

# An Examination of the Effect of Knowledge Utilization on Service Innovation: The Moderating Roles of Performance-Orientation Culture and Competitiveness Culture

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## Abstract

With rapid technological developments toward a knowledge-based economy, service innovation has become indispensable for companies to gain a competitive advantage. This study delineates the relationships between knowledge utilization, entrepreneurial creativity, service innovation, performance-orientation culture, and competitiveness culture. We collected 207 usable questionnaires from Taiwan's cultural and creative industry. Entrepreneurs were asked to complete a survey on their experience with knowledge management and service innovation. The data were analyzed by structural equation modeling. The results show that entrepreneurial creativity mediates the relationship between knowledge utilization and service innovation. Competitiveness culture is the sole positive moderator of the relationship between knowledge utilization and service innovation. The perspective that knowledge utilization embodies competitiveness culture complements the gap of previous service innovation, suggesting that cultural and creative firms can achieve service innovation through competitiveness culture based on knowledge utilization. To strengthen the competitiveness culture in firms, entrepreneurs must compare their skills with competitors, improve their position in the market, and make themselves more adventurous and adaptable. In addition, a culture of competitiveness landscape should be considered to establish and strengthen the service innovation program in the cultural and creative ecosystems for the benefit of all stakeholders. This study contributes to the knowledge management, organizational culture, competitiveness, and service innovation literature and reinforces existing findings. It also enriches creativity-oriented service innovation and competitiveness research.

*Keywords:* knowledge utilization, entrepreneurial creativity, service innovation, performance-orientation culture, competitiveness culture

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# 1. INTRODUCTION

Taipei Songshan Cultural and Creative Park, as an international cultural and creative cluster, encourages entered companies to innovate in services. For example, Eslite Bookstore is a large bookstore chain in Taiwan, initially selling books on arts and humanities, but later transformed into a comprehensive bookstore, combining retail department stores, arts and culture, hotels, and other services innovatively, integrating humanities, arts, and creativity into people's lives. The above case exemplifies what Asia's best bookstores, such as Eslite, are doing to continually innovate services into their operations to ensure their competitive advantage.

Facing increasingly fierce business competition, firms implement service innovation to develop services, products, and technologies that meet market preferences; developing such products and services is essential to firms' prosperity (Casidy et al., 2020). Improving existing services and creating new services are means for service innovation to respond to crises (e.g., COVID-19) (Heinonen & Strandvik, 2020). In the highly competitive service industry, service innovation is easy to replicate, so the ability to bring sustainable competitive advantages to the organization through knowledge management (KM) is critical. The use of knowledge is crucial to innovation. The acquisition or storage of knowledge itself may not lead to positive innovation results unless actions are taken to use the knowledge. Effective knowledge utilization is fundamental for enabling the successful innovation performance of enterprises (Ferraris et al., 2017). Nevertheless, little is known about the influence of knowledge utilization on service innovation (Almahamid et al., 2021). To address the gap occupied by only a limited number of studies in this area, this paper examines the influence of knowledge utilization on service innovation.

Creativity is a necessary factor that enables innovation and plays an essential role in the process of entrepreneurship (Zhou, 2008). Entrepreneurs play a vital role in fostering innovation, and the creative behavior of entrepreneurs affects the entrepreneurial process of producing innovative solutions to meet changing market demands (Marcati et al., 2008). Recently, several studies have investigated the antecedents and consequences of service innovation (e.g., Hameed et al., 2021; Santos-Vijande et al., 2021; Woo et al., 2021; Shamim et al., 2021); however, few studies recognize the potential mechanism of enterprise knowledge utilization affecting service innovation. Therefore, we presume that entrepreneurial creativity is related to service innovation and propose that service innovation is not only the result of knowledge utilization, but most importantly, it also comes from the creativity of entrepreneurs.

Indeed, entrepreneurs control the innovation process, but innovative ideas come from all parts of the organization and external networks. Organizational culture is defined by market orientation (Narver & Slater, 1990). Market orientation constitutes organizational culture, which can most effectively create necessary behaviors and excellent value for the buyer to maintain the high-level performance of firms, that is, performance-oriented culture (i.e., internal organizational culture). Moreover, market orientation is viewed as a composite of a firm's orientation toward competitors, that is, competition-oriented culture (i.e., external organizational culture). Accordingly, internal and external organizational cultures determine the innovativeness of an enterprise. Organizational culture has been employed as a moderating variable between KM and different variables (e.g., Ali et al., 2021; Kharraz & Boussenna, 2021). However, few studies have addressed empirical evidence of organizational culture as a moderator between knowledge

utilization and service innovation. To fill this gap, this study adopted an outcome-oriented view of culture (Gopalakrishnan & Zhang, 2017), i.e., performance-orientation culture (internal organizational culture) and competitiveness culture (external organizational culture), and investigated how these two aspects of culture enhance the influence of knowledge utilization on service innovation.

This study aims to make three contributions to the literature. First, although prior studies have investigated service innovation from KM perspectives (Xin et al., 2022; Migdadi, 2021; Xie et al., 2020; Shen et al., 2022; Peñalba-Aguirrezabalaga et al., 2022), there is no research on the impact of knowledge utilization on service innovation. This is an important research gap, as it shows that firms lack an understanding of how to manage and utilize knowledge. Therefore, entrepreneurs' creativity should be cultivated to generate service innovation. Second, our study expands on prior creativity studies (e.g., Giannopoulou et al., 2014; Geng et al., 2018; Tsai & Zheng, 2021) and identifies entrepreneurial creativity that is critical and beneficial to service innovation. Third, this study enhances the service innovation literature by taking performance-orientation culture and competitiveness culture as moderators, which may foster the influence of knowledge utilization on service innovation. In doing so, this paper develops the research model (see Figure 1).

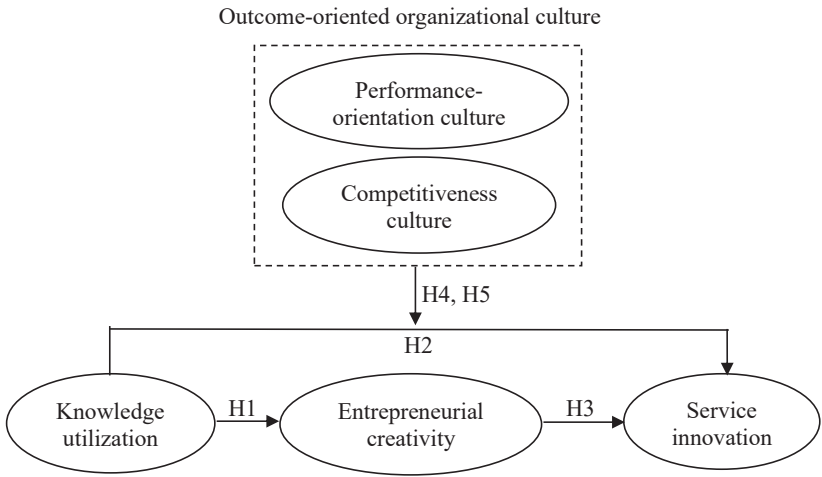


Fig. 1 – The Research Model. Source: own research

## 2. THEORETICAL BACKGROUND

### 2.1 Knowledge Utilization, Entrepreneurial Creativity, and Service Innovation

Knowledge utilization describes how companies effectively use the acquired knowledge in shaping new and improved products (Cegarra-Navarro et al., 2016) and apply it in business processes or organizational functions to unfold activities with clear outcomes, such as services, products, regulations, and procedures (Obeidat et al., 2016). Knowledge utilization is a part of

organizational behavior and problem-solving processes (Chen et al., 2012). In this study, firms apply useful ideas or suggestions in practice to solve problems and improve the effectiveness of workflow procedures and the performance of management activities to evaluate knowledge utilization (Lee et al., 2005). Furthermore, entrepreneurial creativity means the ability of firms to discover and exploit business opportunities to generate and implement ideas, which helps to establish new businesses and revitalize existing organizations (Puhakka, 2012). Dayan et al. (2013) indicate that entrepreneurial creativity is also the ability of the entrepreneur to make new combinations of hitherto independent elements that result in an improved or new product/service, process, or practice that is more valuable than what previously existed in the market or the production environment. In this study, entrepreneurial creativity is defined as the ability of entrepreneurs to identify new opportunities and innovate solutions (Puhakka, 2005).

For entrepreneurs to establish a profitable business, they must grasp enough systematic and organized market information (i.e., firm's current and potentially external stakeholders) and then use professional market knowledge (Chen & Huan, 2022). Datta (2007) mentioned that knowledge application focuses on transforming knowledge into creativity and innovation. Lim & Hernandez (2007) observed that knowledge application promotes problem-solving and creativity. Therefore, the application of knowledge is most inclined to practical action because it reflects the actual use of knowledge to generate creativity. Entrepreneurs can then effectively use knowledge to resolve questions such that entrepreneurial creativity builds on knowledge utilization. Thus, we propose the following:

H1: Knowledge utilization has a positive effect on entrepreneurial creativity.

Service innovation is described as a new service offering or service process whereby firms apply new ideas to change existing service processes and products; improve existing ideas, capabilities, skills, and resources; and ultimately create new value for customers (Witell et al., 2017). Although prior studies have observed a positive relationship between KM and service innovation (e.g., Xin et al., 2022; Tajeddini et al., 2020), there is a need to take a knowledge utilization perspective into account. Only a few studies, such as Velu (2015) and Shen et al. (2022), have approached this issue from the perspective of knowledge utilization. However, knowledge utilization has always been a pivotal component of developing new services. Businesses that have developed effective knowledge utilization can serve as business models to guide service innovations. Therefore, knowledge utilization is helpful in combining firm capabilities with market knowledge and transforming knowledge assets into new services. This study assumes that service innovation is affected by knowledge utilization. Thus, we propose the following:

H2: Knowledge utilization has a positive effect on service innovation.

Creativity promotes the generation of new ideas, which is one of the key determinants of innovation; thus, enhanced creativity provides an important foundation for innovation (Shane, 2003). For entrepreneurs, the ability to implement creativity involves finding new processes and ideas; therefore, entrepreneurial creativity likely allows the practical implementation of new processes and ideas (Joshi & Shah, 2015). By integrating Hypotheses 1 and 2, we argue that firms utilize their internal and external knowledge to cultivate entrepreneurs' creativity, which in turn drives their propensity to implement innovative practices. That is, to initiate service innovation,

firms should utilize internal and external knowledge from which entrepreneurs generate creative ideas. Therefore, entrepreneurial creativity plays a mediating role in the relationship between knowledge utilization and service innovation. According to this line of reasoning, we propose the following:

H3: Entrepreneurial creativity has a mediating effect on the relationship between knowledge utilization and service innovation.

## 2.2 The moderating roles of performance-orientation culture and competitiveness culture

Performance-driven culture is considered an 'inside-out' orientation; firms often use their internal resources (such as employees) to update existing skills and capabilities (Teece et al., 1997), which may produce innovative results. In addition, employees play a critical role in the processes of new service emergence, diffusion, application, and learning. Employees' resources, i.e., their competencies and problem-solving abilities, are the driving force behind innovations (Saari et al., 2015). For example, employees use internal and external customer knowledge to accurately explain the required situation and then develop ideas for new services and products accordingly. If employees of a company constantly realize innovative achievements (Rubalcaba et al., 2012), this will also promote the innovation behavior of the company. Subsequently, the strength of the relationship between knowledge utilization and service innovation should be dependent on the culturally learned context of performance orientation. Performance-orientation culture moderates this link so that a stronger performance-orientation culture enhances service innovation. We thus propose the following:

H4: Performance-orientation culture has a moderating effect on the relationship between knowledge utilization and service innovation.

Firms with a competitive culture tend to have an 'outside-in' market orientation; that is, such companies tend to absorb market information to better develop innovative products and services to meet customer needs (Saeed et al., 2015). An external organizational culture focuses on creating value through opportunities found outside the firm's boundaries (Storey & Hughes, 2013). When entrepreneurs have market-oriented awareness, they create different combinations of products and services or processes to add value to existing markets or create new product markets (Dayan et al., 2013). Market orientation is an important aspect of strategy concerning innovation (Newman et al., 2016). A market-oriented firm can generate superior service innovation (e.g., Cheng & Krumwiede, 2012). If the ability of entrepreneurs to develop new services to meet customer needs depends on the extent to which the culture of competitiveness directs the market to utilize customer knowledge, an interaction between the culture of competitiveness and knowledge utilization can be expected. As Gopalakrishnan and Zhang (2017) indicated, firms that have excellent market knowledge and can quickly and accurately respond to the changing environment. Their in-depth market knowledge enables them to create innovative products and services. In other words, when there is no competitive culture, the low level of knowledge utilization may lead to a serious failure of service innovation. In contrast, a competitive culture can replace or compensate for the lack of knowledge utilization in an organization. When the level of competitiveness culture is high, the increase in knowledge utilization directly affects service innovation behavior. We, therefore, propose the following:

H5: A competitiveness culture has a moderating effect on the relationship between knowledge utilization and service innovation.

### 3. METHODOLOGY

#### 3.1 Questionnaire Design

Following the suggestions of Churchill (1979), the questionnaire was modified and adopted based on the literature. We first developed an English version of the questionnaire. Two independent bilinguals translated English into Chinese and then back into English to ensure the equivalence of meaning. We conducted in-depth pilot interviews with three entrepreneurs and two senior executives. Our interviews lasted for 1.5–2 hours. After that, we asked respondents to validate the relevance and completeness of the questionnaire items (i.e., pretest) to ensure the content and face validity of the measures. In addition, this study examined the relevance of the questionnaire items to the actual situation of CCI in Taiwan. Finally, we further improved the questionnaire by using experts' feedback and formed the final version (see Appendix). All variables were measured with multiple-item five-point Likert scales (1 = strongly disagree, 5 = strongly agree).

#### 3.2 Sampling

We obtained a sample from the Ministry of Culture of Taiwan. Taiwanese cultural and creative firms were selected for two reasons. First, when the Taiwanese government implemented CCI policies, it gradually increased the contributions of the CCI to the national economy (Lu et al., 2018). Thus, the nature of Taiwan's CCI is highly competitive and volatile. Cultural and creative firms must respond quickly to market demands, provide advanced and innovative services, and maintain their competitive advantage by establishing a service innovation mechanism. Second, Taiwan's cultural and creative market system has natural advantages due to its enrichment of human resources (Liu, 2018). Thus, KM has considerable power to help cultural and creative firms maintain their competitive advantage such that these firms have the motivation to establish KM mechanisms that link internal and external connections to maintain growth and survival. The respondents are entrepreneurs who have experience in setting up companies and are still responsible for cultural and creative firms that hold creative ideation to generate customer value through the products or services provided by firms. Entrepreneurs whose firms engage in the following cultural and creative firms were chosen as targeted respondents: visual arts, performing arts, cultural heritage, crafts, film, media, publishing, advertising, product design, visual communication, fashion and branding, architecture, digital content, cultural experiences, and pop music (DCMS, 2001).

#### 3.3 Data Collection

We collected data from December 2021 to March 2022. A total of 515 questionnaires were distributed to the entrepreneurs of the main founders of cultural and creative firms. To increase the response rate, we indicated that for each returned questionnaire, we would donate 100 NTD to a charity of our choice after the completion of the study. Initially, 55 questionnaires were returned. Because of the COVID pandemic, we then distributed an online questionnaire

created within the Google Docs application to our website contact list. A total of 152 online questionnaires were returned. Therefore, the final sample included 207 firms, resulting in a response rate of 40%. We did not find significant differences in performance-orientation culture ( $p = 0.478$ ), competitiveness culture ( $p = 0.209$ ), entrepreneurial creativity ( $p = 0.317$ ), knowledge utilization ( $p = 0.216$ ), or service innovation ( $p = 0.800$ ) between the early and late respondents. Thus, nonresponse bias was not an issue in this study.

Among the sample firms, the largest percentage had been established for more than 20 years (28%) and had capital in the range of 5–10 million NTD (39.1%). Nearly three-fourths of the firms had fewer than 20 employees (74.4%). Of the respondents, 22.2% had worked at their firms for fewer than three years, and 21.7% had worked there for more than 20 years. Harman's one-factor test was used to examine potential common method bias (CMB) (Podsakoff & Organ, 1986). Five factors with eigenvalues greater than one accounted for 79.5% of the total variance, and the first factor accounted for 21.0% of the variance. Since no single factor emerged and a general factor did not account for most of the variance, CMB is unlikely to be a serious problem in this study.

## 4. RESULTS

### 4.1 Measurement Properties

To examine construct validity more precisely, confirmatory factor analysis (CFA) was conducted using AMOS 26.0 to assess the measurement model of the constructs and determine if the data fit our theoretical model. Due to the complexity of SEM, it is generally recommended to report detailed model fit indicators: absolute fit indices ( $\chi^2$ , GFI, and RMSEA) and comparative fit indices (IFI and CFI) produced adequate results to establish that our theoretical model fits the data well. The overall model statistics indicate that the  $\chi^2$  of the model was 511.36 (d.f. = 283), with GFI = 0.93, IFI = 0.92, CFI = 0.92, and RMSEA = 0.06. The internal reliability of the measurement model was tested based on Cronbach's alpha and composite reliability (CR). The Cronbach's alpha should be above the threshold of 0.7, which indicates a high degree of internal consistency, and the CR values should be greater than 0.7 (Fornell & Larcker, 1981) if the variables are reliable. The Cronbach's alpha values for all variables ranged from 0.70 to 0.87, and the CR values ranged from 0.80 to 0.86. Table 1 summarizes the measurement properties.

Tab. 1 - Measurement Properties. Source: own research

| Variables                       | Construct Identifier | Items | SFL  | $\alpha$ | CR   |
|---------------------------------|----------------------|-------|------|----------|------|
| Performance-orientation culture | POC                  | POC1  | 0.64 | 0.70     | 0.80 |
|                                 |                      | POC2  | 0.74 |          |      |
|                                 |                      | POC3  | 0.67 |          |      |
|                                 |                      | POC4  | 0.79 |          |      |

|                            |    |     |      |      |      |
|----------------------------|----|-----|------|------|------|
| Competitiveness culture    | CC | CC1 | 0.67 | 0.71 | 0.81 |
|                            |    | CC2 | 0.78 |      |      |
|                            |    | CC3 | 0.74 |      |      |
|                            |    | CC4 | 0.71 |      |      |
| Entrepreneurial creativity | EC | EC1 | 0.64 | 0.87 | 0.86 |
|                            |    | EC2 | 0.64 |      |      |
|                            |    | EC3 | 0.84 |      |      |
|                            |    | EC4 | 0.77 |      |      |
|                            |    | EC5 | 0.73 |      |      |
|                            |    | EC6 | 0.70 |      |      |
| Service innovation         | SI | SI1 | 0.65 | 0.86 | 0.86 |
|                            |    | SI2 | 0.64 |      |      |
|                            |    | SI3 | 0.72 |      |      |
|                            |    | SI4 | 0.87 |      |      |
|                            |    | SI5 | 0.74 |      |      |
|                            |    | SI6 | 0.71 |      |      |
| Knowledge utilization      | KU | KU1 | 0.62 | 0.85 | 0.85 |
|                            |    | KU2 | 0.68 |      |      |
|                            |    | KU3 | 0.61 |      |      |
|                            |    | KU4 | 0.75 |      |      |
|                            |    | KU5 | 0.86 |      |      |
|                            |    | KU6 | 0.71 |      |      |

Note: a) SFL = standardized factor loading,  $\alpha$  = Cronbach's alpha, CR = composite reliability; b) All factor loadings are significant at the 0.05 level.

In addition, the convergent validity of all variables was estimated using the average variance extracted (AVE). AVE values should be above the recommended level of 0.5 (Fornell & Larcker, 1981); the AVE values for all variables were between 0.50 and 0.52. The square root of the AVE for each variable was correlated with the other variables; in all cases, the diagonal was higher than the correlations among the variables. The AVE values of all constructs were above this threshold, implying discriminant validity and reliability among the constructs. Table 2 shows the means, standard deviations, correlations, and AVE.

Tab. 2 - Mean, SD, Correlations, and AVE (N = 207). Source: own research

| Variables | Mean | SD   | AVE | (a)  | (b)   | (c)   | (d)   | (e)   |      |
|-----------|------|------|-----|------|-------|-------|-------|-------|------|
| POC       | (a)  | 4.28 | .45 | 0.50 | 0.70  |       |       |       |      |
| CC        | (b)  | 4.33 | .46 | 0.52 | .64** | 0.72  |       |       |      |
| EC        | (c)  | 3.99 | .57 | 0.52 | .44** | .37** | 0.72  |       |      |
| SI        | (d)  | 4.09 | .53 | 0.52 | .48** | .35** | .55** | 0.72  |      |
| KU        | (e)  | 4.16 | .53 | 0.50 | .60** | .55** | .43** | .39** | 0.70 |



Note: a) \*\*  $p < 0.01$ ; b) POC = performance-orientation culture, CC = competitiveness culture, EC = entrepreneurial creativity, SI = service innovation, KU = knowledge utilization; c) Values in shaded diagonal are the square root of the AVE.

## 4.2 Hypothesis Testing

SEM analysis was performed to test the research model. The results for the direct effects are shown in Table 3. The overall model statistics indicate that  $\chi^2 = 538.89$  (d.f. = 132), GFI = 0.92, IFI = 0.94, CFI = 0.92, and RMSEA = 0.08. According to Table 3, knowledge utilization had a significantly positive effect on entrepreneurial creativity ( $\beta = 0.65$ ,  $t = 5.84$ ,  $p < 0.001$ ). Thus, H1 is supported. Moreover, knowledge utilization had a significantly positive effect on service innovation ( $\beta = 0.19$ ,  $t = 2.12$ ,  $p < 0.05$ ). Hence, H2 is supported. Regarding the R<sup>2</sup> value, knowledge utilization explained 25% of entrepreneurial creativity; additionally, knowledge utilization and entrepreneurial creativity explained 37% of service innovation. While performing SEM, we used bootstrapping statistics to test for the hypothesis related to the mediating effect among the constructs (Zhao et al., 2010). Table 3 shows that H3 (knowledge utilization  $\rightarrow$  entrepreneurial creativity  $\rightarrow$  service innovation) is supported ( $\beta = 0.25$ ,  $p < 0.01$ ). Therefore, this study suggests that entrepreneurial creativity mediates the relationship between knowledge utilization and service innovation, supporting H3.

Tab. 3 - Standardized Path Coefficients. Source: own research

| Hypothesized Relationships           |    | Path Coefficient | t-value | Results   |
|--------------------------------------|----|------------------|---------|-----------|
| Direct effects                       |    |                  |         |           |
| KU $\rightarrow$ EC                  | H1 | 0.65***          | 5.84    | Supported |
| KU $\rightarrow$ SI                  | H2 | 0.19*            | 2.12    | Supported |
| Indirect effect                      |    |                  |         |           |
| KU $\rightarrow$ EC $\rightarrow$ SI | H3 | 0.25**           | 2.64    | Supported |
| R <sup>2</sup>                       |    |                  |         |           |
| EC                                   |    | 0.25             |         |           |
| SI                                   |    | 0.37             |         |           |

Note: a) \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ ; b) KU = knowledge utilization, EC = entrepreneurial creativity, SI = service innovation.

The moderating effects of performance-orientation culture and competitiveness culture on the relationship between knowledge utilization and service innovation are summarized in Table 4. We mean-centered all constructs before generating the interaction terms. Then, we added the interaction term from Model 1 to Model 2. Model 1 introduced the main effect (knowledge utilization), while Model 2 introduced the interaction terms of knowledge utilization  $\times$  performance-orientation culture and knowledge utilization  $\times$  competitiveness culture. Based on the results, Model 2 indicates that the interaction term of knowledge utilization  $\times$  performance-orientation culture had a nonsignificant moderating effect on the relationship between knowledge utilization and service innovation. Thus, H4 is not supported. As predicted by H5, the interaction term of knowledge utilization  $\times$  competitiveness culture had a significant positive moderating

effect on the relationship between knowledge utilization and service innovation, confirming the moderating role of a culture of competitiveness. In addition, including the moderating effect increased the R<sup>2</sup> value for service innovation from 37% in Model 1 to 42% in Model 2. Thus, H5 is supported.

Tab. 4 - The Results for Moderating Effects. Source: own research

| Variables                      | Hypotheses | SI      |         |                             |
|--------------------------------|------------|---------|---------|-----------------------------|
|                                |            | Model 1 | Model 2 | Results                     |
| Independent variable<br>KU     | -          | 0.59*** | 0.22*** | -                           |
| Moderate variables<br>KU × POC | H4         | -       | 0.190   | Not supported-<br>Supported |
| KU × CC                        | H5         | -       | .14**   |                             |
| R <sup>2</sup>                 |            | 0.37    | 0.42    | -                           |

Notes: a) \*\* p < 0.01, \*\*\* p < 0.001; b) KU = knowledge utilization, SI = service innovation, POC = performance-orientation culture, CC = competitiveness culture; c) “-” = not applicable.

## 5. DISCUSSION AND CONCLUSION

This study finds that Taiwanese cultural and creative firms foster a culture of competitiveness in organizational functions or business processes to perform activities that generate explicit results, such as products, services, procedures, and regulations. When cultural and creative firms utilize internal and external knowledge, they must foster a culture of competitiveness to transform valuable resources into service innovation. We found that the moderation effect of performance-orientation culture was not significant. This finding runs contrary to our expectations, but it is novel. There is one possible explanation for this result: Taiwanese cultural and creative firms have learned and accepted such business philosophies as a culture of performance orientation and instilled these philosophies in all functions and employees through education and training programs. Performance-orientation culture has become a routine corporate culture trait among Taiwanese cultural and creative firms to survive fierce domestic and global competition. Therefore, performance-orientation culture does not produce a more positive interaction effect on knowledge utilization on service innovation. This may suggest that performance-orientation culture is not necessarily bundled with knowledge utilization in cultural and creative firms. In sum, greater commitments to a culture of competitiveness significantly increase the effect of knowledge utilization on service innovation. Competitiveness culture was found to be a powerful explanatory variable that accounts for important differences in service innovation. Because a culture of competitiveness embodies market-oriented competition, competitiveness culture sets the service operations that promote a firm's ability to sense and respond to marketplace changes, making it more agile and better able to innovate existing services. Cultural and creative firms that orient themselves toward a culture of competitiveness will be likely to reap greater benefits from knowledge utilization because it is directed toward service innovation.

## 5.1 Research Contributions

This study has contributed to the literature on KM, creativity, service innovation, and competitiveness. First, prior studies (e.g., Sung & Choi, 2012; Liu et al., 2021; Ahlin et al., 2014; Xin et al., 2022; Tajeddini et al., 2020) have not simultaneously explored the relationships between knowledge utilization, entrepreneurial creativity, and service innovation. Therefore, this study provides one of the most holistic understandings of knowledge-based service innovation. Additionally, recent studies have recognized that the link between KM and innovation performance may not be direct (e.g., Migdadi, 2021). Accordingly, we further studied this mainstream research, focusing on how entrepreneurial creativity plays a mediating role between knowledge utilization and service innovation performance. Second, we examined the moderating roles suggested by prior studies (e.g., Baron & Tang, 2011; Ahlin et al., 2014) and identified a culture of competitiveness as a potential means for a firm to influence the transformation of knowledge utilization into service innovation. The association of the three factors of knowledge utilization, competitiveness culture, and service innovation can provide ample explanatory power. The perspective that knowledge utilization embodies competitiveness culture is a novel complement to previous studies (e.g., Hana, 2013; Bencsik et al., 2020; Lewandowska et al., 2021) on innovation, suggesting that the cultural and creative firms explored in this study can achieve service innovation through a culture of competitiveness. One explanation is that although knowledge utilization enables entrepreneurs to identify opportunities for innovative practices to promote service innovation, a competitiveness culture will ultimately enable these opportunities to be realized.

## 5.2 Managerial Implications

First, cultural and creative firms commit to introducing workflow diagrams, offering more research and education programs, and encouraging knowledge-sharing activities in entrepreneurs' daily work. They will benefit more from their service innovation practices. If cultural and creative firms implement these knowledge utilization strategies, they will successfully enhance their service innovation. In particular, firms should devote more business resources to relevant programs and activities and cultivate entrepreneurial creativity to identify market opportunities accordingly. Without strong entrepreneurial creativity, firms will not be able to implement effective and agile service innovation actions in the market. Second, firms should commit to developing their competitiveness culture as part of a crucial organizational culture to introduce new ideas, acquire the necessary resources to execute their quality management, and be distinct from the competition. A culture of competitiveness enables entrepreneurs to exploit the knowledge that applies to their field of creativity to address marketplace changes, which facilitates the assimilation of service innovation. To strengthen the culture of competitiveness in firms, entrepreneurs must compare their skills with competitors, improve their position in the market, and make themselves more adventurous and adaptable.

Third, public policy measures should be prepared and strengthened to support cultural and creative programs for increasing entrepreneurial capability to innovate services or processes not only for R&D investment but also for increasing the number of cultural and creative workers. Taiwan's cultural and creative policy mainly focuses on strengthening both non-R&D and R&D

investment programs as well as providing sufficient knowledge and information corresponding to entrepreneurs for service innovation and creativity through establishing the public system. Thus, policy-makers should understand that the effects of entrepreneurial creativity and service innovation depend on knowledge in utilizing resources. However, it should be noted that questions arise regarding firms with low utilization of knowledge that may lead to poor service innovation performance. Nonetheless, a culture of competitiveness landscape should be considered to establish and strengthen the service innovation program in the cultural and creative ecosystems for the benefit of all stakeholders. Thus, firms can build a culture of competitiveness to complement their knowledge and resource bases and to achieve various types of service innovation.

### 5.3 Limitations and Future Research

There are several limitations of the study that can be addressed in future studies. First, we chose to investigate the CCI in Taiwan. When the same research model is applied to other industries, the results may differ. Therefore, we suggest that future research should compare the same industries in different countries or extend this research model to different industries to increase generalizability. Second, another line of study that may support an in-depth analysis of the relation between knowledge utilization and service innovation could consider other possible moderating variables, such as varying levels of cultural strength in companies, national cultures, or the uncertainty faced by companies. Third, this study collected data from Taiwan through questionnaires. Although the questionnaires allow the collection of data quickly, their depth is limited compared to in-depth surveys. In future studies, qualitative data could be added at the same time to further develop different views on management. Finally, issues related to cross-sectional or cross-cultural interpretations in this field have not been solved, and replication in other sectors or industries may show different or similar results from this study, thus providing a theme for future research.

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## Appendix- Questionnaire

Performance-orientation culture [Source: Gopalakrishnan and Zhang (2017)]

Our company.....

PO1. has high expectations for performance.

PO2. has enthusiasm for the job.

PO3. is results oriented.

PO4. is highly organized.

Competitiveness culture [Source: Gopalakrishnan and Zhang (2017)]

Our company.....

CN1. is competitive.

CN2. is distinctive – is different from others.

CN3. is achievement orientation.

CN4. has an emphasis on quality.

Entrepreneurial creativity [Source: Puhakka (2005)]

EC1. I have plenty of ideas.

EC2. I search for new solutions even when they are not needed.

EC3. My ideas are often very original.

EC4. I am sensitive to seeing problems that others do not see.

EC5. New solutions come into my mind when they are not especially needed.

EC6. It is easy for me to find proposals for improvement.

Service innovation [Source: Avlonitis et al. (2001)]

In the last three years, our company has.....

SI1. offered new market services.

SI2. offered new company services.

SI3. offered new service delivery processes.

SI4. extended existing service lines.

SI5. repositioned existing services.

SI6. modified existing services.

Knowledge utilization [Source: Lee et al. (2005)]

KU1. Our EDI is extensively used to facilitate processing tasks.

KU2. Our employee's work is promoted by utilizing organization-wide information and knowledge.

KU3. Our workflow diagrams are required and used in performing tasks.

KU4. Our company has existing incentive and benefit policies for new idea suggestions by utilizing existing knowledge.

KU5. Our company has existing research and education programs.

KU6. Our company has an existing culture that encourages knowledge sharing.