

A Strategic Orientation toward Entrepreneurship: Implications for Pallet Manufacturer Performance

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Abstract

Leaders in the wood pallet industry have faced numerous trends over the past few decades that have challenged their ability to maintain success without adopting new business models and innovations. Past literature would predict that industry managers who instill entrepreneurial processes such as innovation, risk-taking, and proactiveness into their operations should be better equipped to identify, positively react to, and take advantage of changing environmental conditions. Firms that emphasize such processes are described as being strategically orientated toward entrepreneurship. The objective of this study was to determine whether pallet manufacturing firms that exhibit entrepreneurial processes are more successful than those that do not. As an example of how an entrepreneurial orientation might influence business operations, this study also analyzed revenue-generating methods of managing wood waste. Data for the study were collected from executives of North American pallet manufacturers. Findings suggest pallet firms that continually work to improve their products and services, frequently make decisions that involve risk, and proactively seek out new opportunities have higher performance than firms that do not. Furthermore, manufacturing firms that monetize waste products exhibit greater proclivity for entrepreneurial processes than firms that pay to dispose of or give away wood waste. Results are discussed and potential implications for managers in the industry are provided.

The wood pallet manufacturing industry is not often characterized as being one of rapid change and continuous innovation. It would be imprudent, however, to assume the industry has long been stable and immune to environmental uncertainties. Over the past two decades, the industry has experienced a host of major trends that have motivated many producers to adopt new business processes and develop new skills in hopes of successfully competing in changing pallet markets.

A key research question is whether pallet manufacturers, the vast majority of which are small and medium sized enterprises (SMEs), can benefit from a strategic orientation that emphasizes risk-taking or innovation. Does an entrepreneurial strategy help these firms succeed in the face of a changing marketplace? It is presumed that larger manufacturing firms whose leaders instill entrepreneurial processes, such as innovation, risk-taking, and proactiveness, into their day-to-day operations are better equipped to identify and positively react to changing environmental conditions. It is possible, however, that there are penalties for being innovative and taking risks in this segment of the forest products industry.

An entrepreneurial orientation (EO) refers to a strategic orientation in which processes related to innovation, risk-taking, and proactiveness are highlighted throughout the

firm. EO and its relationship to performance have been studied in many industry contexts, including health care (Monsen 2005), banks (Richard et al. 2004), apparel retailers (Smart and Conant 1994), high-tech industries such as electronics and pharmaceuticals (Kemelgor 2002), and mature manufacturing industries such as textiles, paving mixtures, and steel mills (Zahra and Covin 1993). Although this relationship has been shown to vary within the literature, it is generally accepted that a firm's EO is positively related to its performance in both financial and nonfinancial measures (Rauch et al. 2009).

The objective of this study was to determine whether the positive EO-performance relationship identified in other industries also applies in the specific context of SME pallet manufacturing firms. Although this context specificity introduces limitations for the broader application of the

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study's findings, we believe there is particular value to studying these firms. From an economic perspective, pallet manufacturing has consistently been the single largest use of hardwood lumber in the United States for decades, and wood pallets are a key component in modern supply chains. In 2015, the estimated 3.6 billion board feet of hardwood lumber used in pallet manufacturing accounted for approximately 42 percent of all hardwood consumption (Hardwood Market Report 2016). Pallet manufacturers also experience many of the same environmental constraints as other types of primary and secondary wood processing mills, such as procurement of raw materials, disposal of wastes, and access to capital. As such, findings from this study could inform the decision making of practitioners in forest product industry sectors beyond pallet manufacturing.

Background

North American pallet industry trends and developments

Although the pallet manufacturing industry may seem relatively stable, it has experienced important changes that are worth mentioning. Major trends of the past few decades include a growing preference for block pallets among large retailers, changing regulations for wood packaging material involved in international trade (Trevisani et al. 2014), the continued growth of pallet reuse and recycling (Araman et al. 2010), new restrictions on the disposal of waste materials (Buehlmann et al. 2009), and the rise in power of large pallet pooling organizations such as CHEP (Trebilcock 2010).

These trends have resulted in significant changes within the industry as it attempts to adapt to variations in customer preferences for unit load solutions, to new regulations, and to competing nonwood products (e.g., iGPS plastic pallets). Technology also continues to play an increasingly important role in the transportation packaging industry, such as using pallet tracking technologies (i.e., radio frequency identification [RFID]) to manage distribution within pallet pools in order to meet current needs. Although these developments do not directly relate to the pallet design or manufacturing processes, it is not difficult to consider the potential for these and other technologies (robotics, advanced sensors, automation, online shopping, etc.) to significantly disrupt the activities of businesses peripheral to supply chain management and freight transportation.

Considering these ongoing developments, leaders in the pallet industry are faced with uncertainty when developing long-term strategies. A strategic orientation toward entrepreneurship may be advantageous in such an environment if it enables a firm to effectively seek out and capitalize on opportunities, ultimately leading to greater performance.

EO and performance

EO refers to the strategic orientation of a firm, encompassing entrepreneurial aspects of decision-making processes and methods. According to Lumpkin and Dess (1996), EO reflects more closely *how* a firm operates, rather than *what* it actually does. Rauch et al. (2009) state that EO can be “viewed as the entrepreneurial strategy-making processes that key decision makers use to enact their firm’s organizational purpose, sustain its vision, and create competitive advantage” (p. 763).

Our study used a multidimensional approach, reflective of the most common conceptualization of the EO construct (Miller 1983), including dimensions of innovativeness, proactiveness, and risk-taking. According to Rauch et al. (2009, p. 763):

Innovativeness is the predisposition to engage in creativity and experimentation through the introduction of new products/services as well as technological leadership via R&D in new processes.

Risk taking involves taking bold actions by venturing into the unknown, borrowing heavily, and/or committing significant resources to ventures in uncertain environments.

Proactiveness is an opportunity-seeking, forward-looking perspective characterized by the introduction of new products and services ahead of the competition and acting in anticipation of future demand.

Innovation is not necessarily limited to the development of new, or modification of existing, products, services, and manufacturing processes. Although innovation is more common in highly dynamic, high-technology industries, the innovativeness of a firm has been shown to be positively associated with revenue growth irrespective of the industry in which that firm operates (Thornhill 2006). In uncertain environments, innovative capacity may be particularly important, since it affects a firm’s ability to effectively pursue new opportunities that result from changing market demands. According to Garg et al. (2003), “firms that confront uncertainty where it exists, via innovation, typically outperform those that ignore its presence” (p. 728).

Like innovation, the value associated with a willingness to assume risk is not restricted to certain environments. Owing to the ambiguity associated with industry transformations, firms competing in a changing industry cannot accurately predict the future success of potential strategic actions. In this environment, a willingness to commit resources to projects having uncertain returns is often necessary to gain, or even maintain, competitive advantage.

The extent to which a firm anticipates future market needs, seeks out new opportunities, and takes initiative in pursuing those opportunities is a measure of its proactiveness (Lumpkin and Dess 1996). A proactive firm may seek out opportunities unrelated to their current operations, be willing to eliminate operations that have limited opportunities for future growth, or lead the marketplace in new product or service offerings (Venkatraman 1989). Maintaining focus on new opportunities that may result from changing environmental conditions can increase a firm’s potential for realizing economic gains.

Although the implications of EO on performance have been shown to differ in various contexts, the majority of EO research has concluded that businesses are likely to benefit from pursuing an EO (Rauch et al. 2009). In terms of pallet manufacturing, market trends of the past decade could indicate disruptions to the broader industry in the future, possibly requiring firms to make fundamental changes to the ways they operate in order to compete. Rather than producing commodity type products (i.e., stringer pallets) sold through traditional distribution channels, for example, firms may need to adopt new business models that emphasize a combination of customized products with

customized services (e.g., total pallet management) in order to meet market needs.

Firms that proactively pursue new opportunities, despite the inherent risk associated with such strategic actions, may have greater potential for realizing economic gains. Owing to the uncertainty associated with the transport packaging industry, adopting such a strategy may be of particular value to pallet manufacturers. We thus hypothesize that EO is positively related to firm performance among pallet manufacturers. That is, firms strategically oriented toward innovation, risk-taking, and proactively pursuing opportunities will, on average, experience greater performance than those firms exhibiting lower levels of EO.

Research Methodology

Sample

An e-mail survey was used to collect data from pallet manufacturing firms; the surveys were sent by the president of The National Wooden Pallet and Container Association (NWPCA) to known upper-level managers of approximately 1,200 firms whose operations relate to the pallet industry, including both NWPCA members and nonmembers. In order to be included in the initial survey sample, organizational contact information must have contained the name, title, and e-mail address of an upper-level manager (e.g., owner, president, vice president). The e-mail provided a brief description of the study, encouraged participation, and included a link to the online questionnaire to be completed by a member of the top management team. A follow-up e-mail was sent by the NWPCA 10 days later as a reminder. Based on techniques found successful for mail surveys, we then sent personalized e-mails to approximately 280 NWPCA members in the following 2 weeks as a final request for their participation (Dillman 1991). After 3 weeks, the online questionnaire was deactivated having received a total of 183 responses. Responses from firms headquartered outside of North America were not included in the sample. Additionally, responses from three large manufacturing firms (more than 500 employees) were not included in this analysis due to the dissimilarities of their firm characteristics to those of the broader industry. After these considerations, the final sample consisted of 125 responses.

To address concerns related to nonresponse bias, we used common statistical tests to compare the answers of early versus late respondents. We evaluated the mean responses of survey measures for those managers who completed the survey prior to the stated deadline and those who completed the survey after the deadline had passed. The perceptions of late respondents are assumed to be more similar to those of nonrespondents than those of early respondents (Kanuk and Berenson 1975), and so significant correlations between item measures and the survey completion date would point to the existence of nonresponse bias (Combs and Ketchen 1999). Using *t* tests, we compared the mean responses of these two groups for multiple variables, including number of full-time production employees, firm age, total performance score, and total EO score. The results of these tests indicated that early respondents did not differ significantly from late respondents for any of the chosen variables, thereby mitigating concerns of potential nonresponse bias.

Respondent profile

Of the respondent firms, 112 were headquartered in the United States, 9 in Canada, and 4 in Mexico. Results from a recent meta-analysis of past EO research suggest the cultural effects of EO on performance do not differ significantly across countries and so were not controlled for here (Rauch et al. 2009). The mean age of respondent firms was 34 years. The number of full-time production employees reported by respondent firms ranged from 0 to 280, with an average number of 55 and a median number of 38. Approximately 60 percent of firms in the sample employed fewer than 50 full-time production workers, and 21 percent employed fewer than 20. Finally, the total previous year's revenue for half of respondent firms was less than \$5 million. Approximately 44 percent reported revenues between \$5 and \$25 million, and the remaining 6 percent reported revenues between \$25 and \$50 million. Five firms did not provide data for revenue.

The primary source of revenue for two-thirds of the firms in the research sample was manufacturing new wood pallets ($n = 82$; 66%), with the remaining third represented by firms whose revenue came primarily from the recovery, repair, and/or remanufacturing of wood pallets ($n = 43$; 34%).

Based on these data, very small manufacturing firms are likely underrepresented in our sample. According to the 2012 US Economic Census (the most recent year for which data are available), the average number of production workers employed by firms in the wood pallet industry was 15, and approximately 53 percent of firms had fewer than 10 employees total (US Census Bureau 2015). By comparison, only about 5 percent of firms in our sample had fewer than 10 employees. Therefore our sample is most representative of the remaining half of the industry, being those firms with 10 to 250 employees, and underrepresents the "micro" size firms in the industry.

Variables and measurement

The items used in this study to measure EO and performance were adapted from previously established scales shown to be reliable measures in the entrepreneurship literature (Covin and Slevin 1989; Wiklund and Shepherd 2003). The survey also included multiple items that were outside the scope of this study, such as measures of marketing and technology expertise, perceptions of sustainability practices, and environmental scanning.

Dependent variable.—Firm performance was used as our dependent variable. Measuring firm performance and its antecedents can be a challenge for researchers given the wide variety of firm operations, economic conditions, managerial goals, etc. Previous research has suggested that subjective measures, such as those assessing firm performance, can accurately reflect objective measures, and so enhance validity (Dess and Robinson 1984). Furthermore, self-perceived measures are the dominant method of measuring firm performance in EO research (Rauch et al. 2009). Following Wiklund and Shepherd (2003), respondents were asked to compare the performance of their own firm over the past 3 years with that of their most relevant competitors for five different dimensions of performance: sales, number of employees, profitability, product and service quality, and customer satisfaction ($\alpha = 0.80$). Items were measured using a 5-point Likert scale ranging from "much weaker" to "much stronger." Aggregate scores

representing an overall measure of performance were then calculated for each firm using all five performance dimensions with equal weight given to each.

Independent variables.—Our independent variables were measures of EO. To measure EO, the Covin and Slevin (1989) version of the survey instrument was used. The EO construct was calculated as the aggregate score of nine equally weighted items (three items for each of the three dimensions) measured on 7-point scales ($\alpha = 0.86$). All items were in the form of semantic differentials such that two opposing statements anchored each end of the scale. For example, an item belonging to the proactiveness dimension stated, “In dealing with its most relevant competitors, my firm . . .” with the lower anchor statement being “typically responds to actions which competitors initiate,” and the upper anchor statement being “typically initiates actions which competitors then respond to.”

Analysis and Results

We divided the sample into two groups based on the overall performance scores of the firms in order to investigate the relationship between EO and performance. High and low performance groups were created using the 50th percentile, or median, value of overall performance scores among the entire sample as a cutoff (50th percentile value = 3.80). Firms having overall performance scores above the 50th percentile value were categorized as high performers ($n = 56$), and those whose performance scores were at or below the 50th percentile value were categorized as low performers ($n = 69$). The mean performance score for the entire sample was 3.75, and the mean scores of the high and low performance groups were 4.25 and 3.35, respectively.

Analysis of variance (ANOVA) procedures comparing the two performance groups were carried out on each of the nine individual EO items to identify differences between the EOs of high and low performing firms. These procedures were also carried out on aggregate scores of each EO dimension and the overall EO construct. For aggregate scores, only firms responding to all applicable items for each dimension (three items each) or the overall construct (nine items) were included in the analyses. Although the EO items are most often used only in the aggregate forms of the EO dimensions and overall construct, we believe that in this context there is value in considering each item individually as well as in aggregate form. Descriptive statistics and results from analyses of variance for the individual EO items are presented in Table 1. Those for the aggregate measures of each dimension and overall construct are presented in Table 2. The mean aggregate scores from Table 2 are also presented in Figure 1.

These results illustrate differences between the strategies of high- and low-performing pallet manufacturing firms. Among the individual EO items, results for the analyses of eight of the nine items are significant ($P < 0.05$). This can also be seen in Table 2, in which the aggregate scores of each dimension ($P < 0.01$) and the overall EO construct ($P < 0.001$) all differed significantly between the high- and low-performing firms. Likewise, the radar plot in Figure 1 shows the proportionally greater emphasis placed on processes relating to risk-taking and proactiveness by firms in the high performance group than by those of the low performance group.

Wood waste utilization as example of EO

As an example of how the strategy characteristics described by the EO dimensions could manifest themselves in the context of pallet manufacturing, we also analyzed wood waste utilization methods employed by the sample firms. Our survey included a multiple-response item asking respondent firms how they manage wood waste. Response options included methods such as selling waste for use as landscaping mulch and animal bedding, converting waste into fuel products (i.e., pellets) before selling, giving waste away, and paying disposal fees. Respondent firms that indicated they burn their wood waste as a fuel for company facilities were not included in this secondary analysis because the method is closely associated with particular operational processes, such as kiln-drying or heat treating, that are not broadly represented within the sample.

Two categories were again created, in this case based on the generation of revenue from wood waste. Firms that only identified methods involving the sale of their wood waste were differentiated from those firms that identified among their multiple responses either giving away or paying disposal fees as methods for managing waste. Simply put, firms were categorized based on their monetization of their wood waste. The waste management groups were similar in size, with 52 firms generating revenue from their waste and 41 firms potentially forfeiting that value.

Similar to the first analysis, measures of EO were compared between the two waste management groups. Descriptive statistics and results from this analysis are presented in Table 3. These results suggest that firms failing to generate revenue from wood waste score significantly lower on measures of proactiveness ($P < 0.001$) and risk-taking ($P < 0.05$) than firms that exclusively create value from their waste products. Although scores on the innovation dimension did not differ significantly between the waste management groups, the direction of the relationship was as expected. Finally, scores on the overall EO construct also differed significantly ($P < 0.01$).

Discussion

The objective of this research was to investigate the relationship between EO and firm performance among SME pallet manufacturers. We had hypothesized that firms strategically orientated toward innovation, risk-taking, and proactively pursuing opportunities will, on average, outper-

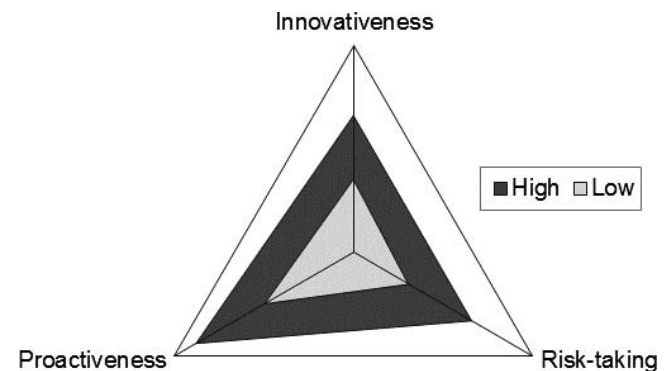


Figure 1.—Radar plot of mean entrepreneurial orientation dimension scores, by performance group. Note: Scores plotted on reduced scale of 3 to 5 to visualize differences.

Table 1.—Descriptive statistics and analysis of variance comparisons of entrepreneurial orientation (EO) items between performance groups.

Item ^a	Item summary	Performance group	n ^b	Mean (SD)	F	Significance
1	Many new lines of products or services in past 3 yr	Low	69	3.90 (1.610)	3.36	0.069
		High	55	4.44 (1.642)		
2	Dramatic change in product or service lines in past 3 yr	Low	68	3.57 (1.605)	6.95	0.009
		High	55	4.33 (1.540)		
3	Favors a strong emphasis on R&D and technological leadership	Low	69	3.62 (1.285)	6.35	0.013
		High	56	4.23 (1.414)		
4	Adopts a bold, aggressive posture when confronted with uncertainty	Low	69	3.81 (1.287)	12.40	0.001
		High	56	4.66 (1.405)		
5	Has a strong preference for high-risk projects	Low	69	3.51 (1.268)	8.35	0.005
		High	56	4.23 (1.537)		
6	Believes that bold actions are necessary to achieve objectives	Low	68	3.53 (1.252)	4.33	0.040
		High	56	4.05 (1.554)		
7	Typically initiates actions which competitors then respond to	Low	68	4.06 (1.348)	8.63	0.004
		High	56	4.73 (1.168)		
8	Often first to introduce new products, techniques, technologies, etc.	Low	67	4.13 (1.455)	7.78	0.006
		High	56	4.82 (1.237)		
9	Adopts a very competitive “undo-the-competitors” posture	Low	67	3.76 (1.315)	12.05	0.001
		High	55	4.69 (1.643)		

^a The EO construct is composed of nine items along three dimensions: innovativeness (items 1 to 3), risk-taking (items 4 to 6), and proactiveness (items 7 to 9).

^b n values may differ due to incomplete responses.

Table 2.—Descriptive statistics and analysis of variance comparisons of aggregate entrepreneurial orientation measures between performance groups.

Aggregate measure	Performance group	n ^a	Mean (SD)	F	Significance
Innovativeness	Low	68	3.71 (1.264)	7.06	0.009
	High	54	4.32 (1.279)		
Risk-taking	Low	68	3.61 (1.042)	10.98	0.001
	High	56	4.32 (1.319)		
Proactiveness	Low	65	3.99 (0.977)	15.96	0.000
	High	55	4.75 (1.112)		
Total EO score	Low	64	3.78 (0.904)	13.00	0.000
	High	53	4.43 (1.029)		

^a n values may differ due to incomplete responses. Respondents must have provided data for all applicable items in order to be represented in aggregate measures.

form those firms exhibiting lower levels of EO. Results from our study suggest that EO has positive performance implications for manufacturing firms operating in this industry. More specifically, pallet manufacturers that continually work to improve their products and services, are comfortable taking risks, and actively seek out new opportunities were found to have higher performance than those that did not. It may be the case that leaders who proactively pursue new opportunities, despite the inherent risk associated with such strategic actions, enjoy greater potential for realizing economic gains. These findings are similar to previous studies having shown EO to be positively associated with performance in manufacturing sectors having high levels of environmental uncertainty (Yusuf 2002).

We used methods for managing wood waste as a basic example of how strategic orientations may influence business operations. Waste management can be viewed as a necessary cost of doing business or as an opportunity to extract residual value from by-products of primary operations. Although fewer human resources are required to manage waste when paying to dispose of it or giving it

Table 3.—Descriptive statistics and analysis of variance comparisons of aggregate entrepreneurial orientation measures between waste management groups.

Aggregate measure	Waste management group	n ^a	Mean (SD)	F	Significance
Innovativeness	Give away/pay fees	41	3.84 (1.174)	1.96	0.165
	Sell	51	4.20 (1.298)		
Risk-taking	Give away/pay fees	40	3.58 (1.195)	6.15	0.015
	Sell	52	4.18 (1.102)		
Proactiveness	Give away/pay fees	39	3.85 (1.043)	15.74	0.000
	Sell	50	4.67 (0.906)		
Total EO score	Give away/pay fees	39	3.73 (0.966)	9.54	0.003
	Sell	49	4.34 (0.893)		

^a n values may differ due to incomplete responses. Respondents must have provided data for all applicable items in order to be represented in aggregate measures.

away, opportunities for revenue generation are also lost. A willingness to expend resources to identify markets and find customers for the sale of wood waste may reflect both an openness to risk and a proactiveness to pursuing opportunities. If such attributes can be seen in the ancillary operations of a firm, it is likely they are present and more impactful in the core operations. When a strategic orientation toward entrepreneurial processes is present throughout all of a firm's operations, the firm is better able to identify and exploit opportunities that can lead to greater performance. This could be reflected by the fact that the mean performance score of firms in our sample that generate revenue from their waste was significantly greater than that of those firms that pay to dispose of or give away their waste ($\bar{x} = 3.83$ and 3.58 , respectively; $P < 0.05$).

Implications

If our findings are reflective of circumstances for all SME pallet producers, these results then suggest that all leaders should consider emphasizing throughout their organizations the entrepreneurial processes investigated in this study. Having an EO does not mean that leaders need to be "entrepreneurs," but research strongly indicates there are numerous advantages for firms that act entrepreneurially in terms of having a strategic orientation toward innovation, risk-taking, and proactiveness. Our most important implication may then be that leadership should not fear developing this orientation, and in fact should work to ingrain it into their operations. This would include encouraging EO in the management team, incentive systems, and corporate culture.

Dealing with wood waste is a common issue for most if not all wood manufacturers, and thus our results could point to implications of EO for other segments of the broader industry. Paying to dispose of or giving away wood waste not only reflects a missed opportunity for additional revenue, but more importantly, may also reflect a management approach that is orientated away from entrepreneurial processes. If waste management methods are indicative of broader strategic processes within a firm, as our results for this sample suggest, organizational leaders in other industry segments could use this example as a starting point for considering the strategic orientations of their own firms.

One implication of this work is the need to educate industry managers with respect to the value of having an EO. Training programs could be designed to help management understand how to adopt strategies that, e.g., emphasize scanning the environment to identify new opportunities and taking appropriate levels of risk in pursuing those opportunities. We also see implications for higher education, since these results, coupled with past findings, suggest that our degree-seeking candidates should be taught about the value of an EO.

Limitations

Although use of an online questionnaire is advantageous in many aspects, the potential for methodological bias common in self-administered surveys could present limitations in the research findings. Our use of an online questionnaire, self-reported data and subjective measures all create potential for error. To minimize this potential, we used measurement scales that were previously validated in

the literature. We also followed generally accepted methods for data collection and analysis procedures.

Because our study relied on cross-sectional data, we cannot empirically determine causality in the relationships between EO and performance. Although our findings are in agreement with previous studies, we acknowledge that untested factors are also likely related to firm performance. Further study of the relationships between EO and other operational practices, such as methods for procuring raw materials or providing new customer services, could generate additional insight for the wood pallet manufacturing industry. Owing to the context specificity of this study, our findings are limited in their generality. Future research investigating these relationships in other well-defined contexts will facilitate the development of a cumulative body of knowledge in the EO field and its applicability to various segments of the wood-based industry.

Conclusions

Although the pallet manufacturing industry may seem relatively stable, it has experienced important changes that have impacted many operators. Major trends of the past few decades have affected firms in the pallet industry, regardless of whether they are small or very large, and will presumably continue to do so in the future.

Considering these ongoing developments, having the right strategic orientation may become increasingly valuable for industry firms. Leaders in forest products firms regularly face changing conditions in their industries. These circumstances make it more difficult to predict with certainty what the future holds for their business or how successful their current strategic choices will be. This ambiguity is likely a contributing factor in the relationship between a firm's EO and its performance. Perhaps all leaders should consider how their firms can be more innovative and proactive with a healthy dose of risk-taking in order to gain competitive advantage.

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