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Organizational Slack, Firm Performance, and the Role of Industry

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Organizational research has increasingly focused on why managers accumulate, maintain, and deploy certain types of resources as a method to achieve company success. Early work in the area suggested that organizational slack directly impacts firm performance (Bourgeois, 1981; Bourgeois and Singh, 1983). However, for more than two decades the related research has presented conflicting views about how slack specifically impacts firm performance.

Empirical research has proposed organizational slack buffers the firm from rapid changes in its external environment (Bansal, 2003; Thompson, 1967), enhances the firm's capacity to adjust to shifts in consumer demand (Pfeffer and Salancik, 1986), and leads to operational inefficiency (Singh, 1986). Interestingly, after the publication of more than 65 studies examining whether slack impacts firm performance, the relationship between those constructs remains in dispute.

This study answers the call to conduct additional research on the slack-performance relationship issued by Daniel, Lohrke, Fornaciari and Turner's

(2004) meta-analysis by examining the role of industry on the slack-performance relationship. This is an important topic for empirical examination for two reasons. First, recent research has explored macroeconomic conditions (Latham and Braun, 2008) and the role of innovation (Herold *et al.*, 2006) on the slack-performance relationship while suggesting that industry factors may play an important role in how slack is employed among direct competitors (Ferrier and Lee, 2002). Second, the business strategy literature has suggested that managerial decisions on the deployment of key organizational resources is linked to firm performance when also considering the industry in which the firm competes (Porter, 1985).

The study begins by briefly reviewing the theoretical issues defining organizational slack, firm performance and industry factors, and presenting research hypotheses. A presentation of the methodology employed and results found follow. Finally, findings, limitations, and implications for management practitioners and organizational researchers are presented.

THEORETICAL ISSUES

The relationship between organizational slack and firm performance is a powerful concept that underlies several managerial theories. The resource-based view (RBV), wherein the uniqueness of certain resources held by the firm as the basis for successful competition, has focused attention on *which* resources enhance firm competitiveness. That is, some RBV theorists argue key organizational resources that are not easily replicated by competitors will result in firm success (Wernerfelt, 1984, 1995), while others suggest the processes employed by the firm directly impact firm performance (Teece, 2007; Wu, 2007). Thus, according to the RBV the treatment of organizational resources within the context of the firm's competitive realm will have an impact on performance. There have been studies examining parts but none assessing the slack-performance relationship and the role of the industry in a single model.

For example, Carpano, Rahman, Roth, and Michel (2006) examined resource use within a specific industry to assess the success of certain competitive firm activities. Dreyer and Gronhaug (2004) conducted a longitudinal study focusing on firm flexibility and found that balancing certain categories of slack is necessary for firms to cope with the challenges and opportunities afforded by differing competitive environments. They suggested low levels of slack may hinder the firm from reacting to a new opportunity while high levels of slack may result in inefficiency.

Organizational Slack

Bourgeois defined organizational slack as "a cushion of actual or potential resources which allow an organization to adapt successfully to internal pressures for adjustment or to external pressures for change in policy, as well as to initiate changes in strategy with respect to external environment" (1981: 30). Empirical studies have reported various

relationships between slack resources and firm performance that are positive, negative, linear, and curvilinear in direction and form (Daniel *et al.*, 2004).

In addition to firm financial performance, slack has been examined in relation to innovation (Geiger and Cashen, 2002), internal efficiency (Kerschbamer and Tournas, 2003), organizational structure (Riahi-Belkaoui, 1998), risk-taking behavior (Moses, 1992), and knowledge management (Zahra *et al.*, 2005). Thus, how firms define slack resources, and what actions are taken to match the necessary level of resources with the strategic needs of the firm, becomes critical to understanding factors impacting the long-term success of the firm (Nohria and Gulati, 1997).

Within the broad context of theoretical underpinnings, predicting the need for organizational slack and its relationship to firm performance seems to form two distinct groups of thought (Palmer and Wiseman, 1999; Tan and Peng, 2003). According to organizational theorists, maintaining slack resources is good because managers are able to deploy resources in times of unexpected demand or to manage needed shifts in the availability of key materials (Sharfman *et al.*, 1988). Thus, it has been argued that maintaining a certain level of slack displays skillful management of the firm in situations where the competitive environment is uncertain (Sharfman and Dean, 1997).

Deephouse and Wiseman (2000) suggest that the risk-return relationship of employing organizational slack is impacted by managerial choice *and* macro-environmental conditions. In the strategy-conduct-performance model of strategic management, the task environment (Dess and Beard, 1984) and industry structure have been asserted to be important factors controlling the competitive behaviors, or conduct, of the firm (Porter, 1980, 1985). Thus, it has been suggested that competitive task environments common to certain industries impact the "reference point" of the firms competing within the industry, which in turn affect strategy choices of managers and, ultimately, firm performance (Fiegenbaum and Thomas, 2004).

Research into the nature of organizational decision-making has suggested that slack in the form of unused productive capacity and unnecessary capital expenditures adds costs to organizations, resulting in competitive disadvantages and reduced performance (Bourgeois, 1981; Cyert and March, 1963; Singh, 1986). Therefore, knowing the optimal level of slack necessary for positive company performance provides useful information for executives contemplating changes in response to external forces (Lawson, 2001). Maintaining slack gives executive managers a resource cushion to weather unexpected shocks from external forces which can be used for the benefit of the firm or misused by the manager (Christensen and Montgomery, 1981; Riahi-Belkaoui, 1998; Martinez and Artz, 2006).

In an empirical examination of organizational slack, Nohria and Gulati (1996) found slack to have an inverted U-shaped effect on innovation, suggesting that intermediate levels of slack have an optimal effect on innovation while lower or higher levels of slack tend to reduce desirable levels of innovation. Others

suggest an optimal level of slack exists for any given firm and if organizational slack falls below, or rises above that level, organization performance will decline (D'Souza, 2002; Ferrier and Lee, 2002; Sharfman *et al.*, 1988).

In efforts to operationalize slack, several studies report measuring organizational slack using financial indicators (Bourgeois and Singh, 1983; Cheng and Kesner, 1997; Hambrick and D'Aveni, 1988; Singh, 1986). For example, Singh (1986) measured slack using two approaches: unabsorbed and absorbed slack. While both types of slack are subject to managerial discretion, there are significant differences in how quickly they are available for deployment and their potential impact on the performance of the firm (Finney *et al.*, 2005).

Absorbed slack, defined as slack committed in salaries, overhead expense and various other administrative costs, has been measured as the ratio of general and administrative expenses to sales. Based on how it is held in the organization, absorbed slack is much more difficult to mobilize but may be used to offset intermediate-term organizational risk. For example, Singh (1986) reports a positive association between absorbed slack and risk-taking. That is, firms with a certain level of absorbed slack are able to reduce employee turnover because workers are not being required to work excessive hours on a routine basis when new products are introduced or customer demands change. However, when external factors dictate the need for change, perhaps through reductions in consumer demand for the firm's products, reductions in absorbed slack may occur over a long period of time through downsizing, layoffs, and overhead reductions.

Conversely, unabsorbed (or available) slack is defined as excess, uncommitted liquid assets, indicating a firm's ability to meet current obligations with easily-available resources. While available slack allows for immediacy of use, it is also more easily subjected to managerial avarice and personal risk-taking. Palmer and Wiseman (1999) report that the environmental impact on risk occurs primarily through managerial choice and that slack is negatively associated with managerial risk-taking, leading to strategic complacency. It has also been suggested that available slack serves as a discretionary tool used by managers to insulate external impacts from the competitive environment and industry factors (Latham and Braun, 2008).

This study distinguishes between absorbed and available slack because each type of slack implies a different time horizon for managerial decision-making. That is, employee lay-offs associated with obtaining and re-deploying absorbed slack are much more time consuming than simply investing cash and short-term investments in more productive assets. In addition, since each type of slack can be managed independently of the other, this study separately investigates the impact of each on firm performance. Thus, consistent with prior research (Palmer and Wiseman, 1999), this study investigates particular types of organizational slack that can help executives pinpoint the types of resources to be used to attain peak performance levels. Based on the above discussion, the following hypotheses relating to the slack-performance relationships are offered:

H1: There will be a curvilinear relationship between *available slack* and firm performance.

H2: There will be a curvilinear relationship between *absorbed slack* and firm performance.

Industry

Since firms tend to compete within industries, there is the long-held opinion that industries have become constraining forces within which firms adapt or perish (Aldrich, 1980; Burns and Stalker, 1961; Christensen and Montgomery, 1981; Lawrence and Lorsch, 1969; Porter, 1980). The role of industry structure has been shown to affect firms in their management of licensing activities (Zahra *et al.*, 2005), strategic decisions made by firms in regulated and unregulated firms within the same industry (Martinez and Artz, 2006), the decision to internationalize firms (Rasheed, 2005), firm economizing behaviors (Key *et al.*, 2005), product versus market growth decisions (Mishina *et al.*, 2004), risk reduction factors (Fiegenbaum and Thomas, 2004), organizational learning orientations (Weerawardena *et al.*, 2006), and in the growth of firms in emerging economies (Tan and Peng, 2003).

In their meta-analysis, Daniel *et al.* reported that studies controlling for industry-relative performance would "...highlight the importance of additional research into intervening factors impacting the slack-performance relationship" (2004: 565). Palmer and Wiseman (1999) found that the firm's environment impacts organizational risk, which in turn affects the need for differing levels of organizational slack. Specifically, they found that increased complexity in the firm's environment resulted in increased organizational risk.

The conjecture is that in rapidly changing industries, high levels of available slack would be of benefit to balance risks to the firm. Conversely, in more mature industries where there is not a pattern of aggressive competition, maintaining high levels of absorbed slack would likely result in higher levels of performance. Thus, the industry does not so much serve as a moderating factor than as a constraining factor in how the resident firms choose to compete (Latham and Braun, 2008).

Based on the above discussion, it is hypothesized that by adding controls for industry factors in the slack-performance relationship, additional predictability will be gained for both available and absorbed slack and for the measures of performance as follows:

H3: When industry is added as a constraining factor to available slack, there will be a significant increase in the predictability of firm performance.

H4: When industry is added as a constraining factor to absorbed slack, there will be a significant increase in the predictability of firm performance.

METHOD

Following the methods employed by Nohria and Gulati (1997), Palmer and Wiseman (1999), and Daniel *et al.* (2004), several measures of firm performance were collected for an eight-year period (1991 to 1998) from the Research Insight database of domestic firms.

Two measures of slack were used. *Absorbed Slack* was defined as general and administrative expenses divided by total sales. *Available Slack* was defined as gross profit less net profit divided by total sales. Three measures of performance were used, return on assets (ROA), return on equity (ROE), and average worker productivity (APL). ROA and ROE have been used in organizational and strategy research to measure accounting and market performance, respectively. APL, defined as total sales divided by number of workers, was used to capture differences in organizational outcomes resulting from managerial decisions relating to staffing levels of the firm (Hill and Snell, 1989).

The data were screened for missing observations among the independent variables of interest and a list-wise deletion of records was made. The final data contained 359 company records after the data were screened for the components necessary to calculate Available Slack and Absorbed Slack. Tests to determine whether deleted records differed from those remaining in the data set did not indicate significant differences between the two groups.

In order to develop control groups replicating industry-based competitive conditions, firms in the data set were classified into 12 broad industry groups along the two-digit SIC classification scheme (see Table 1 below). Groupings were sought that shared similar structural factors impacting their competitive similarities such as levels of capital needed for manufacturing firms or effective management of supply chain partners for retailing firms. For example, eight two-digit SIC industries were grouped to form a single category of Industrial Good Manufacturers that included firms such as Air Products and Chemicals, Cabot Corporation, Clorox, Eaton Corp., and other similar firms producing industrial products requiring high levels of capital. A series of regressions were performed (Cohen *et al.*, 2003). First, slack was entered into the equation as a predictor followed by the slack measure squared. Squared values for both slack measures were used to identify any non-linearity. Industry groups were entered into the equation to control for their impact on the slack-performance relationship.

Table 1
Means and Standard Deviations (N = 359)

	Means	Std. Deviations
Available Slack	0.14	1.46
Available Slack^2	2.14	34.70
Absorbed Slack	199.29	114.80
Absorbed Slack^2	52857.60	55400.55
APL	246.45	223.44
ROA	6.86	5.81
ROE	15.16	22.73
Industrial Goods Manufacturing (D1)	0.16	0.37
Consumer Goods Manufacturing (D2)	0.04	0.20
Component Parts Manufacturing (D3)	0.16	0.37
Food Manufacturing (D4)	0.08	0.28
Retailing of Consumer Goods (D5)	0.06	0.24
Pharmaceuticals (D6)	0.10	0.30
Hotels and Resorts (D7)	0.04	0.19
Equipment and Tool Manufacturing (D8)	0.15	0.36
Computer and Software (D9)	0.05	0.22
Paper, News and Printing (D10)	0.10	0.30
Communication (D11)	0.03	0.17
Transportation (D12)	0.02	0.14

Note: D1 refers to dummy-code for industry 1, etc.

RESULTS

Bivariate relationships among the variables were examined through inter-correlation, while multivariate analysis was conducted using hierarchical regression. Table 1 provides the means and standard deviations for the variables included in the study. Table 2 provides the zero-order correlation matrix.

All measures of performance (ROA, ROE, and APL) were found to be significantly correlated with the measures of Absorbed Slack (r = from -.20 to .35). Average Product of Labor was not correlated with the two other measures of performance (ROA and ROE), but as expected ROA and ROE were significantly correlated (r = .47).

Table 2
Correlation Matrix ($N = 359$)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Avail. Slack	1.00																	
2. Avail. Slack^2	.96**	1.00																
3. Abs. Slack	-.16**	-.11*	1.00															
4. Abs. Slack^2	-.09*	-.06	.96**	1.00														
5. APL	-.02	-.01	-.20**	-.14**	1.00													
6. ROA	.05	.10*	.35**	.33**	.02	1.00												
7. ROE	.01	.02	.21**	.22**	.04	.47**	1.00											
8. D1	-.04	-.03	-.09*	-.12*	.03	.02	.06	1.00										
9. D2	-.01	-.01	.19**	.23**	-.01	.18**	.18**	-.09*	1.00									
10. D3	.00	-.01	.05	.00	-.16**	-.01	-.01	-.19**	-.09*	1.00								
11. D4	-.03	-.02	.08	.07	-.04	.05	.07	-.13**	-.06	-.13**	1.00							
12. D5	-.02	-.02	-.18**	-.15**	.37**	-.12*	-.09*	-.11*	-.05	-.11*	-.08	1.00						
13. D6	-.00	-.02	.24**	.28**	-.02	.12*	.07	-.15**	-.07	-.15**	-.10*	-.09	1.00					
14. D7	-.02	-.01	-.01	-.00	-.04	.05	.00	-.09*	-.04	-.09*	-.06	-.05	-.07	1.00				
15. D8	.13**	.13**	-.19**	-.19**	-.06	-.07	-.12*	-.19**	-.09*	-.18**	-.13**	-.11*	-.14**	-.09	1.00			
16. D9	-.02	-.02	.19**	.19**	.13**	.05	.01	-.11*	-.05	-.10*	-.07	-.06	-.08	-.05	-.10*	1.00		
17. D10	-.01	-.02	-.11*	-.11*	-.02	-.20**	-.11*	-.15**	-.07	-.15**	-.10*	-.09	-.11*	-.07	-.14**	-.08	1.00	
18. D11	-.02	-.01	.02	.01	-.06	.04	.01	-.08	-.04	-.07	-.05	-.04	-.06	-.03	-.07	-.04	-.06	1.00
19. D12	-.01	- .01	-.11*	-.10*	-.04	-.04	-.01	-.06	-.03	-.06	-.04	-.04	-.05	-.03	-.06	-.03	-.05	-.02

*p < 0.05 level , **p < 0.01 level.
Industry Coding: D1--Industrial Goods Manufacturing, D2--Consumer Goods Manufacturing, D3--Component Parts Manufacturing, D4--Food Manufacturing, D5--Retailing of Consumer Goods, D6--Pharmaceuticals, D7--Hotels and Resorts, D8--Equipment and Tool Manufacturing, D9--Computer and Software Manufacturing, D10--Paper, News, and Printing, D11--Communication, D12--Transportation.

Table 3
Available Slack Hierarchical Regressions

Variables Entered	APL			ROA			ROE		
	Beta	R^2	R^2 Change	*Beta*	R^2	R^2 Change	*Beta*	R^2	R^2 Change
Available Slack	-.02			.05			.01		
		.00	.00		.00	.00		.00	.00
Available Slack	-.12			**-.51****			-.14		
Available Slack^2	.11			**.58****			.16		
		.00	.00		.03	.03**		.00	.00
Available Slack	-.05			-.51**			-.13		
Available Slack^2	.05			.59**			.17		
D1 – Industrial Goods Manufacturing	.13			.12			.08		
D2 – Consumer Goods Manufacturing	.05			**.24****			**.20***		
D3 – Component Parts Manufacturing	-.03			.11			.03		
D4 – Food Manufacturing	.04			.13			.09		
D5 – Retailing of Consumer Goods	**.41****			-.05			-.07		
D6 – Pharmaceutical	.07			.20			.09		
D7 – Hotels & Resorts	.02			.10			.02		
D8 – Equipment & Tool Manufacturing	.05			.04			-.07		
D9 – Computer & Software Manufacturing	**.19***			.12			.03		
D10 – Paper, News & Printing	.07			-.08			-.07		
D11 – Communication	-.02			.09			.02		
D1 – D11		.18	.18**		.14	.11**		.08	.08**

*p < 0.05 level, **p < 0.01 level.
Note: Industry D-12 (Transportation) was not included in the analysis.

Table 3 reports the results of regression analyses using Available Slack, Available Slack^2, and the industry control variables. Separate regressions were conducted for each performance measure because they were shown to be strongly correlated. Available Slack and Available Slack^2 were not significant predictors of performance when APL was used as the dependent variable. However, when industry type was added to the regression, both were significant predictors of performance--specifically in the retailing of consumer goods and computer and software manufacturing industries. The additional variance accounted for was 18 percent and was significant ($p < .01$), and the corresponding *beta* weights were .41 and .19 ($p < .01$ and $p < .05$, respectively).

Available Slack

Available Slack and Available Slack^2 were found to be significant predictors of ROA, with variance accounting for three percent, suggesting a curvilinear relationship and significant *beta* weights (β = -.51 and .58, $p < .01$, respectively). Based on these results, Hypothesis 1 was partially supported. Results indicate that Available Slack and ROA have an inverse curvilinear relationship.

In a few cases, industry was related to some of the measures of performance. Consumer goods manufacturing was related to ROA and ROE (r = .18 and .18). Food manufacturing was related to APL (r = -.16). Retailing of consumer goods was related to all three performance measures (r = .37, -.12 and -.09 for APL, ROA and ROE, respectively). Computer and software manufacturing was positively related to APL (r = .13), while paper, news and printing was negatively related to ROA and ROE (r = -.20 and -.11, respectively).

When industry was added to the regression model, Available Slack and Available Slack^2 continued to have significant *beta* weights (β = -.51 and .59, $p < .01$, respectively). The consumer goods manufacturing industry was also significant ($p < .01$) with a *beta* weight of .24. The variance accounted for increased to 14 percent and the change in variance accounted for was significant ($p < .01$).

Available Slack and Available Slack^2 were initially not found to be significant predictors of performance when ROE was used as the dependent variable. However, when industry was added to the regression, they were significant predictors of performance--specifically consumer goods manufacturing. The variance accounted for was eight percent and was significant ($p < .01$), with the corresponding *beta* weight of .20 ($p < .05$). In this case, industry, specifically consumer goods manufacturing, was a significant predictor of average ROE. Based on these findings, Hypothesis 3 was supported.

Absorbed Slack

Table 4 provides the results of the hierarchal regression analyses using Absorbed Slack and Absorbed Slack^2 as the predictors. Separate regressions

Table 4
Absorbed Slack Hierarchical Regressions

Variables Entered	APL			ROA			ROE		
	Beta	R^2	R^2 Change	*Beta*	R^2	R^2 Change	*Beta*	R^2	R^2 Change
Absorbed Slack	**-.20****			**.35****			**.21****		
		.04	.04**		.12	.12**		.04	.04**
Absorbed Slack	**-.74****			.32			.00		
Absorbed Slack^2	**.57****			.03			.22		
		.06	.03**		.12	.00		.05	.00
Absorbed Slack	**-.54****			.33			-.02		
Absorbed Slack^2	**.37***			-.05			.17		
D1 – Industrial Goods Manufacturing	.19			.06			.06		
D2 – Consumer Goods Manufacturing	.10			.14			.14		
D3 – Component Parts Manufacturing	.05			.01			-.01		
D4 – Food Manufacturing	.10			.04			.06		
D5 – Retailing of Consumer Goods	**.41****			-.05			-.07		
D6 – Pharmaceutical	.14			.07			.02		
D7 – Hotels & Resorts	.05			.06			.00		
D8 – Equipment & Tool Manufacturing	.08			.01			-.09		
D9 – Computer & Software Manufacturing	**.25***			.02			-.02		
D10 – Paper, News & Printing	.10			-.13			-.09		
D11 – Communication	.02			.04			.01		
D1 – D11		.22	.16**		.17	.05*		.09	.05

*p < 0.05 level, **p < 0.01 level.
Note: Industry D-12 (Transportation) was not included in the analysis.

were conducted for each of the three dependent variables: APL, ROA, and ROE. Absorbed Slack was a significant predictor of performance in the first step of the hierarchical regression (β = -.20, $p < .01$, $R^2 = .04$, $p < .01$). Absorbed Slack and Absorbed Slack^2 were significant predictors of performance when APL was used as the dependent variable, suggesting a curvilinear relationship between Absorbed Slack and APL (β = -.74 and .57, $p < .01$, $R^2 = .03$, $p < .01$). When industry types were added to the regression, Absorbed Slack and Absorbed Slack^2 continued to have significant *beta* weights (β = -.54 and .37, $p < .01$ and $p < .05$, respectively). Thus, Hypothesis 2 was partially supported.

Industry as a Constraining Factor

In the third step the analysis focused on industry as an important factor in the slack-performance relationship. The retailing of consumer goods and computer and software manufacturing industries were found to impact the relationship between slack and performance. The variance accounted for was 16 percent and was significant ($p < .01$), and the corresponding *beta* weights were .41 and .25, respectively (both $p < .01$). When ROA was used as the dependent variable, Absorbed Slack was found to be a significant predictor of Average ROA, and accounted for 12 percent of the explained variance, suggesting a linear relationship ($\beta = .35$, $p < .01$).

When ROE was used as the dependent variable, Absorbed Slack was found to be a significant predictor of ROE with 14 percent of the variance accounted for within a linear relationship ($\beta = .21$, $p < .01$). Thus, Hypothesis 4 was partially supported.

Finally, when industry was added to the regression model, the relationship between Absorbed Slack and APL was found to be significant. Thus, Absorbed Slack and ROA were found to have a significant relationship when industry was added to the model. However, none of the individual industry *beta* weights were found to be significant.

In summary, empirical examination of the relationship between organizational slack and firm performance, while considering the impact of industry on the slack-performance relationship, has shown the following outcomes:

H1: A curvilinear relationship between *available slack* and firm performance was partially supported.

H2: A curvilinear relationship between *absorbed slack* and firm performance was partially supported.

H3: When industry is added as a control variable to available slack, a significant increase in the predictability of firm performance was fully supported.

H4: When industry is added as a control variable to absorbed slack, a significant increase in the predictability of firm performance was partially supported.

DISCUSSION

The results of the analysis suggest the industry in which a firm competes impacts the relationship between organizational slack and firm performance. This is an important finding because prior research has failed to find a consistent relationship between organizational slack and firm performance. The analysis suggests a possible explanation of this inconsistency since the significance of the slack-performance relationship depends on the measures employed.

The analysis suggests that when absorbed slack is the predictor and labor productivity is the criterion, industries that are sensitive to labor factors to assure competitive success tend to strengthen the importance of the slack-performance relationship. Specifically, consumer goods retailing and computer and software manufacturing industries are important environments for managing labor effectiveness.

When profitability, specifically return on assets, is used as the criterion, the relationship between available slack and firm performance was found to be curvilinear and the consumer goods manufacturing industry was found to be particularly sensitive to this relationship. This also makes sense since available slack reflects the more readily available assets that are easier to adjust to external demand factors as would be desirable in consumer goods manufacturing such as apparel, footware, and other consumer products having short production cycles.

In general, this study suggests that when absorbed slack is the predictor and organizational productivity is the criterion, being in either the consumer goods retailing industry or computer and software manufacturing industry significantly increases the prediction of worker productivity. This tends to make sense since those industries have high levels of human resource dependence and rely on worker performance to assure competitive levels of organizational success.

Thus, the previously reported curvilinear relationship between organizational slack and firm performance is now known to be impacted by the industry in which the firm competes. The general implications of this finding is that managerial decisions impacting how limited organizational resources are allocated need much more careful study in a research context and in the ways managers are encouraged to treat resource-based decision-making.

Research Implications

There is a rich history in organizational research regarding studies seeking

to determine valid methods for improving worker productivity (Guzzo *et al.*, 1985; Cramton and Webber, 2005). For example, the Hawthorne studies (Sonnenfeld, 1985) provide valuable insight into ways managers have impacted employee productivity. Average Product of Labor was employed as a measure of worker productivity which assesses the impact of more imbedded forms of slack on the effectiveness of the firms. Average Product of Labor reflects differences in organizational outcomes resulting from managerial decisions and work motivations (Hill and Snell, 1989).

The results from this study suggest that the relationship between organizational slack and firm performance is impacted by industry type (consumer goods retailing and computer and software manufacturing). For available slack, industry type was found to help predict firm productivity, but for absorbed slack, industry type predicts the slack and productivity relationship. This line of inquiry is relatively unexplored and has the potential to be a fruitful area of research for both practicing managers and organizational researchers. This study can be important and useful for management practitioners because worker productivity is a global measure of firm performance and a traditional management factor considered to be under the direct control of managers.

Managerial Implications

For management practitioners, this study's findings may potentially impact how firms develop selection, evaluation, and incentive systems. That is, managers may now have another factor, available slack, within their control that can be used to impact performance. More importantly, firms within certain industries should pay special attention to how such systems are used.

For example, companies in the consumer goods retailing or software manufacturing industries rely heavily on worker productivity to meet their competitive needs. For companies in these industries, a loss of productivity can have disastrous consequences on profitability and market share. This occurs because the productivity level of the employees in these industries is critical. It may be the case that in other industries the productivity of the workforce does not have as much of an impact on company performance or that the management of organizational slack is not critical to those companies.

Investing in employee training and wellness programs, as well as management accountability, are well-established ways of improving productivity. Goal setting and employee involvement in business decisions are also well-established ways of improving productivity.

Managers should be vigilant for signs of low performance and productivity, and strategically deploy slack resources to meet the challenges. Their own knowledge, expertise, and alertness may be the key to improved performance and productivity. Managers should also be aware that geographically dispersed teams present additional obstacles to team performance and productivity and

that new technologies and novel approaches may be needed to overcome the problems associated with geographically dispersed teams.

Limitations and Future Research

This study is clearly a start to more systematically examining the impact of industry structure on the ways in which organizational slack is linked to firm performance. The results from this study make it clear that future research on the relationship between slack and performance should include industry type. Including industry will create a clearer picture of the relationship between slack and performance. In this regard, further research is needed to more carefully define whether the competitive structure of the industry, the external environment, or regulatory activities impact the slack-performance relationship. Applying the approach suggested by Rasheed (2005) for examining the environmental munificence is one method worthy of future research.

This is the first attempt to explore the impact of industry factors on the slack-performance relationship using the strategic management lens. Thus, the implications of the prior research on productivity and the results from this study indicate that managers in consumer goods retailing and computer and software manufacturing companies should try to strike a balance in their slack resources and utilize the knowledge from the research on productivity to improve firm performance.

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