)		.06 (.78)
Harmonization → EIB	.46 (5.25**)		.16 (2.35*)
Information exchange → EIB	.06 (.79)		-.02 (-.33)
Solidarity → SPC		.42 (5.28**)	.42(5.26**)
Harmonization → SPC		.43 (5.77**)	.42 (5.71**)
Information exchange → SPC		.11 (1.70)	.11 (1.71)
SPC → EIB		.87 (12.01**)	.71(7.66**)

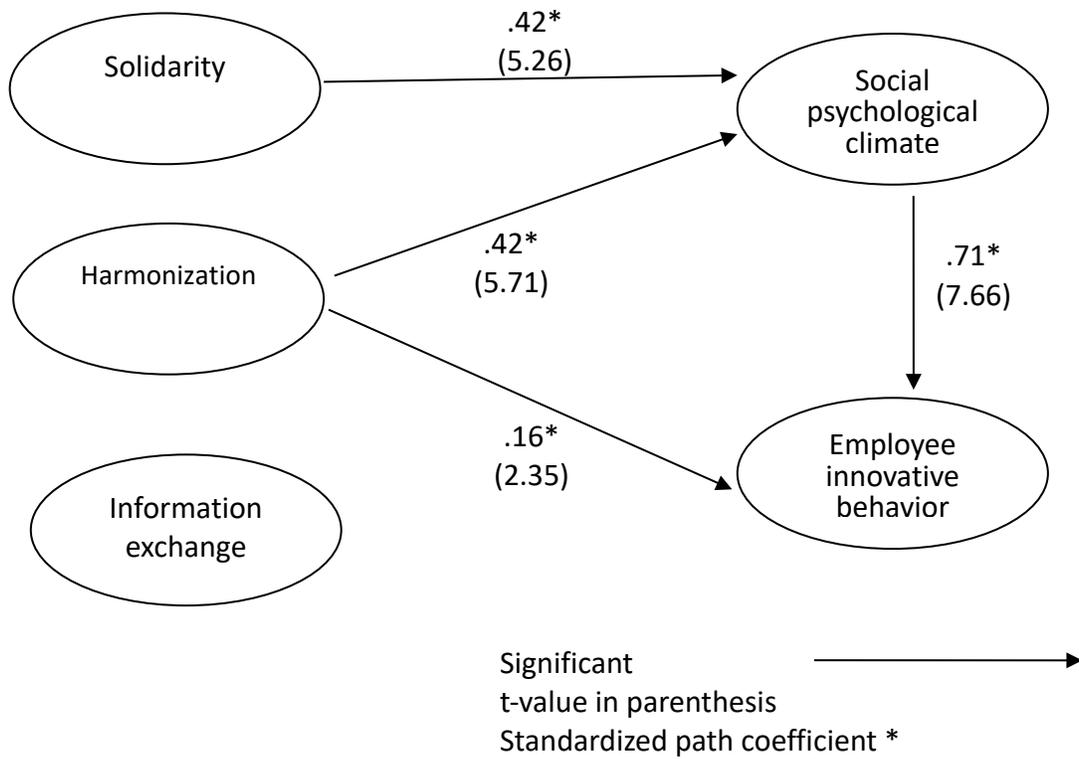
\*\*\*p<.001; \*\*p<.01; \*p<.05

EIB: Employee innovative behavior

SPC: Social psychological climate



**Figure 1. Proposed conceptual model**



**Figure 2. Results of the structural model**