

Symmetrical and asymmetrical analysis of the complex relationship between perceived environmental uncertainty and creative performance: exploring a competency formula

Author

Darvishmotevali, M, Prentice, C, Altinay, L

Published

2024

Journal Title

International Journal of Contemporary Hospitality Management

Version

Accepted Manuscript (AM)

DOI

[10.1108/IJCHM-06-2023-0776](https://doi.org/10.1108/IJCHM-06-2023-0776)

Rights statement

This author accepted manuscript is deposited under a Creative Commons Attribution Non-commercial 4.0 International (CC BY-NC) licence. This means that anyone may distribute, adapt, and build upon the work for non-commercial purposes, subject to full attribution. If you wish to use this manuscript for commercial purposes, please contact permissions@emerald.com.

Downloaded from

<https://hdl.handle.net/10072/430550>

Griffith Research Online

<https://research-repository.griffith.edu.au>

Symmetrical and asymmetrical analysis of the complex relationship between perceived environmental uncertainty and creative performance: Exploring a competency formula

Darvishmotevali, Mahlagha; Prentice, Catherine; Altinay, Levent

Purpose: In a dynamic and complex environment, employees' creative performance (CP) can be essential in developing a distinguished and competitive strategy for an organization. Using the lens of competency management, this research examines how employees perceived environmental uncertainty (PEU) and competency formula relate to employee CP, with a focus on the hospitality industry.

Design/methodology/approach: The data were collected from employees in the hospitality sector. Both symmetrical (PLS-SEM) and asymmetrical (fuzzy-set qualitative comparative analysis [fsQCA]) tests were performed to gain in-depth knowledge of how individual, organizational, and environmental factors can be configured to explain employees' CP.

Findings: The symmetrical analysis shows that competency formula mediates the negative impacts of PEU on two dimensions of creativity—that is, novelty and utility. The fsQCA testing generated contrasting findings and revealed that uncertainty, along with the formula elements, is a unique antecedent condition and opportunity for employees' CP. The inconsistent findings indicate asymmetrical and complex relationships between the proposed antecedents and outcomes in the case of employee creativity.

Originality/value: This study is the first to employ symmetrical and asymmetrical testing to address the inadequacy of explaining employee CP in complex and uncertain environments, and highlight the crucial role of the competency formula in enhancing novelty and utility dimensions of CP. This research examines the impact of various internal and external factors (i.e., individual, organizational, contextual) on employee creativity within the hospitality industry.

Implications: A combination of symmetrical and asymmetrical approaches is necessary to uncover the complex relationships among employees, organizations, and the environment. The study shows that organizational agility, competency strategies, and comprehensive strategic management processes can be configured to explain positive outcomes for organizations during uncertain circumstances. The findings can be used by HR practitioners to maximize employee creativity and enhance organizational performance.

Keywords: Competency, employees' creativity, uncertainty, SEM, fsQCA.

1. Introduction

The hospitality industry experiences continuous transformation, propelled by technology breakthroughs and shifting consumer preferences, characterized by uncertainty regarding customers due to various factors such as changing travel patterns, economic fluctuations, and evolving consumer preferences (Darvishmotevali *et al.*, 2020). These uncertainties make it challenging for businesses in the industry to predict and plan for customer demand accurately. Environmental uncertainty (EU) refers to the degree to which future events cannot be anticipated and correctly predicted (Salancik and Pfeffer, 1978), and is one of the most important external environmental characteristics for organizations to consider. Generally, there are three types of EU, which employees may perceive at the workplace: state, effect, and response (Milliken, 1987).

Employees who encounter customers may face a lack of information about the customers' requests and preferences (state uncertainty), a lack of knowledge about the effects of this uncertainty (effect uncertainty), and a lack of knowledge about the consequences of decisions and actions (response uncertainty) (Darvishmotevali *et al.*, 2018; Milliken, 1987). Delivering excellent service requires taking critical and creative actions to effectively react and respond to the results of EU arising from ever-changing customer demands (Drvishmotevali *et al.*, 2020). Examining EU holds significant importance in fostering employees' creativity, as it offers valuable insights or contributions into the dynamic and constantly evolving conditions under which they function.

Employees' CP is recognized as a source of organizational innovation (Ouyang *et al.*, 2021) and a key factor for organizational operation, service, and performance in uncertain and competitive environments (Bavik and Kuo, 2022). Many studies have investigated the personal and organizational characteristics associated with creativity. However, the interactions among personal, organizational, and contextual factors when it comes to enhancing creativity under

uncertainty remain under-researched (Bavik and Kuo, 2022; Ouyang *et al.*, 2021). Oldham and Cummings (1996) indicated that employee creativity is maximized when high levels of personal and contextual factors are present; the authors asserted that a high level of any one condition enhances an employee's ability to positively respond to the other conditions. Consistent with their view, the current study proposes that personality, organizational, and contextual factors may function in combination to explain employees' CP under uncertainty.

Among all personality trait measures, big Five Personality Factors (Goldberg, 1990) are the most cited in the literature, including extraversion, agreeableness, openness, neuroticism and conscientiousness. Out of these five factors, conscientiousness is the only personal characteristic that constantly demonstrates a strong association with individuals' careers (Zare and Flinchbaugh, 2019). This characteristic assumes a pivotal function in the realm of creativity due to its association with attributes such as discipline, perseverance, and meticulousness, all of which are indispensable for generating and executing innovative concepts (Nudelman and Otto, 2021). However, even conscientious employees should be ready for, and a fit with, their position, especially for jobs that entail coming into contact with customers directly, such as frontline jobs in the hospitality industry. Scholars have stressed that frontline staff need basic skills training to overcome uncertainty, service quality delivery, and CP (Beqiri and Mazreku, 2020; Luo *et al.*, 2021). Furthermore, evidence has suggested that even conscientious and well-trained employees are likely to exhibit low levels of creativity when their work lacks control and acceptance (Jaiswal and Dhar, 2017). Workplace empowerment entails allowing employees to take ownership of their jobs and participate in critical decision-making. Scholars have stated that empowered employees are more engaged, motivated, agile, creative, and satisfied; work harder; and are more devoted to the organization (Ouyang *et al.*, 2021; Tripathi *et al.*, 2021).

Nevertheless, we believe that each of these critical factors, when considered individually, will not have a significant and prominent impact on employees' CP in complex and uncertain

environments compared to when they work together synergistically. Working in this context, the present study aims to propose a model for reinforcing employees' creativity in conditions of uncertainty through the lens of competency management. By examining how the interaction effect of conscientiousness as a personal resource, training, and empowerment as organizational resources increases the chances of overcoming PEU toward CP, this work aims to shed light on the mechanisms that foster employees' CP by introducing a *competency formula* (see Figure 1).

2. Conceptual framework

2.1 The complex relationship between environmental uncertainty and creative performance

Uncertainty has always been a significant challenge for the hospitality industry, with evolving trends and customer expectations. Employees who deal directly with customers may feel uneasy about keeping up with trends and finding ways to incorporate them into their interactions. When dealing with clients, customer service representatives frequently encounter a wide range of uncertainties, some of which might hinder their ability to think creatively and innovatively (Darvishmotevali *et al.*, 2018). Lack of predictability in a given situation can have unpleasant effects on employees' work experience, attitudes, and performance in the workplace (Liu-Lastres *et al.*, 2023). Based on confusion theory (Watson and French, 1966), confusion is created by uncertainty, making a situation difficult to forecast. According to this theory, employees will most likely be confused in uncertain situations, making it challenging to provide excellent customer service or meet customer demands.

In general, customer contact employees usually face three types of uncertainty when dealing with customers: state, effect, and response uncertainty (Milliken, 1987). For customer contact employees, what differentiates these types of uncertainty is the lack of information perceived at different stages. In the first stage, employees may lack information about the nature of changes. Hence, they are unable to predict customers' preferences and tastes, or their requirements. When employees are faced with effect uncertainty, they cannot evaluate the

impact of the future state of the changes and cannot predict the amount and consequences of changes in customer requirements and service delivery expectations. In the third uncertainty stage, employees cannot respond to customer preference or requirement changes. Here, they lack knowledge of alternative solutions, appropriate actions or responses, or effects thereof (Milliken, 1987).

Preliminary studies regarding PEU and its relationship with performance outcomes have revealed an inverted relationship (e.g., Harrison-Walker, 2019; Magnani and Zucchella, 2019). However, studies have not focused on the three types of uncertainty that customer contact employees may face when dealing with customers. The current study aims to examine and offer some possible explanations for how three types of PEU that occur when facing customers impact employees' creativity. Amabile (1988) defined CP as generating new, novel, and potentially beneficial ideas, problem solutions, and insights. Creativity is the ability to think differently about a task or issue in new ways, or to use one's imagination to generate new ideas and fine new solutions (Ouyang *et al.*, 2021). Today, creativity is viewed as a two-criteria construct that characterizes creative products as novel (e.g., original or unexpected) and appropriate (e.g., fulfilling or useful work) (Bavik and Kuo, 2022). There is a tendency in modern service excellence to shift the focus of creative work from novelty to novelty and utility (Kharkhurin, 2014). According to Piffer's (2012) idea, novelty and utility complement one another in order to produce ideas that are comparatively novel, suitable, and of high quality. So, for creative implementation to satisfy customers, it may not be enough to propose or implement a new idea—the appropriateness and usefulness of the solution and innovative action are also critical. In this process, customer contact employees are responsible for delivering service excellence to customers. Therefore, it is imperative to enhance the understanding of uncertainty as it can potentially give rise to significant challenges in the

perceived reputation of the hospitality industry and its customer base, resulting in severe financial repercussions in both the short and long term.

It is widely acknowledged that investigating the various forms of uncertainty and their impact on employees' creative abilities within the hospitality sector is crucial for comprehending the characteristics of these factors and their subsequent implications. Scholars have stressed that performance analysis can advance our understanding of navigating uncertainties and unsettling times (Harrison-Walker, 2019; Liu-Lastres *et al.*, 2023). Therefore, understanding the relationship between state, effect, and response uncertainties with employees' creativity in both the novelty and utility dimensions is critical. In this regard, the current study proposes the following hypotheses (H):

H1a: State, effect, and response uncertainties are significantly related to the novelty dimension.

H1b: State, effect, and response uncertainties are significantly related to the utility dimension.

2.2 The buffering role of the competency formula in the formation of creative performance

As discussed above, employees in the hospitality industry are constantly involved in customer development relationships and adapt themselves to complex and dynamic environments, resulting from uncertainty in interacting with customers with different preferences, expectations, backgrounds, and opinions. We believe that organizations must have competency management to provide excellent services under uncertain situations. According to dynamic capabilities theory (Teece *et al.*, 1997), organizations' basic competencies can create short-term competitive positions, leading to long-term competitive advantage, which is the core of organizational innovation and creativity. Dynamic capabilities theory asserts that by strengthening organizational competencies, organizations may focus on competitive survival issues in response to rapidly changing business conditions. However, the content of competency management may vary in different contexts. Based on the organization's context of activity and location, the nature of external threats, and uncertainties, organizations try to form different

types of competencies at various levels of work. The present study proposes three competency management indicators based on their significant characteristics when encountering customers in the hospitality industry.

According to the Big Five personality traits (Goldberg, 1990) derived from trait theory, conscientiousness refers to being cautious or diligent, having a high desire to perform well, and taking obligations to others seriously. According to Lynn (2021), conscientious individuals exhibit elevated cognitive abilities, effective regulation of impulsive tendencies, and intentional engagement in behaviors directed toward achieving specific long-term objectives. Tagger (2021) asserted that this type of employee performs based on long-standing relations and is keener to cooperate with the organization and achieve organizational goals, which increases the possibility of obtaining favorable outcomes. Previous studies have demonstrated that conscientiousness is directly associated with different job attitudes and outcomes, such as job satisfaction, affective commitment, work engagement, and performance, while conscientiousness is indirectly associated with absenteeism (Nudelman and Otto, 2021).

The reality is that even conscientious employees are unable to act efficiently and effectively without the required training. Scholars believe that customer contact employees require basic skills training (e.g., technical, vocational, or management skills) to deliver service quality, extra-role performance, creativity, and effective service recovery (Luo *et al.*, 2021). Employee training typically entails a brief duration and is primarily aimed at enhancing an organization's production capacity, whether it pertains to a product or service. Continuous employee training is crucial due to its role in familiarizing employees with job-related tasks, as well as organizational values and beliefs (Beqiri & Mazreku, 2020). One example of acquiring novel and useful strategies to address dissatisfied customers is to build employee expertise and ongoing training. Scholars widely acknowledge that employee training holds significant importance within the hospitality industry due to its positive impact on various aspects. These

include enhanced productivity per employee, improved cost-effectiveness and collaboration, more efficient utilization of new tools, fostering creativity and innovation, as well as promoting high commitment and satisfaction (Luo *et al.*, 2021).

Importantly, having trained conscientious employees is insufficient when it comes to acting in unpredictable situations (encountering customers). If they lack autonomy, trained conscientious employees can only perform their defined tasks and cannot go above and beyond their duties (if required). This is critical when considering employees' empowerment, especially in industries that have direct contact with customers, such as the hospitality industry. Research on situational strength—or the degree to which the environment limits or does not limit an individual's choices—suggests that various workplace characteristics can provide situations for expressing individual differences. One of these characteristics is empowerment. Empowerment refers to the authority or power given to someone to do something (Quinn and Spreitzer, 1997). Researchers believe that workplace empowerment encapsulates employees' degree of freedom and authority to perform tasks their way, with autonomy and independence across different roles (e.g., extra-role and recovery performance), along with the selecting appropriate approaches when encountering customers (Tripathi *et al.*, 2021). According to Quinn and Spreitzer (1997), empowerment entails acquiring the skills to proactively and innovatively address job-related obstacles, and it is realized when individuals are equipped with necessary information, assistance, and resources, along with avenues for personal development. Ahn (2020) stated that freedom of action and support for autonomy are needed in the workplace to maximize productivity because this makes employees willing to utilize their maximum capabilities and perform better.

According to dynamic capabilities theory (Teece *et al.*, 1997), it can be claimed that when highly trained, empowered, and conscientious employees face uncertainty, they may strive to enact service recovery and act behind their routine responsibilities to find creative solutions to

overcome uncertainty. This proactive approach in a competency framework not only demonstrates their commitment to organizational success but also may foster a culture of creativity, where employees are encouraged to explore alternative possibilities and demonstrate novel and useful performance. We believe that by embracing the challenge of uncertainty as an opportunity for growth and development, the competency formula might contribute to employees' adaptive-creative capacity and their abilities to perform creativity in an ever-changing hospitality environment. Therefore, it can be assumed that the interaction of conscientiousness, training, and empowerment forms a strong combination of competency management to mediate the relationship between uncertainties and CP in the workplace. Thus, we posit the following:

H2a: The competency formula (conscientiousness, training, and empowerment) is significantly related to uncertainty (state, effect, and response) and the novelty dimension of creativity.

H2b: The competency formula (conscientiousness, training, and empowerment) is significantly related to uncertainty (state, effect, and response) and the utility dimension of creativity.

[Figure 1]

3. Methodology

3.1 Symmetrical and asymmetrical analyses framework

The study employs both symmetrical and asymmetrical methods to examine the interrelated and complex relationships between individual, organizational, and environmental factors. The symmetrical method is a variable-based approach for testing the linear relationship between the proposed variables using regression modeling; the asymmetrical method refers to a case-based approach for testing complex and asymmetrical relationships using fuzzy-set qualitative comparative analysis (fsQCA).

Structural Equation Modeling (SEM) was utilized as a symmetrical method to examine complex relationships between sturdy constructs, employing factor analysis and regression

analysis. It enables the modeling of simultaneous effects between variables, assuming symmetric relationships (Kline, 2012). The fsQCA approach was utilized to obtain a deep understanding of the configurations of various factors in stimulating CP. Using asymmetrical modeling, the present study proposes identifying combinations of the three competency management indicators that lead to high and low scores for coping with uncertainty in CP at the macro level. This method enables us to explain heterogeneous features, occurrences of contrarian cases, and the complex interactions of CP antecedents.

It sought to strengthen the reliability and validity of the study's results by utilizing both approaches. Statistical tests of model fit are provided by SEM, enabling the evaluation of the proposed model's overall goodness of fit (Kline, 2012). By considering various possible configurations and checking if they are consistent with CP antecedents, fsQCA, which focuses on identifying necessary and sufficient conditions, can offer extra validation (Vis, 2012). Combining SEM and fsQCA aims to perform what is known as "triangulation of results," which enables comparing and contrasting the results from multiple analytic methods (Kumar *et al.*, 2022).

3.2 Sample

The study was undertaken at several 4- and 5-star hotels in the Turkish Republic of Northern Cyprus (TRNC). TRNC is one of the most important and attractive tourist destinations, and the hospitality industry is one of this region's main pillars of economic growth. Higher-star grading hotels (four & five-star) are selected because relevant literature shows they have higher levels of crisis planning implementation and problem preparedness (Melián-Alzola *et al.*, 2020). This category of hotels might be exposed to increased EU and turbulence, emphasizing strategic human resources management, risk management, workplace creativity, and the provision of relevant explicit display regulations and strategies (Darvishmotevali *et al.*, 2020). These high-end establishments are renowned for their dedication to achieving exceptional standards,

provision of top-tier service, and careful attention to detail in all aspects of the guest experience in an uncertain atmosphere. The constant exposure to uncertainty encourages employees to be creative, forcing them to think creatively and develop novel solutions to meet customer expectations. As a result, researching uncertainty and creativity in 4 and 5-star hotels offers insightful knowledge into how these elements interact in a setting that values exceptional customer service and requires ongoing innovation. This emphasis on uncertainty and creativity in 4 and 5-star hotels also aligns with earlier research (Anasori *et al*, 2023; Darvishmotevali *et al.*, 2018). These hotels have been found to foster an environment that encourages staff creativity because they strongly emphasize providing personalized experiences and exceeding guest expectations.

Purposive sampling was employed, and the data were collected from predominantly customer contact employees, including those who worked at the front office, reservation, housekeeping, concierge, guest service, security, and communication departments.

3.3 Measures

Six items from Boshoff and Allen (2000) were used to measure training. Twelve items from Sue-Chan and Hempel (2016) were used to measure employees' utility and novelty dimensions of creativity. Empowerment was measured using five items proposed by Hayes (1994). Conscientiousness was measured using nine items adapted from John and Srivastava (1999). Twelve items were adopted from Ashill and Jobber (2010) to measure the state, effect, and response types of PEU.

3.4 Data collection procedures

In the first stage of data collection, we sought permission to conduct the survey by contacting the public relations managers of each hotel. After being granted permission, a self-report survey form and a blank envelope were given to each target sample (customer contact employees). They were asked to return the completed survey form in a sealed envelope. Several

procedural remedies (Podsakoff *et al.*, 2003) were applied to minimize potential common method bias (CMB) before and during data collection. These remedies included providing comprehensive and straightforward instructions for completing the questionnaire, guaranteeing anonymity and confidentiality of respondents, counterbalancing items, and ensuring simplicity and clarity of content.

All items were originally written in English and then translated into Turkish (the official language in TRNC). Then they were back-translated into English with the assistance of two academics proficient in both languages (McGorry, 2000). This process was done to determine whether or not the translated version was equivalent to the original version. In addition, the items' content validity was examined via pilot research that included a total of twelve customer contact employees. Their feedback was considered while developing the final version of the questionnaire. Four hundred questionnaires were handed out to the participants in the study, but only three hundred twenty-eight were returned. After removing the nine questionnaires that were found to be incomplete, three hundred nineteen usable responses were left.

4. Result

4.1 Demographic Information

According to descriptive analysis, around seventy percent of the respondents were men, and thirty percent were women. Over one-third of the respondents were aged between thirty and thirty-nine, and less than five percent were aged fifty and above. Almost half of the respondents had a bachelor's degree, and a quarter had a master's degree. Around sixty percent of respondents had tenure between one to five years, and less than ten percent had more than sixteen years. Table I presents the profiles of the respondents.

[Table I]

4.2 Results of measurement reliability and validity testing

In the first step of the measurement validity and reliability confirmation process, factor reduction analysis was used to identify the valid and reliable items of the study constructs based on the data set. One item (CON7) from the conscientiousness measures and one item (EMP2) from the empowerment measures were removed from the subsequent analysis because of their nonsignificant loadings. In the next step of the measurement validity and reliability confirmation process, confirmatory factor analysis was applied to identify the valid and reliable items based on the Cronbach's alpha (α) value, composite reliability (CR), average variance extracted (AVE), and variance inflation factor (VIF). In this stage, two items (CON5 & CON6) were removed from subsequent analysis too enhance the AVE value. In addition, the heterotrait–monotrait ratio (HTMT) and square root of average variance extracted ($\sqrt{\text{AVE}}$) were measured for final confirmation of discriminant and convergent validity. As the findings demonstrate, CMB is not a threat in this study (Tables II and III). In addition, the composite scores for all constructs were computed by averaging each construct item's values. The constructs' means, standard deviation (SD), and intercorrelations are reported in Table III.

[Tables II and III]

4.3 Results for symmetrical testing

Path coefficients and t-values were estimated by consistent PLS bootstrapping to test the hypotheses. Table IV, Figures 2 and 3 demonstrate the results. The results of the direct analysis show the negative and significant effect of state uncertainty ($\beta = -0.234$; $p < .001$), effect uncertainty ($\beta = -0.212$; $p < .05$), and response uncertainty ($\beta = -0.121$; $p < .10$) on employees' novelty dimension of creativity. In addition, the results of direct analysis show the negative and significant effect of state uncertainty ($\beta = -0.170$; $p < .01$), effect uncertainty ($\beta = -0.169$; $p < .05$), and response uncertainty ($\beta = -0.186$; $p < .01$) on employees' utility dimension of creativity.

[Figure 2]

The results of the mediating analysis show the positive and significant role of the competency formula on two types of employees' CP, novelty and utility. The findings demonstrate that the interaction of conscientiousness, training, and empowerment neutralizes the negative impact of three types of uncertainty (state, effect, and response) on the novelty ($\beta = 0.429$; $p < .001$) and utility ($\beta = 0.469$; $p < .001$) dimensions of creativity. The results indicate that the competency formula works as a buffer against the presence and pressure of uncertainties. Moreover, the result indicates that the competency formula fully mediates the negative impact of response uncertainty on novelty CP and state and effect uncertainty on utility CP. However, partially mediates the competency formula fully mediates the negative impact of state and effect uncertainty on novelty CP and response uncertainty on utility CP since both direct and indirect effects are significant.

To provide more evidence of the mediating effect of the competency formula, the Sobel test also was applied (Sobel, 1982). The result of the Sobel test shows that the competency formula significantly mediates the relation between three types of uncertainties with novelty (SPU: $t = 3.468$, $p < .00$; EPU: $t = 2.790$, $p < .01$; RPU: $t = 3.154$, $p < .01$), and utility (SPU: $t = 3.570$, $p < .00$; EPU: $t = 2.824$, $p < .01$; RPU: $t = 3.187$, $p < .01$) dimensions of creativity.

[Table IV]**[Figure 3]***4.4 Results for asymmetrical testing*

To understand how individual, organizational, and environmental factors are configured to explain employee CP, fsQCA was used to generate further insights. The analytical procedure for this method is to first calibrate the data and then analyze the truth table. This procedure has been documented in detail in numerous studies (e.g., Douglas and Prentice, 2019; Prentice, 2020) and is briefly summarized here. First, the data need to be "calibrated" for Boolean

analysis by converting the values from their raw scores into set membership scores ranging from 0 to 1.

Subsequently, the fsQCA results show the truth table values that are represented by consistency and coverage. *Consistency* is analogous to statistical significance in symmetrical analysis and tests the degree to which the combination of antecedent conditions consistently produces the outcome, ranging from 0 to 1, with 1 indicating the degree of similarity of the within-person relationships between the proposed antecedent conditions (environmental factors and competency formula) and outcome (employee CP) for a specific configuration or recipe. Coverage is analogous to the R-square value in symmetrical testing, indicating the percentage of variance explained by the proposed antecedent conditions for the criterion outcome. The results from fsQCA show that all proposed antecedents have full memberships in explaining employee CP, as follows:

Model: utility dimension = f (conscientiousness, training, empowerment)

Conscientiousness*training*empowerment 0.47 (raw coverage), 0.47 (unique coverage), 0.99 (consistency)

Solution coverage: 0.47

Solution consistency: 0.99

Model: novelty dimension = f (conscientiousness, empowerment, training)

Conscientiousness*empowerment*training 0.47, 0.47, 0.99

Solution coverage: 0.47

Solution consistency: 0.99

Model: utility dimension = f (state, effect, response)

State*effect*response 0.30, 0.30, 0.99

Solution coverage: 0.30

Solution consistency: 0.99

Model: novelty dimension = f (state, effect, response)

State*effect*response 0.30, 0.30, 0.99

Solution coverage: 0.30

Solution consistency: 0.99

The results for the interrelatedness between PEU and the competency formula are as follows. The results indicate that the competency formula has the largest coverage; in other words, it has the most significant variance in explaining employee CP. The degree of uncertainty also prompts employee creativity.

Model: utility dimension = f (conscientiousness, empowerment, training, response, state, effect)

Conscientiousness*empowerment*training*response*state*effect 0.29, 0.29 0.99

Solution coverage: 0.30

Solution consistency: 0.99

Model: novelty dimension = f (conscientiousness, empowerment, training, response, state, effect)

Conscientiousness*empowerment*training*response*state*effect 0.30, 0.30, 0.99

Solution coverage: 0.30

Solution consistency: 0.99

5. Discussion

The findings indicate that three types of uncertainty (state, effect, and response) are negatively related to two dimensions of creativity—that is, novelty and utility. Uncertainty, in the context of the state, refers to the absence of clear or predictable conditions within the internal or external environment. In the hospitality industry, state uncertainty can be attributed to various factors, including evolving customer preferences, market dynamics, and unexpected occurrences such as natural calamities (Ashill *et al.*, 2018; Darvishmotevali *et al.*, 2020, Milliken, 1987). The presence of uncertainty can impede the process of creative thinking and restrict the ability to generate innovative ideas. In the face of ongoing uncertainty, hotel managers and employees may tend to adhere to familiar and secure strategies, resulting in a dearth of innovative offerings (Magnani and Zucchella, 2019). Effect uncertainty refers to the ambiguity surrounding the nature or consequences of uncertainty. Employees may hesitate to

take risks or invest resources in innovative initiatives when faced with effect uncertainty (Ashill *et al.*, 2018; Darvishmotevali *et al.*, 2020; Milliken, 1987). Uncertainty regarding the effect can engender a feeling of prudence, resulting in hesitancy to embark upon innovative methodologies. This type of uncertainty may impede the progress of creativity within the hotel industry, thereby restricting the opportunity to explore novel concepts and potentially impede the improvement of hotel offerings. Response uncertainty pertains to the inherent unpredictability associated with the effectiveness of various responses. Uncertainty regarding responses may emerge within the hotel industry when implementing novel practices or services for guests (Milliken, 1987). If customers' feedback is characterized by uncertainty or negativity, it is plausible for hotel staff to exhibit reluctance in pursuing innovative strategies. The worry about unpredictable reactions can impose restrictions on exploring new ideas and restrict the effectiveness of hotel services. In total, uncertainty in hotels lacking competency can impede the generation of innovative ideas, discourage risk-taking, and limit the implementation of creative endeavors, which may ultimately hamper the development of novelty and utility.

These findings shed light on how uncertainty affects customer contact employees' performance by applying confusion theory (Watson and French, 1966). The magnitude of creativity can be expected to vary with the degree of the three types of uncertainty about the situation. The results show that there is always uncertainty and confusion about how employees use surrounding facts to predict and make novel and useful decisions. In addition, it is not the case that an individual must experience one type of uncertainty to experience another type. In fact, employees could be sure that a particular change will occur when encountering customers but be unsure about the effects the change will cause. Milliken (1987) asserted that the response type of uncertainty is experienced in the context of the need to make an immediate decision. Therefore, service customer contact employees encountering different kinds of customers will most likely experience response uncertainty when choosing among several possible strategic

solutions or formulating a suitable response. The results align with the assertions made by Darvishmotevali et al. (2020), positing that in situations where the complexity and volatility of a given setting are elevated, the level of uncertainty within the environment is also heightened, thereby leading to an ambiguous relationship between the environment and the organizational operation. The presence of elevated levels of uncertainty significantly complicates employees' decision-making processes at the different levels of the organizations. In another investigation by Darvishmotevali et al. (2018), it was discovered that uncertainty and creativity are interconnected. The study found that when individuals face uncertainty in causal relationships due to contextual ambiguity and low predictability, they tend to adopt conventional strategies instead of pursuing creative solutions. This tendency persists even when these conventional strategies are not the most optimal choices. The researchers posit that EU adversely impacts CP due to its ability to diminish the capacity to perceive alternative problem formulations.

The study shows that the introduced competency management formula effectively and significantly enables employees to take agile and adopt flexible behavioral actions. Through competency management, the key skills necessary for employees to achieve performance targets in their specific roles are identified and then developed and optimized to align with the organization's strategy. As our results confirm, trained, conscientious employees who enjoy job involvement and autonomy can act in ways consistent with organizational goals (e.g., CP, customer satisfaction) because they have the independence and freedom to make their own decisions in the workplace. More specifically, greater empowerment gives employees greater freedom to act beyond their routine duties, consider customers' satisfaction, and devote more attention to searching for and processing information toward CP. The study findings are consistent with and support dynamic capabilities theory (Teece *et al.*, 1997), which posits that organizations must develop their employees' capacity to efficiently and responsively behave and react to uncertainty. The competency package introduced in the present study to cope with

three types of uncertainty is a strategic competitive leverage of the organizational dynamic capability model. Scholars have studied the individual's behavior, thoughts, and feelings and stated that conscientious employees exhibit more goal-oriented behavior, which is very important in the hospitality industry (e.g., Lynn, 2021). In addition, according to Huang *et al.* (2021), organizations can gain a form of capital by training their employees, which then provides an internal capability or resource to increase the productivity and creativity of individuals and organizations. Tripathi *et al.* (2021) also indicated that employees must have empowerment and flexibility to design work processes according to their knowledge and beliefs and assess different methods based on their skills and experience to make judgments to address service failures, and to do so in the shortest possible time. The findings reveal that conscientious employees can obtain maximum satisfaction and make plans for creative and effective action if they are skillful, empowered, and independent in their jobs and duties. In fact, the interaction of conscientiousness, training, and empowerment is a strategic formula that increases employees' dynamic capability, providing an opportunity to increase creativity and innovation in performance.

Nevertheless, the results from asymmetrical testing through fsQCA contrast with those from the SEM testing. Whilst the symmetrical testing shows the proposed antecedents are negatively associated with outcome variables, the fsQCA results reveal that these antecedents have full membership in the outcome. In other words, fsQCA adds more insights into the proposed relationships by tapping into different sample cohorts that have high CP under uncertain environments. The critical viewpoints of two outstanding theorists can interpret these contrasting results. Schumpeter (1978) agreed with the negative impact of uncertainty on innovation but stressed innovation and uncertainty as the preconditions for productivity growth (Brouwer, 2000, 2002). On the other hand, Knight's entrepreneurship theory (1921) revolves around the positive effects of uncertainty on work outcomes. Nevertheless, both theorists

support the idea that uncertainty spurs diffusion and improves the utilization of human capital (Brouwer, 2000, 2002).

6. Implications

6.1 Theoretical contributions

The study was a result of responding to a call for more investigation of the interactions among various factors regarding enhancing creativity under uncertainty that remains under-researched (Bavik and Kuo, 2022; Ouyang *et al.*, 2021). The current study addresses the concerns that a single perspective such as either personal or organizational factors is inadequate to explain employee performance and creativity in complex and uncertain environments (Jaiswal and Dhar, 2017; Moon *et al.*, 2019). The symmetrical output of this study confirmed the crucial role of the competency formula in generating a competitive and agile strategy in encountering uncertainty from customers in the hotel industry. The findings contribute to service management and human resources research by showing the process by which the interaction effect of conscientiousness, training, and empowerment increases the chance of overcoming PEU toward CP (Moon *et al.*, 2019).

This study addresses a knowledge gap in the literature on CP and expands upon what is already known by establishing a competency formula to deal with uncertainty (Darvishmotevali 2020 *et al.*, 2020; Melián-Alzola *et al.*, 2020; Ouyang *et al.*, 2021). This research extended the existing knowledge by examining and validating a conceptual framework combining several factors at the workplace in different internal and external environments (i.e., individual, organizational, contextual) to predict their effect on employees CP within the hospitality industry. The findings expand on existing literature by categorizing and examining different dimensions of uncertainty and provides a comprehensive framework for understanding how uncertainty operates and affects creativity in the hotel industry. This categorization allows for a more nuanced understanding of the specific challenges and barriers that uncertainty poses to

creative thinking and idea generation. Furthermore, this study presents a competency formula by emphasizing the significance of competencies and skills in effectively navigating uncertain situations and promoting the development of creativity.

Moreover, this research employed the asymmetrical method (i.e., fsQCA) to assess complex systems, as recommended by Douglas and Prentice (2019). The fsQCA approach was used since it is beneficial to learn how configurations of multiple components (uncertainties and competency formula) work together to stimulate CP. The results allow researchers to compare the effectiveness of various CP predictors and circumstances. This is the first research of its kind to apply a mix of symmetrical and asymmetrical approaches to comprehend the complexity, combinations, and interrelatedness of the work environment, employees' attributes, and organizational resources to explain employee CP. Contrasting findings enrich existing literature by indicating asymmetrical and complex relationships between the proposed antecedents and outcomes regarding employees' creativity. The fsQCA testing adds valuable information to the strategic management literature by demonstrating that employees tend to be more creative in a high-uncertainty environment; simultaneously, the competency formula is also a unique antecedent condition of employees' CP.

Altogether, by identifying and examining the interaction between organizational, personal, and contextual elements, this study offers a more holistic comprehension of the mechanisms that cultivate creativity within the professional environment. This study contributes to a more comprehensive knowledge of how these factors collectively impact creativity within organizational settings, enhancing our understanding of the underlying mechanisms and providing valuable insights for future research and practical implications. The findings contribute to the existing body of literature by providing further insight into the distinct influence of uncertainty, training, conscientiousness, and empowerment on enhancing creativity, emphasizing the significance of concurrently considering multiple factors and their

collective impact on creative outcomes. This nuanced comprehension can assist organizations and scholars in formulating more focused interventions and strategies to augment creativity in the workplace.

6.2 Managerial implications

Creativity is essential in today's complicated and fast-paced corporate world. Creativity fosters flexibility, enabling organizations to respond effectively to evolving market demands and stay ahead of the competition. Employees' CP is essential in the hospitality industry to enhance guest experiences, drive innovation, problem-solving, marketing, and generate revenue. Whether designing innovative room layouts, offering creative services, or developing personalized services, creative thinking and performance can elevate the overall guest experience and differentiate a hospitality business from its competitors. Additionally, this approach can potentially improve employee engagement and retention, resulting in a motivated and dedicated workforce.

Businesses can gain a competitive edge and succeed in the hospitality industry by studying creativity to learn about customer preferences, how to build good customer experiences, how to develop employees, and what the industry's best practices are.

This study provides insights into the cognitive processes and mechanisms underlying creativity. It helps identify the factors that contribute to generating novel and useful ideas for CP in uncertain situations, allowing managers and policymakers to comprehend the best ways to foster and utilize creativity. The competency formula enables employees in the hospitality industry to be better equipped to respond to changing customer needs and develop creative solutions, whether it's responding to unexpected guest requests, resolving service issues, or adjusting operations to meet changing trends.

The current study has introduced conscientiousness, training, and empowerment as indicators of competency formula to service excellence toward enhancing CP. The

incorporation of conscientiousness, training, and empowerment in hotel operations yields numerous benefits. This competency allows employees to effectively respond to unpredictable conditions, thereby promoting their ability to withstand and adapt to challenges while maintaining flexibility. Although many hotel managers believe that excellent service is their top priority, they do not take the power of competency management seriously or do not have enough information about this type of strategic management. Therefore, they have not taken decisive steps to increase the competence of their employees, especially customer contact employees. Because the quality of interaction between customer contact employees and customers predicts the quality and effectiveness of service delivery, hotel management should ensure that employees have already acquired the skills required to provide technical and functional services. In addition, it is essential that hotel management give employees enough responsibility and authority to respond quickly and appropriately to customers. Conscientious employees who have acquired the necessary skills to do their work through specialized training cannot work without empowerment and freedom of action. They can work efficiently in a decentralized work environment and perform their functions appropriately, quickly, and creatively without stress.

Managers should consider that creating core competencies creates stronger employees. Training and empowering conscientious employees are required to enable them to succeed in their extra-role tasks, allowing them to overcome uncertainties and spend more time being creative in their performance to satisfy customers. Human resources and strategic managers should be aware that a strong culture of competency management will allow the company to extend both employee and organizational competencies, adding value to the company as a whole. This type of management will make a difference in recruiting and retaining the most skilled and committed employees.

To develop competency management in service organizations, managers should endeavor to involve many different human and situational management procedures, including the development of employees' capabilities, identifying threatened external factors, providing the agility to overcome uncertainties, empowering employees for extra and recovery performance when encountering customers, and formulating creative strategies for satisfying customers and offering excellent service.

7. Limitations and future directions

These findings provide a foundation for future scholars to expand our comprehension of workplace creativity and investigate novel research directions and practical implementations. However, a few limitations must be acknowledged for this study despite the great effort to ensure rigorousness. Firstly, researchers can further explore the intricate dynamics by which organizational and personal factors impact creativity under conditions of uncertainty. This may entail undertaking qualitative investigations or experimental inquiries to comprehensively understand the fundamental mechanisms at play. Secondly, future researchers need to investigate the potential moderating or mediating influences of additional variables that could interact with the identified factors. One possible avenue involves examining the impact of organizational culture or leadership style and also other type of personality traits on the interplay between uncertainty and creativity. Finally, researchers can broaden the study's scope by investigating these interactions within various industries or cultural contexts, contributing to the generalizability of findings and enhancing our comprehension of creativity enhancement in diverse organizational contexts.

8. Conclusion

Informed by confusion, trait theory, and dynamic capacities theories, the present research was conducted to explain the function of the competency formula in enhancing employees'

novelty and utility dimension of creativity under the conditions of state, effect, and response uncertainty from consumers. The results of symmetrical (PLS-SEM) and asymmetrical (fsQCA) tests reveal that the competency formula mediates the adverse effects of PEU on two dimensions of creativity, and what's more significant is that conscientious trained employees, when empowered, tend to be more creative under uncertainty. The findings align with dynamic capabilities theory, which proposes that organizations must enhance their employees' ability to behave and respond to uncertainty in an agile and effective manner. In addition, the result highlighted Schumpeter and Knight's entrepreneurship theories, which support the idea that uncertainty spurs diffusion and increases the utilization of human capital.

Reference

- Anasori, E., De Vita, G., & Gürkan Küçükergin, K. (2023). Workplace bullying, psychological distress, job performance and employee creativity: the moderating effect of psychological resilience. *The Service Industries Journal*, Vol. 43 No. (5-6), pp. 336-357.
- Ahn, J. (2020), "Understanding the role of perceived satisfaction with autonomy, competence, and relatedness in the CSR context", *Journal of Sustainable Tourism*, Vol. 28 No. 12, pp. 2027-2043.
- Amabile, T. M. (1988), "A model of creativity and innovation in organizations", *Research in organizational behavior*, Vol. 10 No. 1, pp. 123-167.
- Ashill, N. J., and Jobber, D. (2010), "Measuring state, effect, and response uncertainty: Theoretical construct development and empirical validation", *Journal of Management*, Vol. 36 No. 5, pp. 1278-1308.
- Bavik, A., and Kuo, C. F. (2022), "A systematic review of creativity in tourism and hospitality", *The Service Industries Journal*, Vol. 42 No. 5-6, pp. 321-359.
- Beqiri, T., and Mazreku, I. (2020), "Lifelong learning, training and development employee's perspective", *Journal of Educational and Social Research*, Vol. 10 No. 2, pp. 94-102.

- Boshoff, C., and Allen, J. (2000), "The influence of selected antecedents on frontline staff's perceptions of service recovery performance", *International Journal of Service Industry Management*, Vol. 11 No. 1, pp. 63-90.
- Brouwer, M. (2000), "Entrepreneurship and uncertainty: innovation and competition among the many", *Small Business Economics*, Vol. 15, pp. 149-160.
- Brouwer, M. T. (2002), "Weber, Schumpeter and Knight on entrepreneurship and economic development", *Journal of evolutionary economics*, Vol. 12, pp. 83-105.
- Darvishmotevali, M., Altinay, L., & Köseoglu, M. A. (2020). The link between environmental uncertainty, organizational agility, and organizational creativity in the hotel industry. *International journal of hospitality management*, 87, 102499.
- Darvishmotevali, M., Altinay, L., & De Vita, G. (2018). Emotional intelligence and creative performance: Looking through the lens of environmental uncertainty and cultural intelligence. *International Journal of Hospitality Management*, 73, 44-54.
- Douglas, E., and Prentice, C. (2019), "Innovation and profit motivations for social entrepreneurship: A fuzzy-set analysis", *Journal of Business Research*, Vol. 99, pp. 69-79.
- Goldberg, L. R. (1990), "An alternative "description of personality": The Big Five Factor structure", *Journal of Personality and Social Psychology*, Vol. 59 No. 6, pp. 1216-1229.
- Harrison-Walker, L.J. (2019), "The effect of consumer emotions on outcome behaviors following service failure", *Journal of Services Marketing*, Vol. 33 No. 3, pp. 285-302.
- Hayes, B. E. (1994), "How to measure empowerment", *Quality progress*, Vol. 27, pp. 41-46.
- Huang, S., Yu, Z., Shao, Y., Yu, M., and Li, Z. (2021), "Relative effects of human capital, social capital and psychological capital on hotel employees' job performance", *International Journal of Contemporary Hospitality Management*, Vol. 33 No. 2, 490-512.

- Jaiswal, D., & Dhar, R. L. (2017), "Impact of human resources practices on employee creativity in the hotel industry: The impact of job autonomy", *Journal of Human Resources in Hospitality & Tourism*, Vol. 16 No. 1, pp. 1-21.
- John, O. P., & Srivastava, S. (1999). The big-five trait taxonomy: History, measurement, and theoretical perspectives (Vol. 2, pp. 102–138). University of California.
- Kharkhurin, A. V. (2014), "Creativity. 4in1: Four-criterion construct of creativity", *Creativity research journal*, Vol. 26 No. 3, pp. 338-352.
- Kline, R. B. (2012). Assumptions in structural equation modeling. *Handbook of structural equation modeling*, 111, 125.
- Knight, Frank H., (1921), *Risk, Uncertainty and Profit*, New York: Houghton Mifflin.
- Kumar, S., Sahoo, S., Lim, W. M., Kraus, S., & Bamel, U. (2022). Fuzzy-set qualitative comparative analysis (fsQCA) in business and management research: A contemporary overview. *Technological Forecasting and Social Change*, Vol. 178, 121599.
- Liu-Lastres, B., Wen, H., and Huang, W. J. (2023), "A reflection on the Great Resignation in the hospitality and tourism industry", *International Journal of Contemporary Hospitality Management*, Vol. 35 No. 1, pp. 235-249.
- Luo, Z., Ma, E., and Li, A. (2021), "Driving frontline employees performance through mentorship, training, and interpersonal helping: The case of upscale hotels in China", *International Journal of Tourism Research*, Vol. 23 No. 5, pp. 846-857.
- Lynn, M. (2021), "Effects of the Big Five personality traits on tipping attitudes, motives, and behaviors", *International Journal of Hospitality Management*, Vol. 92, 102722.
- Magnani, G., and Zucchella, A. (2019)", Coping with uncertainty in the internationalisation strategy: An exploratory study on entrepreneurial firms", *International Marketing Review*, Vol. 36 No. 1, pp. 131-163.

- McGorry, S. Y. (2000), "Measurement in a cross-cultural environment: Survey translation issues", *Qualitative Market Research: An International Journal*, Vol. 3 No. 2, pp. 74–81.
- Melián-Alzola, L., Fernández-Monroy, M., and Hidalgo-Peñate, M. (2020), "Hotels in contexts of uncertainty: Measuring organisational resilience", *Tourism management perspectives*, Vol. 36, 100747.
- Milliken, F. J. (1987), "Three types of perceived uncertainty about the environment: State, effect, and response uncertainty", *Academy of Management review*, Vol. 12 No. 1, pp. 133-143.
- Moon, T. W., Hur, W. M., and Hyun, S. S. (2019), "How service employees' work motivations lead to job performance: The role of service employees' job creativity and customer orientation", *Current Psychology*, Vol. 38 No. 2, pp. 517-532.
- Nudelman, G., and Otto, K. (2021), "Personal Belief in a Just World and Conscientiousness: A meta-analysis, facet-level examination, and mediation model", *British Journal of Psychology*, Vol. 112 No. 1, pp. 92-119.
- Oldham, G. R., and Cummings, A. (1996), "Employee creativity: Personal and contextual factors at work", *Academy of management journal*, Vol. 39 No. 3, pp. 607-634.
- Ouyang, X., Liu, Z., and Gui, C. (2021)", Creativity in the hospitality and tourism industry: a meta-analysis", *International Journal of Contemporary Hospitality Management*, Vol. 33 No. 10, 3685-3704.
- Piffer, D. (2012), "Can creativity be measured? An attempt to clarify the notion of creativity and general directions for future research", *Thinking Skills and Creativity*, Vol. 7, pp. 258–264.

- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., and Podsakoff, N. P. (2003), “Common method biases in behavioral research: a critical review of the literature and recommended remedies”, *Journal of applied psychology*, Vol. 88 No. 5, pp. 879-903.
- Prentice, C. (2020), “Testing complexity theory in service research”, *Journal of Services Marketing*, Vol. 34 No. 2, pp. 149-162.
- Quinn, R. E., and Spreitzer, G. M. (1997), “The road to empowerment: Seven questions every leader should consider”, *Organizational dynamics*, Vol. 26 No. 2, pp. 37-49.
- Salancik, G. R., and Pfeffer, J. (1978), “Uncertainty, secrecy, and the choice of similar others”, *Social Psychology*, pp. 246-255.
- Schumpeter, Joseph A., 1978, *The Theory of Economic Development*, Oxford: Oxford University Press.
- Sobel, M. E. (1982), “Asymptotic confidence intervals for indirect effects in structural equation models”, *Sociological methodology*, Vol. 13, pp. 290-312.
- Sue-Chan, C., and Hempel, P. S. (2016), “The creativity-performance relationship: How rewarding creativity moderates the expression of creativity”, *Human Resource Management*, Vol. 55 Vol. 4, pp. 637-653.
- Teece, D. J., Pisano, G., and Shuen, A. (1997), “Dynamic capabilities and strategic management”, *Strategic management journal*, Vol. 18 No. 7, pp. 509-533.
- Tripathi, P. M., Srivastava, S., Singh, L. B., Kapoor, V., and Solanki, U. (2021), “A JD-R perspective for enhancing engagement through empowerment: A study on Indian hotel industry”, *Journal of Hospitality and Tourism Management*, Vol. 46, pp. 12-25.
- Vis, B. (2012). The comparative advantages of fsQCA and regression analysis for moderately large-N analyses. *Sociological Methods & Research*, 41(1), 168-198.

Watson, A., and French, C. (1966), “Müller–Lyer haptic illusion and a confusion theory explanation”, *Nature*, Vol. 209, pp. 942-942.

Zare, M., and Flinchbaugh, C. (2019), “Voice, creativity, and Big Five personality traits: a meta-analysis”, *Human Performance*, Vol. 32 No. 1, pp. 30-51.

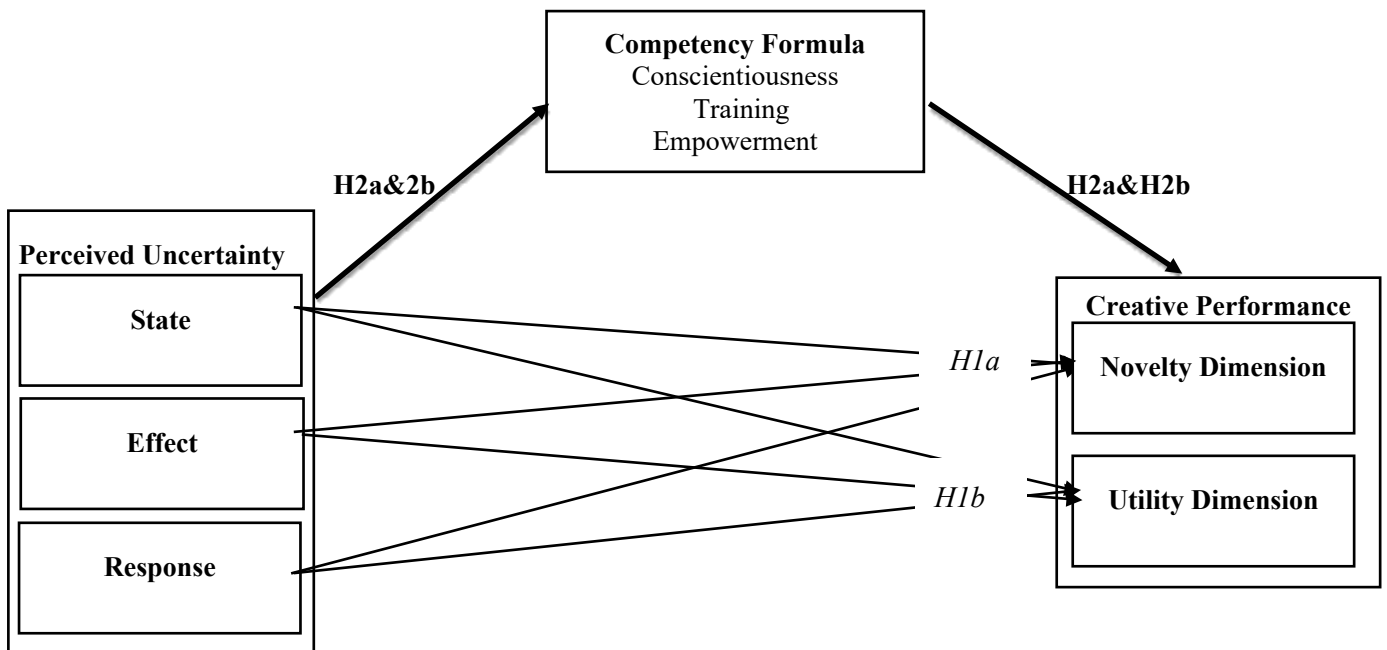


Figure 1. A model of competency management under uncertainty

Table I Respondents' demographic information

Items	Frequency	Percent (%)
Age (years)	319	100.0
Less than 20	73	22.9
20-29	105	32.9
30-39	111	34.8
40-49	22	6.9
50 and above	8	2.5
Gender	319	100.0
Male	221	69.3
Female	98	30.7
Education	319	100.0
High school & diploma	17	5.3
Vocational school diploma	66	20.7
Bachelor	153	48.0
Master	79	24.8
PhD	4	1.3
Tenure (years)	319	100.0
Less than 1	44	13.8
1-5	186	58.3
6-10	49	15.4
11-15	20	6.3
16 and above	20	6.3

Table II Result of CFA

ITEMS	Outer Loadings	CR/ $\alpha \geq .7$	AVE $\geq .5$	$\sqrt{\text{AVE}}$	Rho-A	VIF
<i>Conscientiousness</i>		.865/.867	.519	.720	.871	1.689
CON2	0.770					1.893
CON3	0.830					2.254
CON4	0.710					1.719
CON8	0.624					1.763
CON9	0.709					1.689
CON1	0.661					2.022
<i>Training</i>		.873/.872	.536	.732	.879	
TRG1	0.695					2.091
TRG2	0.760					2.459
TRG3	0.728					2.261
TRG4	0.867					2.269
TRG5	0.696					1.674
TRG6	0.624					1.648
<i>Empowerment</i>		.798/.800	.501	.708	.803	
EMP1	0.755					1.446
EMP3	0.685					1.915
EMP4	0.630					1.614
EMP5	0.748					1.624
<i>State Uncertainty</i>		.870/.866	.630	.794	.889	
SPU1	0.85					2.45
SPU2	0.936					2.693
SPU3	0.626					1.693
SPU4	0.728					2.395
<i>Effect Uncertainty</i>		.879/.881	.647	.804	.884	
EPU1	0.820					2.404
EPU2	0.701					2.445
EPU3	0.814					2.343
EPU4	0.872					1.956
<i>Response Uncertainty</i>		.892/.892	.676	.822	.899	
RPU1	0.884					2.501
RPU2	0.693					2.051
RPU3	0.837					2.422
RPU4	0.861					2.845
<i>Novelty-Creative performance</i>		.929/.929	.686	.828	.930	
NCP1	0.768					2.415
NCP2	0.875					3.876
NCP3	0.842					3.327
NCP4	0.853					2.777
NCP5	0.79					3.075
NCP6	0.836					3.056
<i>Utility- Creative performance</i>		.912/.913	.636	.797	.917	

ITEMS	Outer Loadings	CR/ $\alpha \geq .7$	AVE $\geq .5$	$\sqrt{\text{AVE}}$	Rho-A	VIF
UCP1	0.797					2.466
UCP2	0.735					2.363
UCP3	0.871					2.806
UCP4	0.731					2.561
UCP5	0.729					2.249
UCP6	0.902					3.432

Note: CON: Conscientiousness, NCP: Novel creative performance, UCP: Useful creative performance, TRG: Training, RPU: Response perceived uncertainty, EPU: Effect perceived uncertainty, SPU: State perceived uncertainty, EPW: Empowerment.

Table III Correlations and Heterotrait-Monotrait Ratio

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1- CON	<i>.000</i>	<i>.662</i>	<i>.631</i>	<i>.169</i>	<i>.289</i>	<i>.196</i>	<i>.473</i>	<i>.507</i>	-	-	-	-
2- Training	<i>.571*</i>	<i>.000</i>	<i>.748</i>	<i>.291</i>	<i>.305</i>	<i>.240</i>	<i>.510</i>	<i>.534</i>	-	-	-	-
3- EPW	<i>.522*</i>	<i>.623*</i>	<i>.000</i>	<i>.283</i>	<i>.289</i>	<i>.366</i>	<i>.521</i>	<i>.534</i>	-	-	-	-
4- State	<i>-.145*</i>	<i>-.249*</i>	<i>-.236*</i>	<i>.000</i>	<i>.218</i>	<i>.258</i>	<i>.329</i>	<i>.272</i>	-	-	-	-
5- Effect	<i>-.249*</i>	<i>-.266*</i>	<i>-.243*</i>	<i>.191*</i>	<i>.000</i>	<i>.662</i>	<i>.359</i>	<i>.342</i>	-	-	-	-
6- Response	<i>-.170*</i>	<i>-.210*</i>	<i>-.309*</i>	<i>.227*</i>	<i>.587*</i>	<i>.000</i>	<i>.328</i>	<i>.354</i>	-	-	-	-
7- Novelty	<i>.424*</i>	<i>.458*</i>	<i>.449*</i>	<i>-.269*</i>	<i>-.323*</i>	<i>-.299*</i>	<i>.000</i>	<i>.618</i>	-	-	-	-
8- Utility	<i>.449*</i>	<i>.475*</i>	<i>.456*</i>	<i>-.241*</i>	<i>-.306*</i>	<i>-.318*</i>	<i>.569*</i>	<i>.000</i>	-	-	-	-
9- Gender	<i>-.009</i>	<i>-.090</i>	<i>-.029</i>	<i>.107</i>	<i>.013</i>	<i>.000</i>	<i>-.062</i>	<i>-.039</i>	<i>.000</i>	-	-	-
10- Education	<i>.044</i>	<i>.046</i>	<i>-.013</i>	<i>-.083</i>	<i>.001</i>	<i>-.075</i>	<i>.024</i>	<i>-.036</i>	<i>-.137*</i>	<i>.000</i>	-	-
11- Tenure	<i>.017</i>	<i>.088</i>	<i>.024</i>	<i>-.027</i>	<i>.027</i>	<i>.056</i>	<i>-.039</i>	<i>.003</i>	<i>-.049</i>	<i>-.129*</i>	<i>.000</i>	-
12- Age	<i>.006</i>	<i>-.014</i>	<i>-.056</i>	<i>.003</i>	<i>.043</i>	<i>.078</i>	<i>-.034</i>	<i>-.014</i>	<i>-.032</i>	<i>-.089</i>	<i>.699**</i>	<i>.000</i>

Note: * $P < .001$; ** $P < .000$ (2-tailed test). Heterotrait-Monotrait Ratio values show in *Italic*.

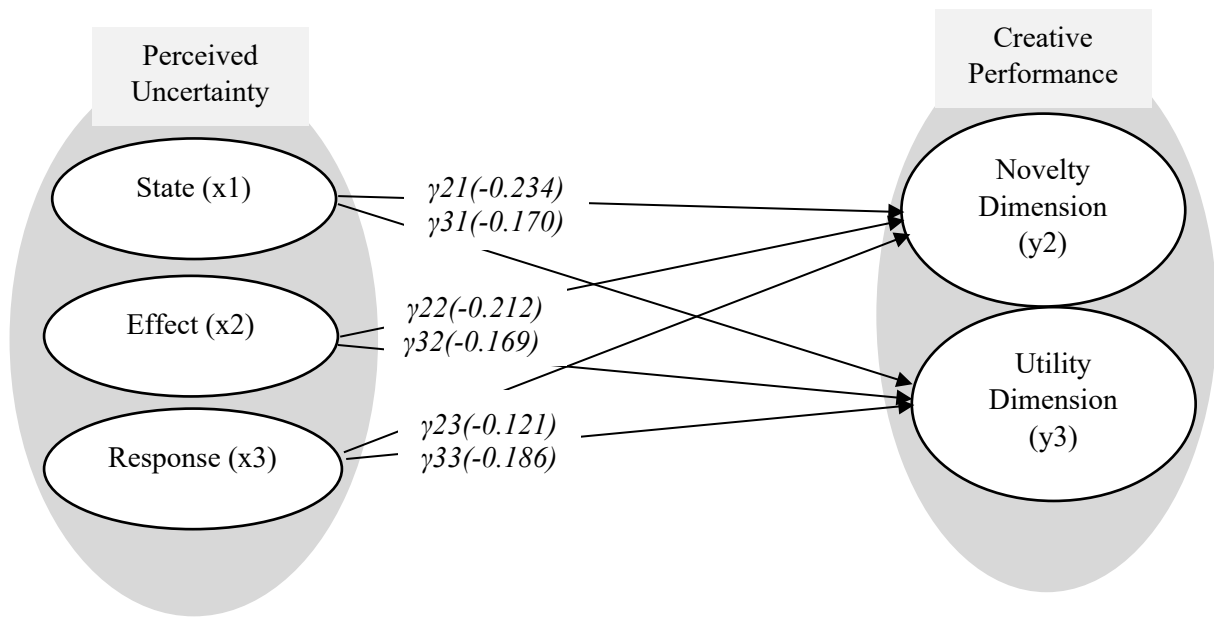


Figure 2. Results of path analysis of the direct hypotheses

Table IV Hypotheses test results

Mediating Hypotheses				
Path	NCP		UCP	
	β Coefficient	P-value	β Coefficient	P-value
H1a: SPU- NCP	-0.151	0.002		
H1a: EPU-NCP	-0.127	0.032		
H1a: RPU-NCP	-0.072	0.148		
H1b: SPU-UCP			-0.082	0.109
H1b: EPU-UCP			-0.076	0.194
H1b: RPU-UCP			-0.129	0.030
CF - NCP				
CF -UCP				
	β Coefficient	P-value	β Coefficient	P-value
H2a and H2b	0.429	0.000	0.469	0.000

Sobel Test:

SPU → CF → NCP: 3.468* SPU → CF → UCP: 3.570*
 EPU → CF → NCP: 2.790** EPU → CF → UCP: 2.824**
 RPU → CF → NCP: 3.154** RPU → CF → UCP: 3.187**

Note: *p<0.00, **p<0.01 – NCP: Novelty Creative Performance; UCP: Utility CP; SPU: Stated Perceived Uncertainty; EPU: Effect PU; RPU: Response PU; CF: Competency Formula.

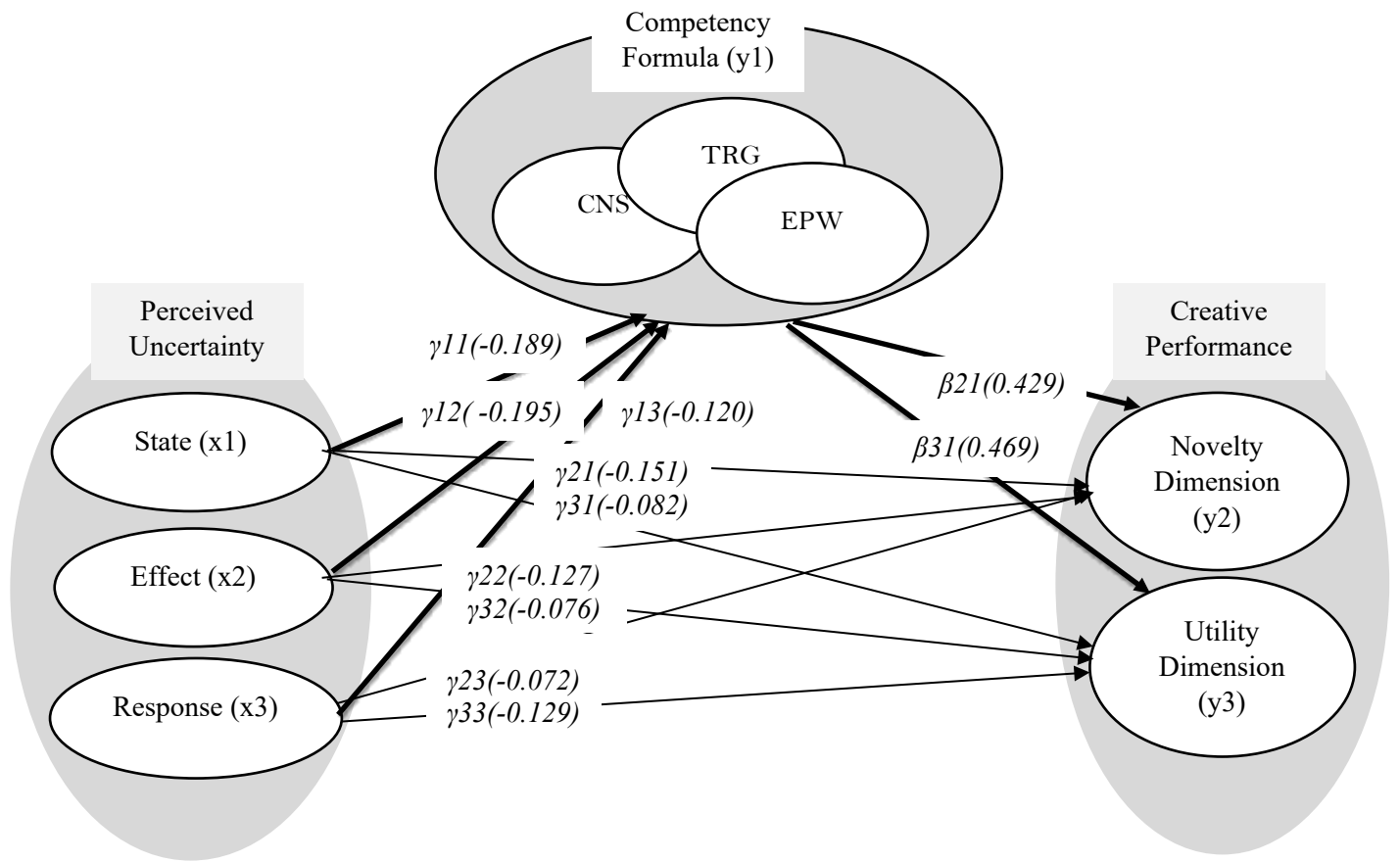


Figure 3. Results of path analysis of the uncertainty-competency-creativity model