

Entrepreneurial Leadership and Innovation: The Mediating Role of Knowledge Sharing (A Study on the Export-oriented Handicraft Industry in Bali)

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Innovation is an alternative solution to the declining export activities of the handicraft industry in Bali. In this respect, the roles of a leader and knowledge sharing are very crucial in determining innovation success. This study aims to verify the impact of entrepreneurial leadership and knowledge sharing on innovation and analyse the mediating role of knowledge sharing in the relationship between entrepreneurial leadership and innovation. This study focusses on export-oriented firms in Bali. The population of this study is the whole of the export-oriented handicraft firms in Bali Province (42 firms). We use the saturated sampling method to determine our sample. We generate the data through the questionnaires and analyse the data by using PLS. The results demonstrate that entrepreneurial leadership positively affects innovation. Also, entrepreneurial leadership positively affects knowledge sharing, and knowledge sharing affects innovation positively. Lastly, the mediation test finds that knowledge sharing partially mediates the impact of entrepreneurial leadership on innovation.

Key words: *Entrepreneurial Leadership, Knowledge Sharing, Innovation, Handicraft Industry.*

Introduction

Innovation is an alternative method for firms to remain competitive through new idea creation (Semuel et al., 2017). Indonesian firms in various industries continuously innovate to survive competitive pressures. However, not all firms exhibit sufficient innovating capability,

including handicraft firms in Bali. To date, export-oriented handicraft firms face innovation obstacles in terms of product and new design development because of difficulties in finding substitute raw materials. In addition, during the production process, handicraft firms still use manual production methods that lack technological content. Also, in terms of the managerial aspect, these firms implement less up-to-date bookkeeping systems. Likewise, in their marketing systems, most of them have not used media such as websites and social media in marketing their products. All these problems indicate that these handicraft firms are less effective and efficient in their operational activities, causing their firms to be increasingly uncompetitive amid more open global competition.

Innovation requires leadership that exhibits entrepreneurial thought. (Fontana and Musa, 2017) hold that entrepreneurial leadership likely encourages faster innovation. Several scholars suggest that entrepreneurial leadership is strongly associated with firms' innovation (Huang et al., 2014; Ryan and Tipu, 2013; Khalili, 2017; Vargas, 2015). However, Chen (2007) argues that entrepreneurial leadership is not associated with firms' innovating capability. Further, innovating capability is not only affected by a leader, but also the contributions of each organisational member.

The gap between the results of previous studies on the impact of entrepreneurial leadership on innovation (Huang et al., 2014; Chen, 2007) suggests that the role of a variable to mediate the relationship is an interesting research issue. In this respect, we propose knowledge sharing as the mediating variable. Knowledge sharing refers to the exchange of knowledge between employees, and likely contributes to innovation that helps organisations to achieve competitive advantage (Wang and Noe, 2010). Knowledge sharing helps leaders develop new skills and competence that positively affect innovation (Hsu, 2008). During the innovation process, leaders can facilitate knowledge sharing (Wang and Wang, 2012). The implementation of knowledge sharing also helps leaders to develop innovation (Xue et al., 2011). Investigating knowledge sharing as a mediating variable is closely related to limited previous studies that analyse the role of knowledge sharing in mediating the impact of entrepreneurial leadership on innovation.

This study also develops an indicator of entrepreneurial leadership (Fontana and Musa, 2017), namely motivational, by adopting the local Balinese ingenuity of *jengah*. The *jengah* culture represents the motivation of Balinese people to achieve a better life by working (Sitiari et al., 2016). The development is interesting because not many previous studies seek to adopt local wisdom as a measure of a construct. Besides, incorporating *jengah* as an indicator of entrepreneurial leadership likely enhances leaders' ability to motivate innovation.

This study seeks to explain the effect of entrepreneurial leadership on innovation and knowledge sharing, and to verify the role of knowledge sharing in mediating the relationship between entrepreneurial leadership and innovation.

Literature Review

Entrepreneurial Leadership

Entrepreneurial leadership has been widely investigated (Huang et al., 2014; Ryan and Tipu, 2013; Khalili Ashkan, 2017; Fontana and Musa, 2017; Vargas, 2015). Lumpkin and Dess (1996) mention that entrepreneurial leadership is a behaviour that reflects the decision-making process of an entrepreneur. Further, Ruvio et al. (2010) identify that entrepreneurial leadership refers to leaders who effectively articulate their future-oriented visions. Also, Huang et al. (2014) suggest that entrepreneurial leadership manages to convince employees to deal with future uncertainty. Leaders with an entrepreneurial spirit are more dominant in creating new ideas (Soriano and Huarng, 2013). Chen and Chang (2013) emphasise that entrepreneurial leadership can introduce changes by building commitments and motivating employees. As suggested by (Gupta et al., 2004), entrepreneurial leadership refers to managing and implementing transformation by providing positive motivation.

In the entrepreneurial leadership literature, several scholars have developed, adopted, and modified the results of previous studies. From various measurements introduced by previous scholars, this study adopts the entrepreneurial leadership measurement that has been developed by Kuratko (2007): Jones and Crompton (2009) and (Karimi *et al.*, 2011) that measures entrepreneurial leadership with three indicators, namely: (1) innovativeness, (2) proactiveness, and (3) risk-taking. This study also refers to (Fontana and Musa, 2017), who use motivational ability as an indicator to measure the entrepreneurial leadership variable. However, this study measures motivational aptitude by adopting the motivation concept of the Balinese culture, commonly known as *jengah*, that develops in Balinese people (Sitiari et al., 2016). The *jengah* concept is similar to the motivation theories of Maslow (1943) and McClelland (1960) and motivational theory (Fontana and Musa, 2017) that indicates the ability of leaders to motivate individuals.

Knowledge Sharing

Industrial development motivates firms to continuously strive for enhancing their performance by improving the method of transforming inputs into outputs. Efficient and effective operational processes require information and knowledge (El Harbi et al., 2011). The existing literature indicates that knowledge sharing is a solution to acquire new information and knowledge. Knowledge sharing facilitates firms to create new knowledge (Christensen, 2007).

Wang and Noe (2010) establish that knowledge sharing between employees contributes to the creation and implementation of new knowledge in firms. However, effective knowledge sharing also requires employees to participate in the process voluntarily (Amayah, 2013). (Hoarau and Kline, 2014) observe that knowledge flow has a practical implication for innovation development. Firms that actively engage in knowledge sharing practices will affect their willingness and capacity to innovate (Chen and Hou, 2016).

Knowledge sharing is measured with two indicators, namely; knowledge donating and knowledge collecting (Nonaka, 1994; Rawung et al., 2015). Knowledge donating is a process in which individuals (leaders, employees, and other related parties) donate their knowledge. Meanwhile, knowledge collecting is a process of collecting knowledge from various sources, both internally and externally. At the individual level, the knowledge-sharing ability is classified into three parts, namely willingness to share, willingness to learn, and willingness to transfer knowledge (Mathuramaytha, 2012).

Innovation

Innovating capability is very crucial for organisations to compete sustainably (Chen and Chang, 2013). Innovation is very vital for modern firms (Ko *et al.*, 2011). Although many firms claim that innovation is crucial, the relationship between innovation and performance is still an empirical question (İşcan et al., 2014). Innovation consists of mechanisms to create new ideas to achieve competitiveness in a dynamic business environment (Ryan and Tipu, 2013). (Semuel et al., 2017) propose that innovation is a process that manages all activities by creating new ideas and developing technologies that are related to new products, processes, and equipment. Innovation requires internal environments that facilitate innovating culture to develop within firms, as indicated by flexibility and speed in response to new opportunities (Urbancova, 2013). Organisational innovation is always considered an effective tool to maintain competitive advantage and to offer high customer value (Birasnav et al., 2013). Innovation development plays an increasingly important role in the development of an industry. Firms' ability to innovate illustrates their ability to meet market demands (Sarros et al., 2008).

To understand innovation, firms initially need to understand and identify the measures of the innovation variable. (García-Morales et al., 2008) measure innovation with three indicators, namely; process innovation, product innovation, and market innovation. (Noruzy et al., 2013) identify three fields of firms' innovation, namely product innovation, system innovation, and service innovation. (Sutanto, 2017) measures organisational innovation with process innovation, operational innovation, and organisational innovation. (Sintaasih et al., 2015) develop managerial innovation as an indicator of organisational innovation. Because this study focusses on the handicraft industry, we measure innovation by analysing three indicators, namely; product innovation, process innovation, and managerial innovation.

Research Hypotheses

Innovation is an important factor in increasing organisational performance. To facilitate innovation, an entrepreneurial leader needs to maximise each available business opportunity in an external environment.

Entrepreneurial leadership is directly related to explorative and exploitative innovation that will eventually affect performance (Huang et al., 2014). (Fontana and Musa, 2017) emphasise that organisations that implement entrepreneurial leadership exhibit more effective innovation processes, and their innovation is in line with organisational objectives. Next, Soriano and Huarng (2013) highlight that entrepreneurial leadership significantly affects innovating activities because leaders with entrepreneurial ability help their firms utilise interactions with internal and external environments that directly affect innovation. Entrepreneurial leadership is active, and proactive leadership strongly tends to innovate (Ryan and Tipu, 2013). Based on these studies, we propose the following hypothesis:

Hypothesis 1: Entrepreneurial leadership has a significantly positive effect on innovation.

Knowledge sharing will be effective if leaders support and facilitate the activity. (Bavik et al., 2018), also observe leaders' support to knowledge development in organisations where ethical leadership supports knowledge sharing processes of employees. Leaders who manage to empower their employees enhance knowledge sharing behaviour within organisations. Entrepreneurial orientation and knowledge creation are interrelated, and it is suggested that organisational leaders adopt entrepreneurial practices in creating knowledge (Li et al., 2009; Xue et al., 2011; Ratih et al., 2016). Based on these studies, the following is the second hypothesis:

Hypothesis 2: Entrepreneurial leadership has a significantly positive effect on knowledge sharing.

Knowledge sharing highly depends on the role of leaders in facilitating employees to donate and collect knowledge voluntarily. Wang and Wang (2012) establish that knowledge sharing processes by organisational members explicitly and implicitly affect innovation. Wang and Noe (2010) hold that knowledge sharing is the basis of cultivating innovation. Knowledge sharing enables employees to exchange their knowledge with each other that will create new knowledge, contribute to innovation, and eventually create organisational competitive advantage. Lin (2007) finds that knowledge donating and knowledge collecting are positively associated with firms' innovation. Further, Zach and Hill (2017) show that knowledge sharing affects employees in innovating. Roper et al. (2017) argue that innovation is the impact of the knowledge acquisition process through the interaction and extraction processes. Knowledge

acquisition will support organisations' service innovation. The strong relationship between knowledge sharing and innovation is evident in the tourism industry (Hoarau and Kline, 2014). Wang and Wang (2012) propose that both tacit and explicit knowledge sharing facilitate firms' innovation that will affect performance.

Hypothesis 3: Knowledge sharing has a significantly positive effect on innovation.

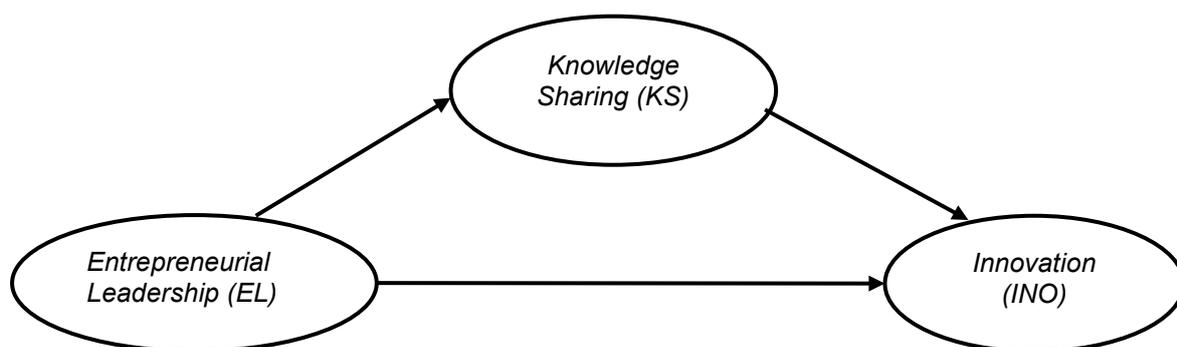
Previous studies have investigated the role of entrepreneurial leaders in enhancing organisational innovation (Huang et al., 2014; Fontana and Musa, 2017). However, Chen (2007) finds that entrepreneurial leadership is not associated with firms' innovating capability. Carmeli and Paulus (2015) analyse knowledge sharing as a mediator of CEO connectivity leadership and team creativity. Their results indicate that knowledge sharing positively mediates the relationship between CEO connectivity leadership with team creativity. (Ratih et al., 2016) also note that knowledge sharing mediates the relationship between creative leadership and innovation. Further, it is stressed that creative leadership cannot directly increase innovation in the silver handicraft industry in Bali, and it requires knowledge sharing as a mediator to affect process and product innovation. Employees' willingness to donate and collect knowledge likely helps top management to improve firms' innovating capability (Mulyana et al., 2015). Wang and Noe (2010) find that knowledge donating and knowledge collecting as the indicators of knowledge sharing are positively related to each other in improving innovation. Based on these studies, we propose the following hypothesis:

Hypothesis 4: Knowledge sharing mediates the effect of entrepreneurial leadership on innovation.

Method

Our research design uses the positivist approach (quantitative) that tests hypotheses with statistical techniques. The following figure illustrates the conceptual model of this study:

Figure 1. The Framework of the Study



This study focusses on the export-oriented handicraft industry in Bali. The population of this study is all handicraft firms that engage in exporting activities, totalling 42 firms. We select our sample based on the saturated sampling method, i.e., all population units become the sample. The respondents are leaders/ owners, managers, and employees. Employees should understand or actively participate in firms' activities to be respondents. Thus, the number of respondents is 126 individuals.

The entrepreneurial leadership variable refers to Kuratko et al. (2017), Jones and Crompton (2009), Karimi et al. (2011), and Sitiari et al. (2016) that is measured by four indicators, namely: innovativeness, proactiveness, risk-taking, and *jengah*. The knowledge sharing variable refers to Hooff and Weenen (2004) that is measured by two indicators, namely: knowledge donating and knowledge collecting. Meanwhile, the innovation variable refers to (Wang and Ahmed, 2004), (Gupta et al., 2016), and (Madrid-Guijarro et al., 2009) that is measured by three indicators, namely: product innovation, process innovation, and managerial innovation.

We generate data through questionnaires that have been tested for validity and reliability. Each variable indicator consists of several question items that are measured with a five-point Likert scale, ranging from strongly disagree (score 1) to strongly agree (score 5). The questionnaires also collect the data of respondents' characteristics such as sex, age, education, and tenure. Lastly, we analyse the data with Partial Least Square (PLS) by using the WarpPLS 6.0 application program.

Results and Discussion

As mentioned before, this study involves 126 respondents that consist of firms' leaders/ owners, middle managers, and employees who are directly involved in the firms' innovation. The descriptive data suggests that most export-oriented handicraft firms are managed by women (56.30%) and those who are 27-36 years old (53.20%), an age range that is considered very productive. Further, those with SMA/SMK education level (general and specific senior high school) and with 6-10 years of working experience dominate our respondents (69% and 57.10%, respectively).

The following explains the result of the data analysis that is related to the evaluation of the measurement model (outer model) and the evaluation of the structural model or inner model, hypothesis testing, and the discussion of research results.

1) The Evaluation of the Measurement Model (Outer Model)

The evaluation of the measurement model aims to ensure the validity of indicators to represent the variables. In particular, the evaluation of the measurement model analyses the following aspects: convergent validity, discriminant validity, and composite reliability. Table 1 and Table 2 below display the results of the evaluation of the outer model.

Table 1: The Evaluation of the Measurement Model

Latent Variable	Indicator	Outer Loading	AVE	\sqrt{AVE}	Composite Reliability	Cronbac-h's alpha
Entrepreneurial leadership (X1)	Innovativeness (X1.1)	0.804	0.628	0.792	0.872	0.802
	Proactive (X1.2)	0.684				
	Risk-taking (X1.3)	0.888				
	<i>Jengah</i> (X1.4)	0.748				
Knowledge Sharing (Y1)	Knowledge Donating (Y1.1)	0.866	0.711	0.843	0.831	0.794
	Knowledge Collecting (Y1.2)	0.814				
Innovation (Y2)	Product Innovation (Y3.1)	0.779	0.664	0.815	0.855	0.744
	Process Innovation (Y3.2)	0.634				
	Managerial Innovation (Y3.3)	0.729				

Source: Processed primary data, 2019

Table 2: The Correlation Coefficient between Variables and the Root Value of AVE (\sqrt{AVE})

	\sqrt{AVE}	Entrepreneurial leadership	Knowledge Sharing	Innovation
Entrepreneurial Leadership	0.792	1.000		
Knowledge Sharing	0.843	0.691	1.000	
Innovation	0.815	0.604	0.671	1.000

Source: Processed primary data, 2019

Table 1 suggests that all indicators of each variable have the outer loading value above 0.70, implying that all indicators are valid in measuring the latent variables (the convergent validity

requirements are met). The discriminant validity also indicates that all variables have the AVE value above 0.50, and the root value of AVE is greater than the correlation coefficient between variables (Table 2). The results imply that the latent variables predict their own indicators better than the indicators of other latent variables. We then interpret the results that the model exhibits good discriminant validity. Next, Table 1 also informs the construct reliability from the Composite Reliability score and Cronbach's Alpha score. Both scores have the values above 0.7 and meet the reliability requirement. Thus, the indicators that measure the latent variables are valid and reliable.

2) *The Evaluation of the Structural Model or Inner Model*

The evaluation of the structural model relies on the Q-Square predictive relevance (Q^2) that is measured by the coefficient of determination value (R^2) of the dependent variables, namely Knowledge Sharing and Innovation. The data classification results in the R_1^2 value of 0.50 and R_2^2 of 0.51. Based on these values, we can calculate the following Q-Square predictive relevance (Q^2) score:

$$Q^2 = 1 - (1 - R_1^2) (1 - R_2^2)$$
$$Q^2 = 1 - (1 - 0.50) (1 - 0.51) = 0.755$$

The Q^2 value is 0.755 (75.5%) that is close to 1 (one), indicating the goodness of fit of the structural model is relatively good. In other words, the model can explain 75.5% of the information of our data, while the rest (24.5%) is explained by error and other variables not included in the model.

3) *Effect size*

The effect size score can be classified into three categories, namely weak (0.02), moderate (0.15), and strong (0.35) (Hair et al., 2013). Based on these categories, we conclude that the effect size of each research variable is moderately strong because the effect size score of entrepreneurial leadership with innovation is 0.306, the effect size of entrepreneurial leadership with knowledge sharing is 0.504, and knowledge sharing has the effect size score of 0.346.

4) *The Results of the Hypothesis Testing*

The data analysis using WarpPLS 6.0 produces the results as displayed in the following Table 3, Figure 2, and Table 4.

Table 3: Hypothesis Testing

The Relation between Variables	Path coefficients	p-value	Explanation
Entrepreneurial Leadership → Innovation	0.55	< 0.001	Significant
Entrepreneurial Leadership → Knowledge Sharing	0.71	< 0.001	Significant
Knowledge Sharing → Innovation	0.50	0.02	Significant
Test of the role of knowledge sharing in mediating the effect:			
Entrepreneurial Leadership → Innovation	0.357	0.003	Significant

Source: Processed primary data, 2019

Figure 2. The Empirical Model of the Research

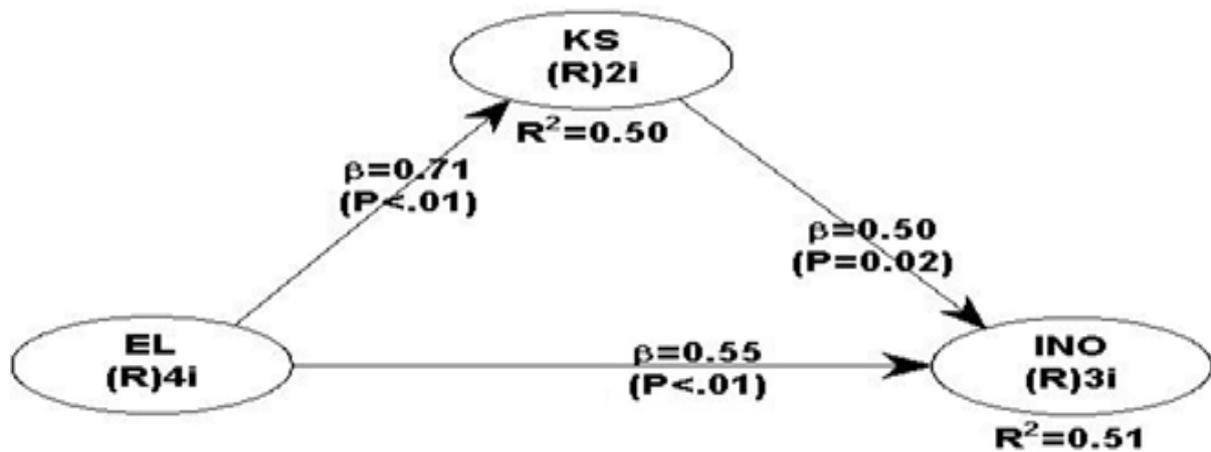


Table 4: The Calculation of Variance Accounted Factor (VAF)

Explanation	Result
Indirect Effect	
Entrepreneurial Leadership → Knowledge Sharing → Innovation = 0.71 x 0.50	0.335
Direct Effect	
Entrepreneurial Leadership → Innovation	0.550
Total Effect= 0.335 + 0.55	0.885
VAF = Indirect Effect/ Total Effect = 0.335/0.885	0.379

Source: Processed primary data, 2019

Table 3 demonstrates that entrepreneurial leadership has a significantly positive effect on innovation in the export-oriented handicraft industry in Bali, as indicated by the path coefficient value of 0.55 ($p=0.001 < \alpha(0.005)$). The results imply that hypothesis 1 that predicts entrepreneurial leadership positively affects innovation is supported. Entrepreneurial leadership also has a significantly positive effect on innovation, as indicated by the path coefficient value of 0.71 and p-value < 0.005 . The findings explain that entrepreneurial

leadership has a very strong impact on improving knowledge sharing practices in the export-oriented handicraft industry in Bali, and hypothesis 2 is supported.

The results of the test of hypothesis 3 show that knowledge sharing has a significantly positive effect on innovation, as indicated by the path coefficient value of 0.50 and p-value 0.02, implying that hypothesis 3 is supported. The analysis of the indirect effect of entrepreneurial leadership on innovation through knowledge sharing has a path coefficient value of 0.375, p-value < 0.05, and t-statistic (1.96) is greater than t-table (1.68). We use the Variance Accounted Factor (VAF) method to investigate the mediating role as displayed in Table 4. The results of the VAF measurement illustrate that knowledge sharing partially mediates the impact of entrepreneurial leadership on innovation.

Discussion

The Effect of Entrepreneurial Leadership on Innovation

Our hypothesis testing demonstrates that entrepreneurial leadership has a significantly positive effect on innovation. The results suggest that the effective implementation of entrepreneurial leadership will enhance innovation. The findings explain that entrepreneurial leaders who are innovative, proactive, risk-taking, and exhibit *jengah* attitude are very crucial in the innovation process of export-oriented handicraft firms in Bali. Leaders' innovativeness in involving their employees in new production processes, active risk-taking behaviour, and *jengah* to find new ideas significantly contribute to firms' success in developing innovation. The results are in line with (Fontana and Musa, 2017) who find that entrepreneurial leadership is more effective in developing innovation. (Huang et al., 2014) also explain that entrepreneurial leadership is directly related to organisations' explorative innovation. Organisational activities highly depend on the ability of top management to apply entrepreneurial practices. More creative leaders will enhance employees' creative behaviour (Khalili, 2017). This study does not support (Chen, 2007), who shows that entrepreneurial leadership does not affect innovation.

The Effect of Entrepreneurial Leadership on Knowledge Sharing

The hypothesis testing shows that entrepreneurial leadership has a significantly positive effect on knowledge sharing. The findings illustrate that entrepreneurial leadership strongly encourages the knowledge-sharing practices of export-oriented handicraft firms in Bali. In other words, the effective implementation of entrepreneurial leadership will improve the knowledge sharing practice of export-oriented handicraft firms in Bali. The results indicate that entrepreneurial leadership significantly supports and facilitates employees' knowledge sharing process that creates new knowledge and increase innovation. The findings are in line with (Soriano and Huarng, 2013) who observe that in general, knowledge will develop in

organisations that highly depend on the leaders' awareness that knowledge flow will help firms achieve their objectives. In a similar vein, Li et al. (2009) emphasise that leaders with entrepreneurial orientation are closely related to organisational knowledge creation. Xue et al. (2011) explain that leaders who adopt entrepreneurial practices will significantly affect their employees' attitudes to sharing knowledge within organisations.

The Effect of Knowledge Sharing on Innovation

The hypothesis testing reveals that knowledge sharing has a significantly positive effect on innovation. The findings explain that the knowledge sharing practice of these export-oriented firms increases innovation. The results also indicate that more effective implementation of knowledge sharing will increase the innovation of the export-oriented handicraft industry in Bali. The findings are in line with (Lin, 2007) who observes that employees' willingness to donate and collect knowledge likely enhances organisations' innovating capability. (Wang and Wang, 2012) also establish that knowledge sharing significantly increases innovation. Similarly, (Noruzi et al., 2013) emphasise that the implementation of knowledge management that is supported by knowledge sharing will directly help firms develop their innovation. (Peng et al., 2014) find that the quality of knowledge sharing directly affects innovation development.

The Role of Knowledge Sharing in mediating the effect of Entrepreneurial Leadership on Innovation

Referring to (Hair et al. 2013) – the emphasis that the VAF value of 20 - 80 percent implies partial mediation – the fourth hypothesis that predicts that knowledge sharing mediates the effect of entrepreneurial leadership on the innovation of the export-oriented handicraft industry is supported. The results suggest that the implementation of entrepreneurial leadership in the export-oriented handicraft industry in Bali likely increases innovation, although not through knowledge sharing. However, knowledge sharing significantly contributes to helping firms increase innovation in the export-oriented handicraft industry in Bali. The findings are in line with Ratih et al. (2016) who find that knowledge sharing increases the impact of creative leadership on product and process innovation. Also, Ma et al. (2013) establish that knowledge sharing practice likely helps leaders improve organisations' creativity and innovation. Similarly, Lin (2007) proposes that employees' willingness to donate and collect knowledge mediates individual factors in developing process innovation.

Conclusion and Suggestion

Our results demonstrate that entrepreneurial leadership has a significantly positive effect on innovation and knowledge sharing. Thus, the findings explain that more effective implementation of entrepreneurial leadership will improve the innovation and knowledge



sharing practice of the export-oriented handicraft industry in Bali. Besides, knowledge sharing also has a significantly positive effect on innovation, suggesting that more effective knowledge sharing will increase innovation. Employees' willingness to participate in knowledge sharing practice that consists of knowledge collection and donation will help firms create new knowledge that is useful to develop firms through innovation. In addition, this study also shows the role of knowledge sharing as a partial mediator of the effect of entrepreneurial leadership on innovation. The findings explain that knowledge sharing plays an important role in developing the innovation of the export-oriented handicraft industry in Bali. Consequently, leaders need to pay more attention and develop knowledge sharing practice that consists of employees' willingness to donate and collect knowledge. This practice will help the export-oriented handicraft industry in Bali develop new knowledge and eventually innovation.

Our research informs future studies on entrepreneurial leadership, knowledge sharing, and innovation, especially those related to *jengah* as a Balinese local wisdom concept to measure entrepreneurial leadership. In the future, leaders need to pay more attention to local culture to better explore organisational capabilities through employees' individual abilities.

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