# Analyzing the Employees' New Media Use in the Energy Industry: The Role of Creative Self-Efficacy, Perceived Usefulness and Leaders' Use

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**Abstract:** Good management of companies in the energy industry is critical to the world's sustainable development as they are the guarantor of social lives and the cornerstone of economic development. This study tries to figure out how to improve the management of energy companies from the angle of new media use. It is widely known that the emergence of new media has provided more opportunities for the development of various entities in society, especially in improving the interaction mode of "enterprise–employee" and "enterprise–consumer", and boosting the efficiency of information transmission. However, the technical and cutting-edge features of those new media have also resulted in some obstacles in their promotion among employees. To address this problem, this paper took the perspective of the social influence theory and the technological acceptance model (TAM), and sampled 20,161 employees from the energy industry in China to explore the effects of creative self-efficacy, perceived usefulness in information acquisition and perceived usefulness in communication on employees' use of new media. Results have shown that both creative self-efficacy and perceived usefulness have positive effects on new media use of employees, and perceived usefulness mediates the relationship between creative self-efficacy and new media use. Leaders' use moderates the mediation relationship, while it weakens the relationship between perceived usefulness and new media use. Our study enriches the knowledge regarding new media promotion and thereby offers insightful and practical implications for corporate managers.

**Keywords:** creative self-efficacy; perceived usefulness in information acquisition; perceived usefulness in communication; new media use; energy industry

## 1. Introduction

There is a growing consensus amongst academics, business commentators and the public that new media are revolutionizing economic activities and social connections [1]. In the context of corporate digitalization, embedding new media in work has far-reaching significance. New communication technologies used in the workplace have skyrocketed in recent years, which has fundamentally changed the mode of current business operations [2–5]. Traditional corporate communication channels are separated, with each one independent of the others. As such, it generates the problem of low corporate efficiency. Besides, new media also contribute to enhancing corporate operational efficiency and management ability by optimizing the "enterprise–employee" interaction, and may help employees boost innovation, connect with executives and each other and spread the good word about companies [6]. However, many people use new media in their private lives, but prefer to use traditional channels for communication on the job [7]. Some employees even reduce the use of new communications

technologies because of privacy concerns [8]. In this vein, even though there are numerous advantages of using new media, they are still underutilized. Indeed, like many other topics in the field, the use of new media (e.g., the Internet or mobile-based applications) has long been an important issue worth of continuing research efforts. Please be advised that the notion of the "new" media means such technologies have been evolving and have ongoing, updated applications. Today, the use pattern of the Internet and other similar technology is still changing due to the different influencing factors and contexts. Therefore, we wish to look into such mature issue and generate new insights, by investigating new media use's relationships with major constructs proposed in the current study (i.e., creative self-efficacy, perceived usefulness and leaders' use), and that in the context we research.

Nevertheless, hitherto existing evidence regarding employees' new media use mostly comes from the developed countries, and research focusing on developing or emerging economies is still limited [9,10]. Given the advantages of new media and the large amount of labor, it is necessary for employers and new media enterprises to figure out what factors influence the acceptance of new media in emerging and developing nations. Considering the foregoing arguments, the main purpose of this paper is to fill this gap by exploring the mechanisms among creative self-efficacy, perceived usefulness and new media use. We also took leaders into consideration, and tried to figure out the moderating role of leaders' use of new media. As China is the world's biggest emerging economy, we set our research in the context of China's energy industry considering that the energy industry is the representative of companies transforming from traditional enterprises to digital ones, and companies in the energy industry are sparing no effort to promote the use of new media among employees.

Overall, this study makes three main contributions: first, incorporating the perspectives of social influence theory and the technological acceptance model (TAM), the research was conducted in a non-Western context, thus enriching the body of knowledge regarding factors that affect the acceptance of new media, and providing valuable theoretical and practical implications for the digital transformation of enterprises in these emerging markets. Second, perceived usefulness was further refined into perceived usefulness in information acquisition and perceived usefulness in communication in the new media context, which deepens our understanding of relevant issues. Third, the moderating effect of leaders' use of new media was examined based on perceived usefulness and employees' new media use mechanisms, thereby offering insightful practical implications for practitioners.

## 2. Literature Review

### 2.1. New Media Adoption

Currently, the research on new media can be divided into six categories, namely, early predictions, usability, concerns, theoretical contributions, perceptions and applications [11]. The first category is mainly about some assertions regarding cost saving, interpersonal, messaging and other effects of communication technology. The second category is about usability. For example, Vorvoreanu proposed a protocol design for an experience-centered approach to websites [12]. Thirdly, some researchers specifically addressed concerns associated with new media such as ethical concerns [13,14]. The fourth category is composed of studies discussing the theoretical contributions of new media, started with Kent and Taylor's article [15]. The fifth category is about practitioner perceptions, including how practitioners [16] and consumers [17] perceived the new media use. It should be mentioned that employees are also consumers of new media, and new communication technologies have an increasing presence in the workplace [11], yet studies have rarely recognized this issue [7]. Last but not least, the application of new media is the fastest growing topic for new media research, mainly focusing on corporate applications [18–20].

The fundamental topic of technological acceptance studies is the analysis of influencing factors on the use of media and the adoption or rejection of technological devices [21]. Some scholars put forward the concept of use-diffusion or the unified theory of acceptance and use of technology (UTAUT) to address this issue. The TAM is the most commonly used model to understand technological adoption,

taking a special place in this area for its rather broad application [22]. The TAM theorizes that the intention to use technology is primarily determined by two factors: perceived usefulness and perceived ease of use [23]. Toft, Schuitema and Thøgersen discussed the private consumers' acceptance of having Smart Grid technology installed in their home. They proposed that individuals were only likely to accept Smart Grid technology if they assess usefulness in terms of a positive impact on society and the environment [24]. Chen, Xu and Arpan investigated smart meter support and adoption intention in America. The results showed that perceived usefulness and privacy concerns had direct effects on the adoption intention of smart meter [25]. Chin and Lin extended the technology acceptance model regarding the building energy management system. They found that compatibility, features, technological complexity and perceived risk were factors influencing user intention which were mediated by user expected satisfaction, perceived ease of use, and perceived usefulness factors [26]. Valence-instrumentality-expectancy (VIE) theory was also widely applied to identify the motivational factors that influence the implementation of new technology [27,28]. Based on VIE, Behringer and Sassenberg deemed that self-efficacy was also very important for usage intention [28]. In general, the topic of employees as consumers of new media is still lacking of attention.

## 2.2. Social Influence Theory

The social influence theory holds that mechanisms on the generation and transition of individual attitudes are different depending on social influence factors, and these mechanisms further decide specific individual behaviors and attitudes, as well as subsequent behavior differences [29]. This theory also states that there are two types of social influences: informational social influence and normative social influence [30]. Informational social influence means that an individual accepts some information after the individual apprehends and approves this information. Normative social influence means an individual is influenced because the individual expects to acquire other individuals' positive feedback [31]. The latter focuses more on the attitudes that are formed during the interaction and the attitudes that potent technology users have about the new technology. This interaction is realized via direct persuasion (e.g., leaders' use or recommendation to individuals) or indirect persuasion (balancing the costs and benefits of new technology from external information) [31]. The normative social influence experienced by an individual is highly correlated to the individual's social position [32].

Social influence transforms personal attitudes mainly through three mechanisms: compliance, identification and internalization [29]. In the identification process, when an individual is accepting some information, s/he pays attention to whether the information transmitter is worth of trust and imitation, rather than the content of information, so this mechanism is pivotal in normative social influence. In the internalization process, an individual accepts some information, because its content is valuable or because this information is consistent with the individual's current values, thereby leading to changes in attitude and behaviors. Internalization occurs under the premise that the individual confirms the reliability of the information source, so it emerges in informational social influence.

## 2.3. Hypotheses Development

The construct of creative self-efficacy is derived from the self-efficacy theory [33] and defined as the belief (or confidence) that reflects one's self-confidence in his or her capabilities while performing an innovation task [34]. People with high creative self-efficacy will be more motivated to meet situational demands [35]. These people tend to spend more time on problem-solving and spare no efforts to seek ideas. Therefore, they are more likely and competent to overcome obstacles during innovation [34,36]. Further, creative self-efficacy plays a pivotal role in enhancing employee innovative behavior [37]. Previous studies have identified a relationship between self-efficacy and user acceptance of technology [38]. It is expected that higher creative self-efficacy enables people to better cope with new situations such as new media use which they are not (or at least to a lower extent) familiar with [21]. Accordingly, we predict that creative self-efficacy positively influences the new media use of employees.

**Hypothesis 1 (H1)**. *Creative self-efficacy has a positive impact on the new media use of employees.*

Perceived usefulness can be understood as the extent to which a person believes that using a given system or technology will enhance his or her performance of tasks [23]. New media are used to receive and deliver information. According to the TAM, if employees perceive new media as useful in information acquisition and communication, they will prefer to use the new media [21]. We assume that these acceptance factors are further influenced by creative self-efficacy. People with high creative self-efficacy are more interested in new technologies and willing to have a try at these technologies. It also means that these individuals are more motivated to learn about new media [39]. By doing so, they tend to have higher chances and possibilities for perceived usefulness of new media. Based on these findings, the following hypotheses are proposed:

**Hypothesis 2a (H2a)**. *Perceived usefulness in information acquisition mediates the relationship between creative self-efficacy and the new media use of employees.*

**Hypothesis 2b (H2b)**. *Perceived usefulness in communication mediates the relationship between creative self-efficacy and the new media use of employees.*

According to the social influence theory, if the new media use among well-reputed and trustworthy leaders is found to be increasing, then the employees will tend to acknowledge the performance-enhancing effect of the new media, which will in turn stimulate them to use the new technologies. Moreover, managers' advocacy for the new technologies will make members in their organizations accept and use these technologies more rapidly [40]. Besides, the use of new media by leaders injects legitimacy to these emerging tools, and due to institutional pressure, employees tend to use new media technologies also in their work [41]. Therefore, this paper proposes that the use of new media by leaders will further influence the mediated relation between creative self-efficacy, perceived usefulness and new media use of employees. More specially, leaders' use will strengthen the relationship between perceived usefulness and the new media use of employees. With a high use frequency of new media technologies by leaders, employees will generate a deeper perception of their legitimacy and efficiency, which will further strengthen the relationship between perceived usefulness and new media use of employees. Therefore, the following hypotheses are proposed:

**Hypothesis 3a (H3a)**. *New media use of leaders moderates the relationship between perceived usefulness in information acquisition and media use of employees in such a way that this relationship is stronger when the level of new media use of leaders is high than when it is low.*

**Hypothesis 3b (Hba)**. *New media use of leaders moderates the relationship between perceived usefulness in communication and media use of employees in such a way that this relationship is stronger when the level of new media use of leaders is high than when it is low.*

## 3. Methodology

### 3.1. Data Collection

The questionnaire developed for data collection consisted of two sections. The first section was composed of four questions about individual demographic data; the second section was composed of questions about leaders' new media use, perceived usefulness, creative self-efficacy and employees' new media use. Before the formal date of collection, a pilot test with a sample of 20 employees was carried out to examine whether the survey was clear, comprehensive and robust enough. The pilot test received some feedback from participants and modifications were made accordingly.

The formal survey was conducted in four provinces and one city in China between November and December 2014, and 20,161 completed questionnaires were sent back. We developed a questionnaire

website on our own, and set the requirements for completing the questionnaire. Questionnaires with missing entries could not be submitted.

Energy companies were chosen because they are not only play a basic role in guaranteeing the normal economic and social operation, but also are the core actors in achieving sustainable development. At present, more and more energy companies are striving to "transform the traditional grid to the energy Internet" [42], and timely sharing of information and employee collaboration is one of the key steps to achieve this goal. Therefore, the application of new media is particularly critical for energy companies. However, through field research we have found that the application of new media among employees of these companies is faced with many obstructions, including risk concerns [43,44] and legal concerns [45,46], becoming a bottleneck against the promotion of organizational management and overall efficiency. Thus, analyzing and clarifying the impact factors on new media use by employees in their routine work are highly important, and discussing the new media use by employees in the energy industry is full of practical significance.

Demographic characteristics of the participants are as follows: 68.5% of the employees surveyed were males and 31.5% females; 7.3% were under the age of 25, 23.9% between the ages of 26–30, 21.3% between the ages of 31–35, 30.4% between the ages of 36–45, and 17.1% above age 46; 22% had a work experience of less than 5 years, 22.1% between 6–10 years, 14.8% between 11–15 years, 14% between 16–20 years, and 27.2% more than 21 years. The participants generally had a bachelor degree (38.4%) or a college degree (24.3%).

### 3.2. Measurement

The measurement indicators used in this research were scales from previous literatures. To guarantee the semantic consistency among these scales, one associate professor and two PhD candidates in business management were invited to do a parallel two-way "translation–back translation" program.

The dependent variable. New media use of employees was measured directly by the question "how much time do you spend in using new media?". A Likert Scale was used for evaluation, in which 1 meant less than 1 h (including "never use"), and 5 meant more than 6 h.

The independent variable. Creative self-efficacy was measured using the 4-item scale developed by Schwarzer, Jerusalem, Hoffman and Schechter, with certain adjustments to the items according to the purpose of this study [47,48]. A Likert Scale was used for evaluation in which 1 meant "completely disagree", and 5 meant "completely agree".

The mediated variables. Perceived usefulness was divided into two dimensions, namely information acquisition with a 5-item scale and communication with a 4-item scale. These scales were developed according to Dogruel, Joeckel and Bowman [21].

The moderated variable. New media use of leaders was measured directly by the question "Do you think your leaders frequently use new media?". A Likert Scale was used for evaluation in which 1 meant "basically do not use" and 5 meant "very frequently".

Socio-demographic variables. According to Bonfadelli, Sun and Shang, gender, age, tenure and education were chosen as the control variables which were accounted for via self-report [49,50].

### 3.3. Data Analysis

Based on the requirement for the distribution of inputted data, the skewness and kurtosis of all the variables were tested. It was found that the absolute values of skewness for all the variables were smaller than 3 and the absolute values of kurtosis were smaller than 10. In the specific data analysis, we first conducted the Harman single-factor test on SPSS 18.0, then computed the means, variances and between-variable correlations for key variables, and finally used multiple linear regression to test the hypotheses proposed in this study.

### 3.4. Common Method Bias

In this study, the questionnaires were acquired from the self-assessment of employees from 43 enterprises in the energy sector, so there might be the problem of common method bias. In order to avoid common method bias, we controlled and tested from two perspectives. (1) As for design and recovery of questionnaire, we tried to separate the questions about independent variables and dependent variables, aiming to prevent the fillers from guessing the intension of questionnaire. (2) We set 1–2 questions, between key variables, irrelevant to the research theme, so as to avoid the problem of social desirability.

## 4. Findings

### 4.1. Descriptive Statistics and Correlations

The descriptive statistics (means and standard deviations) of the main variables and the pairwise correlation coefficients are listed in Tables 1 and 2. The results showed that creative self-efficacy was significantly positively related to perceived usefulness in communication and information acquisition as well as new media use of Employees.

**Table 1.** V-Cramer correlation and the results.

| No. | Variables | 1 | 2 | 3 | 4 |
|-----|-----------|-----|-----|-----|-----|
| 1 | Gender | 1 | | | |
| 2 | Age | 0.153 *** | 1 | | |
| 3 | Tenure | 0.126 *** | 0.601 *** | 1 | |
| 4 | Education | 0.076 *** | 0.218 *** | 0.188 *** | 1 |

Note: * $p < 0.05$, ** $p < 0.01$, N = 20,161.

**Table 2.** Means and standard deviations and Pearson correlation and the results.

| No. | Variable | Mean | SD | 1 | 2 | 3 | 4 | 5 |
|-----|----------|------|-----|------|------|------|------|------|
| 1 | Creative self-efficacy | 3.67 | 0.86 | 1.00 | | | | |
| 2 | Information acquisition | 3.77 | 0.83 | 0.65 ** | 1.00 | | | |
| 3 | Communication | 3.74 | 0.86 | 0.60 ** | 0.84 ** | 1.00 | | |
| 4 | New media use of Leaders | 3.48 | 0.78 | 0.18 ** | 0.25 ** | 0.27 ** | 1.00 | |
| 5 | New media use of Employees | 3.94 | 1.07 | 0.32 ** | 0.28 ** | 0.26 ** | 0.27 ** | 1.00 |

Note: * $p < 0.05$, ** $p < 0.01$, N = 20,161.

### 4.2. Hypotheses Tests

The hypotheses proposed here were tested via ordinary least squareregression, and the results are listed in Table 3. Hypothesis 1 proposed that creative self-efficacy had a positive impact on technology acceptance, which was verified by Model 6 (β = 0.368, $p < 0.001$). This deepened the point of Behringer and Sassenberg who underpinned the importance of self-efficacy for usage intention [28]. We proposed that it was creative self-efficacy positively affected the employees' new media use. Hypothesis 2 proposed the meditated role of perceived usefulness in communication and information acquisition on the association between creative self-efficacy and new media use of employees. The results in Model 6 showed that both perceived usefulness in information acquisition (β = 0.098, $p < 0.001$) and in communication (β = 0.061, $p < 0.001$) mediated the relationship between creative self-efficacy and technology acceptance. It also deepened TAM by refining perceived usefulness into perceived usefulness in communication and information acquisition, which followed the stream of expanding the classical TAM to gain more understanding of new technology use [21]. Therefore, H2 and H3 were fully supported. Further, it was also proposed that leaders' use of new media would strengthen the

relationship between creative self-efficacy, perceived usefulness and acceptance. The result showed the opposite, that leaders' use of new media had a negative effect of weakening the mediation effect. The results are shown in Model 8 and 9, and the coefficient of the mediation effect of information acquisition was −0.039 ($p < 0.001$), and that of communication was −0.029 ($p < 0.001$). It followed the work of Marangunic and Granic who proposed a TAM modification and clarified that TAM was influenced by contextual factors [51].

　　　In order to more clearly characterize the moderation mechanism, simple slope tests were conducted to evaluate whether the relationship (slope) between perceived usefulness and acceptance was intensified or weakened by different levels of leaders' usage. Conventional methods were adopted for plotting simple slopes to understand the moderation effect, at one standard deviation below and above the mean [52]. Figures 1 and 2 show that the new media use by leaders could weaken the positive effect of perceived usefulness in information acquisition on technology acceptance, and that perceived usefulness in communication had stronger positive correlations with technology acceptance at a low level of new media use by leaders.
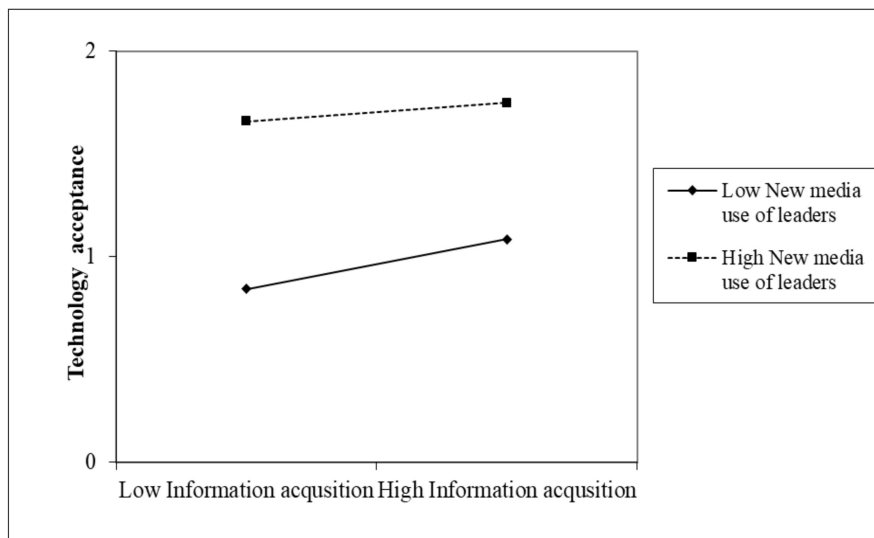


**Figure 1.** Moderating effect of new media use of leaders on the relationship between information acquisition and technology acceptance.
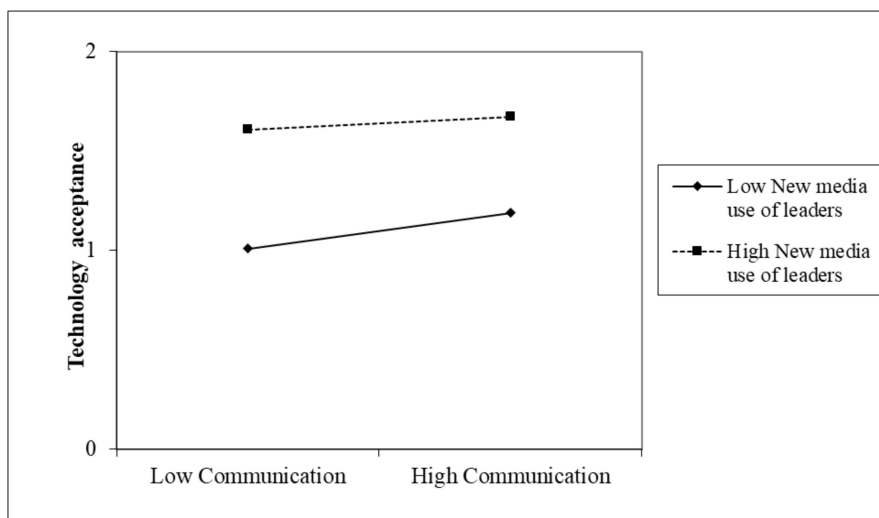


**Figure 2.** Moderating effect of new media use of leaders on the relationship between communication and technology acceptance.

**Table 3.** OLS Regression results of mediation.

| | Information Acquisition | | Communication | | | New Media Use of Employees | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Model 1** | **Model 2** | **Model 3** | **Model 4** | **Model 5** | **Model 6** | **Model 7** | **Model 8** | **Model 9** |
| **Control variables** | | | | | | | | | |
| Gender | −0.016 (0.013) | 0.091 *** (0.010) | −0.006 (0.013) | 0.096 *** (0.011) | −0.032 * (0.016) | 0.030 * (0.015) | 0.015 (0.015) | 0.009 (0.015) | 0.011 (0.015) |
| Age | −0.026 * (0.011) | 0.021 ** (0.008) | −0.036 *** (0.011) | 0.009 (0.009) | −0.141 *** (0.013) | −0.113 *** (0.012) | −0.116 *** (0.012) | −0.112 *** (0.012) | −0.111 *** (0.012) |
| Tenure | −0.015 (0.008) | −0.005 (0.006) | −0.013 (0.009) | −0.003 (0.007) | 0.023 * (0.010) | 0.029 ** (0.010) | 0.030 ** (0.010) | 0.019 * (0.010) | 0.019 (0.010) |
| Education | 0.044 *** (0.008) | 0.008 (0.006) | 0.052 *** (0.009) | 0.017 * (0.007) | 0.285 *** (0.010) | 0.264 *** (0.010) | 0.263 *** (0.010) | 0.238 *** (0.010) | 0.238 *** (0.010) |
| **Independent variables** | | | | | | | | | |
| Creative self-efficacy | | 0.634 *** (0.005) | | 0.608 *** (0.006) | | 0.368 *** (0.008) | 0.269 *** (0.011) | 0.271 *** (0.010) | 0.287 *** (0.010) |
| **Mediator** | | | | | | | | | |
| Information acquisition | | | | | | | 0.098 *** (0.016) | 0.083 *** (0.011) | |
| Communication | | | | | | | 0.061 *** (0.015) | | 0.061 *** (0.010) |
| **Moderator** | | | | | | | | | |
| New media use of leaders | | | | | | | | 0.270 *** (0.009) | 0.271 *** (0.009) |
| Interaction 1 | | | | | | | | −0.039 *** (0.006) | |
| Interaction 2 | | | | | | | | | −0.029 *** (0.006) |
| **Constant** | 3.808 *** (0.038) | 1.252 *** (0.036) | 3.770 *** (0.039) | 1.322 *** (0.039) | 3.600 *** (0.047) | 2.118 *** (0.056) | 1.915 *** (0.057) | 1.355 *** (0.059) | 1.369 *** (0.059) |
| **Adjusted $R^2$** | 0.007 | 0.425 | 0.009 | 0.366 | 0.076 | 0.160 | 0.168 | 0.205 | 0.203 |
| **F-value** | 37.877 *** | 2977.187 *** | 47.763 *** | 2324.052 *** | 413.710 *** | 768.499 *** | 582.310 *** | 651.290 *** | 644.198 *** |
| **Sample** | 20161 | 20161 | 20161 | 20161 | 20161 | 20161 | 20161 | 20161 | 20161 |

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

## 4.3. Robustness Check

In order to prove the robustness of the conclusions, this study used the Bootstrap method to test the results of the multiple linear regression. Preacher and Hayes proposed that the use of the "bootstrap method" to test the effects of moderation and mediation would be more robust and effective [53]. Therefore, this article used the PROCESS program written by Hayes to test the robustness of the data. The "bootstrap" analysis in this study used 5000 repeated samplings with a 95% confidence interval. If the upper and lower limits of the confidence interval included 0, the effect examined was not significant. The results of the data analysis are shown in Tables 4 and 5. Perceived usefulness in information acquisition played a mediating role in the relationship between creative self-efficacy and new media use by employees, and leaders' use moderated this mediation relationship, presenting a significant moderated mediating effect, consistent with the results of the multiple linear regression.

**Table 4.** The results of moderated mediation.

|  | Information Acquisition | | | | New Media Use of Employees | | | |
|---|---|---|---|---|---|---|---|---|
| Variables | β | se | t | p | β | se | t | p |
| Constant | 1.252 | 0.036 | 35.017 | 0.000 | 0.563 | 0.129 | 4.375 | 0.000 |
| Gender | 0.092 | 0.010 | 9.422 | 0.000 | 0.009 | 0.015 | 0.580 | 0.562 |
| Age | 0.021 | 0.008 | 2.567 | 0.010 | −0.112 | 0.012 | −9.257 | 0.000 |
| Tenure | −0.005 | 0.006 | −0.788 | 0.431 | 0.019 | 0.010 | 1.977 | 0.048 |
| Education | 0.008 | 0.006 | 1.204 | 0.229 | 0.239 | 0.010 | 25.033 | 0.000 |
| Creative self-efficacy | 0.634 | 0.005 | 120.932 | 0.000 | 0.271 | 0.011 | 25.919 | 0.000 |
| Information acquisition | | | | | 0.293 | 0.033 | 9.008 | 0.000 |
| New media use of leaders | | | | | 0.497 | 0.035 | 14.317 | 0.000 |
| Interaction | | | | | −0.060 | 0.009 | −6.747 | 0.000 |
| R Square | 0.425 | | | | 0.205 | | | |
| F | 2977.187 *** | | | | 651.29 *** | | | |

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

**Table 5.** The results of bootstrap.

| Results | New Media Use of Leaders | Effect | Boot SE | BootLLCI | BootULCI |
|---|---|---|---|---|---|
| Moderated mediation | Low | 0.0828 | 0.0095 | 0.0631 | 0.1019 |
| | Middle | 0.0528 | 0.0074 | 0.0373 | 0.0675 |
| | High | 0.0229 | 0.0085 | 0.006 | 0.0392 |

As shown in Tables 6 and 7, the perceived usefulness in communication played a mediating role in the relationship between creative self-efficacy and new media use by employees, and leaders' use moderated the above mediation relationship, presenting a significant moderated mediating effect, consistent with the results of the multiple linear regression. Therefore, the statistical results of this study were robust.

**Table 6.** The results of moderated mediation.

|  | Communication | | | | New Media Use of Employees | | | |
|---|---|---|---|---|---|---|---|---|
| Variables | β | se | t | p | β | se | t | p |
| Constant | 1.322 | 0.039 | 33.958 | 0.000 | 0.818 | 0.125 | 6.521 | 0.000 |
| Gender | 0.096 | 0.011 | 9.119 | 0.000 | 0.011 | 0.015 | 0.720 | 0.472 |
| Age | 0.009 | 0.009 | 1.046 | 0.296 | −0.111 | 0.012 | −9.150 | 0.000 |
| Tenure | −0.003 | 0.007 | −0.457 | 0.648 | 0.019 | 0.010 | 1.955 | 0.051 |
| Education | 0.017 | 0.007 | 2.459 | 0.014 | 0.238 | 0.010 | 25.001 | 0.000 |
| Creative self-efficacy | 0.608 | 0.006 | 106.404 | 0.000 | 0.287 | 0.010 | 28.830 | 0.000 |
| Communication | | | | | 0.209 | 0.032 | 6.612 | 0.000 |
| New media use of leaders | | | | | 0.429 | 0.034 | 12.788 | 0.000 |
| Interaction | | | | | −0.042 | 0.009 | −4.865 | 0.000 |
| R Square | 0.366 | | | | 0.203 | | | |
| F | 2324.050 *** | | | | 644.198 *** | | | |

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

**Table 7.** The results of bootstrap.

| Results | New Media Use of Leaders | Effect | Boot SE | BootLLCI | BootULCI |
|---|---|---|---|---|---|
| Moderated mediation | Low | 0.0573 | 0.0088 | 0.0398 | 0.0744 |
| | Middle | 0.0372 | 0.0067 | 0.0236 | 0.0492 |
| | High | 0.0171 | 0.0078 | 0.0022 | 0.0318 |

## 5. Conclusions and Discussion

We surveyed 20,161 employees from energy enterprises in China, and integrated the TAM and social influence theory to discuss the influence factors on new media use of employees. Results show that creative self-efficacy and perceived usefulness both have positive effects on new media use of employees, and perceived usefulness mediates the relationship between creative self-efficacy and new media use. However, it is surprisingly found that leaders' use negatively influences the mediation relationship while it weakens the relationship between perceived usefulness and new media use. One possible explanation is that employees pay more attention to the privacy of their work; while the use of new media by leaders brings endorsement of legitimacy and efficiency to new media, it also raises concerns about the unveiling of their privacy at work. Our research raises the awareness of individual differences, the characteristics of new media and organizational factors in acceptance of new media.

In terms of theoretical contributions, first and foremost, this study contributes to the TAM research by delving into different elements of perceived usefulness. This research divided perceived usefulness into perceived usefulness in communication and perceived usefulness in information acquisition, specifically based on theoretical research and practical observation, and further explored the mediating effect of perceived usefulness on employees' new media use [21].

Second, this study contributes to the new media research by illustrating a moderated mediation model. It illustrates the significant mediating effect of perceived usefulness between creative self-efficacy and employees' new media use and the moderating impact of the leader' use on perceived usefulness–employee new media use relationships. Additionally, we also have contributed to the new media literature by providing new, context-specific evidence understanding by conducting our researchin a non-Western context, thus enriching the body of knowledge regarding factors that affect the new media acceptance of employees [51].

As for practical implications, our research offers novel insights for managers to understand the complex mechanism of new media promotion in order to achieve firm sustainability. Our results have revealed how to digitize enterprises so as to better adapt to the changing environment. Employees are the fundamental resources of firms to achieve sustainable development [54]. As to how to promote new media use among employees, we would like to make the following recommendations. First of all, the evidence regarding the role of creative self-efficacy is practically important, and if employees do not feel they are confident in using the new technology, they will give up using it. Hence, managers need to construct a supportive innovation climate and enhance the self-efficacy of their employees by providing them training and coaching [37]. Gist and Mitchell have proposed that managers can improve employees' creative self-efficacy through enactive mastery experiences [26]. Managers can initiate innovation-motivating activities and encourage employees to participate in such activities [28]. Second, stress the demonstrative role of leaders in new media promotion and emphasize the use of new media only to improve work efficiency, rather than prying into employee privacy so as to reduce employees' concerns for the negative influence of leaders' use of new media. Third, enhance the usefulness of corporate new media, and particularly emphasize the development of information communication and delivery functions of the new technologies.

## 6. Limitations and Future Research

This study also has some limitations that may require further discussion and exploration. First, since cross-section data were used, it was unable to efficiently judge the causality between variables. Thus, in a subsequent study, longitudinal data should be used to validate the findings. Second, due to data unavailability, the samples in this study were all collected from the energy industry, so further validation is needed as to whether our findings can be applied to other industries (e.g., the pharmaceuticals industry, construction industry and manufacturing industry). In subsequent research we would look into enterprises in different provinces and different industries so as to acquire more comprehensive data. Third, the attributes of new media have not been thoroughly considered. For example, it would be rather interesting to take perceived ease of use of new media into consideration.

**Author Contributions:** Conceptualization, methodology and writing—original draft, Y.Z. and X.Y.; Investigation, survey preparation, data collection, N.C.; Writing—review and editing, X.Y. and Y.L.; Funding, Z.Y.and N.C. All authors have read and agreed to the published version of the manuscript.

**Conflicts of Interest:** The authors declare no conflict of interest.

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