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Size Matters for Cloud Capability and Performance

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Completed Research

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Abstract

Most research on cloud computing has been conducted in large firms. However, small, and medium enterprises (SMEs) constitute the majority of organizations worldwide. SMEs differ significantly from large firms and organizational size is a significant contingency variable in the organizational context. Accordingly, we examine how SMEs and large firms differ in leveraging cloud capabilities to achieve performance. We suggest that *Business Scalability* mediates the link between *Enterprise Cloud Capability* and a firm's *Business Performance*. We further hypothesize that the positive effect of *Enterprise Cloud Capability* on *Business Performance* is stronger for SMEs as they benefit more from *Business Scalability* than larger firms. We collect primary matched pair survey data from 147 small and large firms in India to test our research model. Empirical analysis using partial least squares provides support for our primary thesis that SMEs and large firms derive value from *Enterprise Cloud Capability* through different value creation pathways.

Keywords

Cloud computing, scalability, firm performance, SMEs, Small and Medium Enterprises.

Introduction

Digital transformation is a strategic imperative for firms in the post-pandemic world. Cloud computing represents a critical building block for digital transformation. Cloud computing refers to a combination of several IT technologies developed over multiple decades and more recent developments in service delivery over the internet. Such technologies include various hardware, virtualization, distributed computing technologies and above all, delivery of "IT as a service" over the internet. Due to this strategic importance, cloud computing has attracted considerable practitioner and academic interest. Several practitioner surveys and academic research studies have established the positive impacts of cloud computing on organizational outcomes, such as firm performance (Battleson et al. 2016; Choudhary and Vithayathil 2013; Garrison et al. 2012). Most studies have been conducted in the context of large firms, with examinations of small and medium enterprises (SMEs) rare. However, SMEs constitute 90% of all organizations globally (World Bank 2020). SMEs play an essential role in both developed and developing economies, employing 47% of the workforce in the US alone, with a much larger share in developing economies (Nichter and Goldmark 2009).

SMEs differ significantly from large firms and organizational size is considered a significant contingency variable in the macro-organizational context (Kimberly 1976). On one hand, SMEs benefit from advantages over large firms, such as less bureaucracy (Vossen 1998) and a propensity toward alliance formation. However, SMEs also suffer from disadvantages that limit their ability to compete with large firms, such as scarcity of resources, limited access to information, and lack of economies of scale and scope. These systemic differences result in documented variance in resource and capability configurations, and information technology portfolios of SMEs and large firms (Chen and Hambrick 1995).

Given their differences, it is plausible that SMEs and large firms differ in their ability to leverage cloud computing for business value. For example, post COVID-19, digitization and cloud adoption saw an accelerated use of cloud-based products by SMEs in India. Research also suggests that though organizations have used cloud-based resources to enable business transformation, the scale of migration of application portfolios to the cloud, the adoption of cloud-based application, and the implementation of cloud-based analytics capabilities has not been uniform across organizations.

We seek to understand how large and small firms differ in leveraging cloud capabilities to achieve performance. Specifically, we pose the research question: "How do SMEs and large firms differ in their value appropriation from Enterprise Cloud Capability?". We suggest that *Business Scalability* mediates the link between *Enterprise Cloud Capability* and a firm's *Business Performance*. Critically, we suggest that the firm's size moderates this mediation relationship. We hypothesize that smaller firms achieve higher business scalability enabled by cloud implementation and thus higher business performance than larger firms. To test our research model (which is presented in Figure 1), we collected primary matched pair survey data from 147 small and large firms in India. We consider respondent firms as SMEs if they have less than 100 employees (Chen and Hambrick 1995). Empirical analysis using partial least squares (PLS) provides support for our primary thesis that SMEs and large firms derive value from *Enterprise Cloud Capability* through different value creation pathways.

This study makes two main contributions to theory. First, our comparison of SMEs and large firms extends and enhances IT business value literature conducted in the context of large firms by uncovering firm size as a contingency variable for the information technology and firm performance relationship. Second, by highlighting different value appropriation pathways for SMEs and large firms, we suggest equifinality and add to the literature on value appropriation from cloud computing. In sum, we affirm the notion that size matters for performance from the cloud.

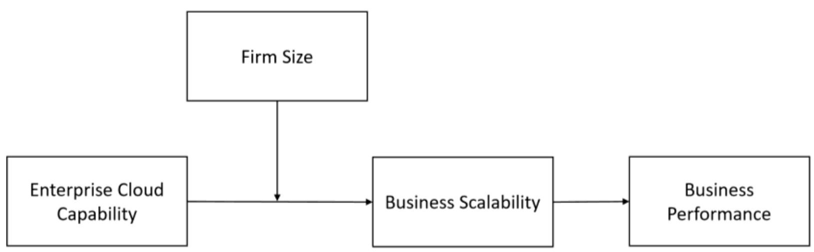

Figure 1: Research Model

Theoretical Background

Small and Medium Enterprises

Research suggests that SMEs have several advantages and disadvantages to large firms. Small ventures have many advantages, such as less bureaucracy (Vossen 1998), an ability to cater to individual customers (Rothwell 1989), propensity towards alliance formation (Gomes- Casseres 1997) and better management of external relationships (Street and Cameron 2007). While larger firms may be characterized by longer chain of command, managerial coordination inefficiency and loss of flexibility (Vossen 1998), small firms may display rapid decision making, have more motivated and committed teams and exhibit faster reaction to changing market conditions. Small firms lack the wherewithal to compete against larger firms due to various factors. (Kale and Arditi 1998). Resource scarcity is a critical disadvantage for SMEs. These include both financial and managerial resources. SMEs lack financial support from creditors (Aldrich and Auster 1986) and have limited organizational slack (Azadegan et al. 2013). This limits SMEs strategic maneuvers and buffer from market uncertainties. SMEs also have difficulty attracting qualified and competent personnel, resulting in managerial imperfections such as lack of flexibility, lack of open culture, and nepotism (Kale and Arditi 1998). Finally, SMEs suffer from disadvantages related to operational weakness such as undercapitalization, inadequate records and systems, poor cash flow, and limited access to information, and incorrect market tactics (Chowdhury and Lang 1996; Kale and Arditi 1998).

There has been limited research on the role of IS in SMEs during the past millennium (Andrade Rojas et al. 2021b; Cragg and King 1993; Harrison et al. 1997; Pradhan et al. 2021). These studies have investigated factors enabling technology adoption, usefulness, advantages of IS, and IS implementation successes in

SMEs. The attitude of the small business owner has been seen as an important factor in determining IS success. IS decision making in SMEs has also been studied and post implementation issues and training and ongoing user support have been investigated (Harrison et al. 1997). Barriers to the adoption of eCommerce by SMEs have also been examined (MacGregor and Vrazalic 2005), showing that large firms have benefitted more than SMEs in both improved sales and costs savings (Riquelme 2002). Research has uncovered the reasons underlying these differences in payoffs: inadequacies of management techniques such as in planning, forecasting (Blili and Raymond 1993), dependence on informal and dynamic strategies and decision-making processes, and nonstandard operating procedures (Dibrell et al. 2008). Though SMEs may have been traditionally reluctant to invest in IS, the recent decades have seen an increasing awareness and adoption of IS by both managers and owners in SMEs. SMEs have not only adopted IT for operational needs like reducing costs and increasing productivity but also for strategic reasons (e.g., for digital transformation), necessitating an examination of value appropriation from cloud computing by SMEs.

Cloud Computing

Cloud computing service models include information as a service (IaaS), platform as a service (PaaS), and software as a service (SaaS). There is much research concerning the adoption of cloud computing in organizations, its catalysts, and impediments. Some of the issues explored in adoption are cloud benefits, risks and costs associated with the adoption of cloud computing (Iyer and Henderson 2012; Lin and Chen 2012; Loebbecke et al. 2012; Marston et al. 2011; McAfee 2011), governance issues and challenges (Choudhary and Vithayathil 2013; Lin and Chen 2012), cloud related security concerns (Aleem and Sprott 2013), adoption of cloud being influenced by executive support and competitive pressures. Studies have explored considerations in cloud provider selection (Ojala and Tyrvainen 2011) and found that trust and fixed-fee models were significant advantages for providers. Other studies have looked at provider evaluation process and measures (Koehler et al. 2010). However, such research does not adequately analyze the business outcomes of adopting cloud computing technologies.

Until the recent decade, most papers on results of cloud computing focused on cost savings, avoidance of investments in hardware, software and/or personnel, and greater IT deployment flexibilities (Benlian et al. 2018). Recent studies have investigated the business outcomes and business value of cloud computing. They note that cloud computing helps organizations focus on core business, experiment with new business models, mitigate business risks, and create applications that work on mobile and social platforms (Iyer and Henderson 2012). In addition, studies have demonstrated that cost reductions of as much as 40% can accrue to organizations, by adopting cloud computing (Khajeh-Hosseini et al. 2010). Some researchers have also suggested that client evaluation and cloud service quality play a critical role in ensuring vendor continuance with a specific client (Benlian et al. 2011).

Thus, research on cloud computing so far has primarily focused on the following areas: cloud adoption, selection of providers, cloud operation dynamics, benefits, and sustenance issues with a cloud provider. Few studies have explored the business impacts of cloud computing and how organizations of differing sizes benefit from the same. The purpose of our study is to better understand the transformative value of cloud computing which is recognized “as the realized or unrealized potential that widespread diffusion of this technology leads to fundamental and large-scale innovations that benefit individuals, organizations, markets, and societies” (Lacity and Reynolds 2014). Notwithstanding extant research related to cloud computing, scant attention has been paid to how firm size affects the value that is derived from cloud computing. Understanding this relationship is critical to IT-enabled information management capabilities. Thus, we also wish to examine if the transformative value of cloud computing affect organizations of different sizes, alike? For this purpose, we leverage the resource-based view (RBV) (Barney 1991) and the dynamic capabilities theory (Teece et al. 1997) to better understand this relationship.

Theoretical Development

Previous studies suggest IT infrastructure and related IT capabilities may alone not be significant for firm success. The ability of firms to exploit their IT infrastructure to provide timely, correct, and reliable information to users may be more critical. IT enabled information management capabilities enable business capabilities, which influence firm performance (Andrade Rojas et al. 2021a; Kathuria et al. 2016; Mithas et al. 2011; Sambamurthy et al. 2003). Accordingly, we adopt this perspective in our research.

Prior research has conceptualized a hierarchy of cloud computing capabilities. We conceptualize *Enterprise Cloud capability* as a higher-order composite capability that is formed of three second-order capabilities identified in prior literature: *Cloud Technological Capability* (*CTC*), *Cloud Service Portfolio Capability* (*CSPC*) and *Cloud Integration Capability* (*CIC*) (Kathuria et al. 2018). We posit that *CTC*, *CSPC* and *CIC* in conjunction form the *Enterprise Cloud Capability* and reinforce each other. *CTC* is defined as the capacity of a firm to deploy cloud-based platforms that are available on-demand via the internet to serve consumers via the pooling of resources in a scalable and measurable manner. This formative capability is formed of essential characteristics of cloud computing: on-demand, broad network access, resource pooling, rapid elasticity, and measured service (Mell and Grance 2011). *CSPC* is also a second-order construct that comprises *Cloud Market Offerings Capability (CMOC)* and *Cloud Service Offerings Capability (CSOC)* (Kathuria et al. 2018). *CMOC* reflects a firm's ability to align its cloud service with other provider's external offerings. *CSOC* is the ability to enable service by dynamically committing resources based on business needs. This is enabled by dynamic discovery, resource pooling, and orchestrating all IT resources. *CIC* is defined as the ability of a firm to maintain consistency between its cloud-enabled functionality and data and legacy system's functionality and data (Rai et al. 2006). *CIC* is also a second-order construct and comprises *Cloud Legacy Consistency Capability (CLCC)* and *Cloud Legacy Synchronization Capability (CLSC)* (Kathuria et al. 2018). *CLCC* is defined as the degree to which application functionality and application data elements are common across the cloud and legacy applications in the firm. *Cloud Legacy Synchronization Capability (CLSC)* is defined as the degree to which cloud and legacy functionality and application data are updated and synchronized in real-time.

We posit that *Enterprise Cloud Capability* has a direct effect on *Business Performance* due to two mechanisms: operational and process improvements due to enhanced information management, and service improvements due to enhanced service design and maintenance (Kathuria et al. 2018). Furthermore, we theorize that *Enterprise Cloud Capability* has an indirect effect on Business Performance through *Business Scalability*. *Business Scalability* is the firm's ability to quickly manage its resources to cope with expanding or diminishing business needs and is achieved through predictive change management processes (Tiwana and Konsynski 2010). A scalable portfolio of cloud services, at a firm level, (i.e., *Enterprise Cloud Capability*) enables it to adapt its services to meet changes. Firms that use the cloud to design and deploy service offerings will be able to register changes in demand and the environment. Consequently, their ability to sense and respond is enhanced. Second, scalability is also enhanced by the alignment and interoperability of cloud systems with the offerings of market participants. In conjunction with the above rationale, we posit the following hypothesis:

> ***H1: Business Scalability mediates the positive effect of Enterprise Cloud Capability on Business Performance.***

We further theorize that SMEs may accrue more business performance benefits from *Business Scalability*. Scalability refers to the idea of a system in which every application or piece of infrastructure can be expanded to handle the increased load. A paucity of resources forms one of the constraints on the business performance SMEs. *Enterprise Cloud Capability* creates the wherewithal of circumventing IT resource shortages, thereby enabling high gains in *Business Performance* for SMEs. On the other hand, large firms may not witness such a fillip as they may not benefit from an elastic availability of IT resources as they would always have a critical mass of slack resources and thus would already be accruing these benefits. Hence our following hypothesis:

> ***H2: The positive effect of Enterprise Cloud Capability on Business Performance is stronger for SMEs as compared to large firms.***

Methodology and Analysis

Sampling and Data Collection

To test our hypotheses, we developed two survey instruments and conducted a cross-sectional matched-pair field survey of organizations in India, an emerging economy with a large number of users of cloud computing services. The Indian cloud services market is growing rapidly. All the three hyperscalers – *Amazon Web Services*, *Microsoft Azure*, and *Google Cloud Platform*, have an Indian region presence and support two or more availability zones. Many Indian firms have migrated part or all aspects of their application portfolio to the cloud. Many firms practice the "cloud-first" strategy where new applications primarily get built on the cloud rather than being on premise. Thus, India is an appropriate context for our study. To minimize the effect of confounding factors due to uneven economic development prevalent in an emerging economy, we drew our sample from an industry directory of firms located near two emerging commercial hubs in western and southern India.

The questionnaires were developed by adapting or adopting scales from extant literature. The description and definition of cloud computing from the *National Institute of Standards and Technology* served as the basis for the scales for the measure of Enterprise Cloud Capability developed in and adopted from prior research (Kathuria et al. 2018). To assess content validity, we interviewed four senior executives about their interpretation of the questionnaire items. Items were revised and then used to conduct a pre-test with four senior IT executives and two academic experts, followed by a pilot test with a small convenience sample from the targeted population. The instruments were refined and finalized after assessing reliability, convergent and discriminant validity, and predictability.

We collected *matched-pair data* through anonymous surveys of volunteering organizations administered using a *dual online-offline mode* - an online and in-person methodology used to collect primary data in India (Kathuria et al. 2018; Khuntia et al. 2021). Separate questionnaires were administered to collect the independent and dependent variables. The first questionnaire, containing questions on the independent variable *Enterprise Cloud Capability*, was administered to top ranking IT executives. The second questionnaire, containing questions on the mediating and dependent variables *Business Scalability* and *Business Performance* respectively, was administered to the top-ranking executives in the firms. Control variables were measured in both questionnaires. After dropping incomplete responses, the final sample had 147 firms hailing multiple industries such as manufacturing, IT and services, food, and healthcare. The average firm age was 4.5 years and firms had an average of 1554 employees. Organizations with less than 100 employees were categorized as SMEs, and SMEs constitute half of our sample. Response bias is not a concern because there were no differences between participating and non-participating firms.

Addressing Common Method Bias

We followed a comprehensive research design to minimize the threat of common method bias. We undertook two steps prior to and during data collection. First, we used different scales (5- and 7-point Likert scales) to measure the independent and other variables (Kathuria et al. 2018; Podsakoff et al. 2003). Second, we used a matched pair design to separate the sources of information. *Enterprise Cloud Capability* related variables were collected from the top-ranking IT executive in the firm, whereas the other variables, which are related to business contingencies and outcomes, were collected from the senior-most business executive in the firm. This well-established approach has been adopted in several prior IS studies (Kathuria et al. 2018; Ramakrishnan et al. 2020; Tiwana and Kim 2015). We then performed two post-hoc analyses after collecting the data to assess common method bias (Podsakoff and Organ 1986). First, we performed Harman’s one-factor test, in which no single major factor emerged. Second, we applied the partial correlation method, in which the highest factor from a factor analysis was added to the PLS model and did not produce a significant change in variance explained. Together, the test results suggest that common method bias is not a concern. Overall, our collective *a-priori* and *post-hoc* approach mitigates concerns regarding common method bias within the constraints of our context.

Variables

Measures for the variables that form *Enterprise Cloud Capability* were adopted from prior literature (Kathuria et al. 2018). For example, *CLSC* was measured as a three-item formative construct that captured the organization's cloud systems synchronized functionality, synchronized data, and communicated with legacy systems in real time (Kathuria et al. 2018). Similarly, *CLCC* was formed of four items that assessed the commonality of key data elements, consistency of data, definitions of key functional elements, and consistency of functional elements stored across cloud and legacy applications (Kathuria et al. 2018). A similar measurement approach was taken for all the elements of *Enterprise Cloud Capability*.

Business Scalability was measured as a five-item reflective construct adopted from prior literature. The items captured the firm's ability to be scalable in response to environmental changes by enlarging or reducing its organizational resources, processes, and strategies. *Business Performance* was measured using a four-item reflective construct adopted from prior research (Hult et al. 2005). The scales reflect whether the firm has had increased revenue, enhanced profit margin, increased ROI, improved competitive advantage, reduced customer churn, and increased rate of customers switching from competitors over the past three years (Khuntia et al. 2021). Firm Size was measured as the number of full-time employees of the firm. Organizations with less than 100 employees were classified as SMEs.

Analysis and Results

We performed partial least squares (PLS) analysis using Smart-PLS 3 to validate the measurement model and test the hypotheses (Ringle and Sarstedt 2016). We used PLS, which is a second-generation structural equation modelling technique, because it makes no data normality assumptions, assesses the measurement model within the context of the theoretical model, and caters to multiple data groups.

Measurement Model Assessment

We adopted a multi-step approach to determine the psychometric adequacy of our measures. This approach followed a methods roadmap from prior research (Kathuria et al. 2018) and used separate procedures to assess the validity (both convergent and discriminant) and reliability of the reflective and formative constructs.

To assess the reflective constructs *Business Scalability* and *Business Performance*, we ran confirmatory factor analysis to evaluate reliability. Cronbach's alphas above the minimum recommended values with significant factor loadings (Nunnally 1978). We evaluated internal consistency reliability through composite reliability scores, convergent validity through average variances extracted, and discriminant validity via cross-loading analysis and the heterotrait-monotrait ratio. To assess the formative constructs related to cloud computing capability, we evaluated convergent validity by performing redundancy analysis. Multicollinearity was assessed using Variance Inflation Factors for the variables and indicators, and we evaluated outer weights, signs, and magnitudes for each indicator to assess convergent and discriminant validity. Overall, the model provided a satisfactory fit across all indices and thus, the measures demonstrated adequate convergent validity, reliability and discriminant validity (Hansen 1999).

Finally, we assessed the construct validity of the higher-order formative constructs. Specifically, we evaluated whether the first-order indicators reliably measured the second-order constructs and repeated this evaluation for the third-order formative construct of *Enterprise Cloud Capability*. Significant path coefficients support the psychometric adequacy of the model.

Structural Model Assessment

To assess the structural model, we calculated the statistical significance of the parameter estimates by conducting a bias-corrected and accelerated bootstrapping procedure with replacement using 5,000 subsamples. We created two data groups – one containing small and medium firms (with less than 100 employees), and the other containing large firms. We conducted PLS Multi-Group Analysis (PLS-MGA) to test if the data groups have significant differences in their group-specific parameter estimates (Henseler et al. 2009; Sarstedt et al. 2011). Figure 2 shows the results of the structural model assessment. We observe a positive direct effect of *Enterprise Cloud Capability* on *Business Performance* (beta = 0.769, $p < 0.01$) for all firms in our sample. However, we observe that this relationship is not mediated by *Business Scalability* for all firms (beta = 0.046, n.s.). Hence, H1 is not supported. On further investigation, the PLS results demonstrated that the mediation relationship (total indirect effect) was stronger for small firms (beta = 0.313, $p < 0.01$) as compared to large firms (beta = 0.026, n.s.) to the extent that the mediating effect became non-significant for large firms. On the contrary, we observed that the direct effect of *Enterprise*

Cloud Capability on *Business Performance* was stronger for large firms (beta = 0.859, p < 0.01) as compared to small firms (beta = 0.543, p < 0.01). The PLS-MGA results also showed a statistically significant difference in the path coefficients across the two groups for all the paths in the structural model (p-value < 0.05 for the path from Enterprise Cloud Capability to Business Scalability and p-value < 0.01 for all other paths). Hence, H2 is supported. The effects of the control variables, resource endowment, strategic focus, and industry are in theoretically expected directions, lending credence to our results. Overall, our results demonstrate support for our primary thesis that SMEs and large firms derive value from *Enterprise Cloud Capability* through different value creation pathways.

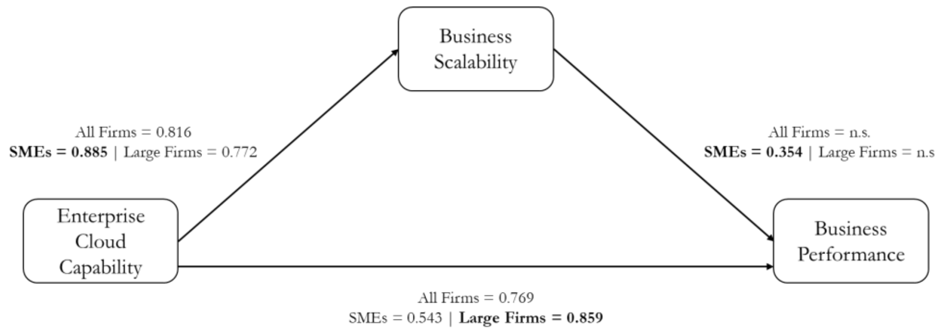

Figure 2: Assessment of Structural Model

Discussion

Theoretical Contributions

Our comparison of SMEs and large firms extends and enhances IT business value literature conducted in the context of large firms by uncovering firm size as a contingency variable for the IT and firm performance relationship. This allows us to reinterpret prior established relationships between information technology and business outcomes, such as innovation and customer growth (Karhade and Dong 2021; Karhade and John Qi 2021; Saldanha et al. 2021; Saldanha et al. 2022; Saldanha et al. 2020), in light of the effect of firm size. This research also adds to the sparse literature that exists on value appropriation from cloud computing (Mann et al. 2016). The study seeks a deeper understanding of impact of cloud computing across firms of differing sizes. By highlighting different value appropriation pathways for SMEs and large firms, we establish equifinality in cloud computing value.

Managerial Implications

Our study suggests that SMEs and large firms derive *Business Performance* from *Enterprise Cloud Computing* through different value creation pathways. This implies that managers need different strategies for deriving maximum value from *Enterprise Cloud Computing*. While enabling *Business Scalability* could be an applicable value creation pathway for managers of SMEs for, the same pathway may not be applicable for managers of large firms. Our results suggest that managers may need to develop approaches, implementation plans, expectations while cognizant of the size of their firm.

Limitations and Future Research

While our research is based on strong theory, the cross-sectional nature of this study hinders causal testing of intertemporal dependencies. The research design and methodology of this study can only ascertain association and does not allow causal inference. Future research could employ alternative estimation techniques to assess sequential causality and endogeneity. Second, it is plausible, though unlikely that the absence of variance in our measurement of *Business Scalability*, or lack of an objective measure of *Business Performance*, underlie our inability to find support for our first hypothesis. Future research could utilize objective data to measure these variables. Third, though we conceptualize *Enterprise Cloud Capability* as a higher-order composite capability, it is plausible that the constituent lower-order capabilities influence may influence *Business Performance* differently for SMEs and large firms. This is a intriguing line of inquiry for future work. Finally, our study was conducted in India, where on one hand IT maturity may be lower than the developed economies like the US, but on the other hand, economic growth rates are higher. While our research answers call for more studies in GREAT (growing, rural, eastern, aspirational, transitional) (Karhade and Kathuria 2020) contexts (Dasgupta et al. 2021; Kathuria and Karhade 2018), future researchers can these relationships in other economies.

In conclusion, SMEs and large firms derive *Business Performance* from *Enterprise Cloud Capability* through different value creation pathways. SMEs gain from a mediating pathway, whereas large firms gain *Business Performance* directly. Thus, size matters for cloud capability and performance.

REFERENCES

Aldrich, H., and Auster, E. R. 1986. "Even Dwarfs Started Small: Liabilities of Age and Size and Their Strategic Implications," *Research in Organizational Behavior* (8), pp.165-198.

Aleem, A., and Sprott, C. R. 2013. "Let Me in the Cloud: Analysis of the Benefit and Risk Assessment of Cloud Platform," *Journal of Financial Crime* (20:1), pp. 6-24.

Andrade Rojas, M., Kathuria, A., and Konsynski, B. 2021a. "Competitive Brokerage: How Information Management Capability and Collaboration Networks Act as Substitutes," *Journal of Management Information Systems* (38:3), pp. 667-703.

Andrade Rojas, M., Saldanha, T., Khuntia, J., Kathuria, A., and Boh, W. F. 2021b. "Overcoming Innovation Deficiencies in Mexico: Use of Open Innovation through It and Closed Innovation through It by Small and Medium Enterprises," *Hawaii International Conference on System Sciences*, p. 617.

Azadegan, A., Patel, P. C., and Parida, V. 2013. "Operational Slack and Venture Survival," *Production and Operations Management* (22:1), pp. 1-18.

Barney, J. 1991. "Firm Resources and Sustained Competitive Advantage," *Journal of Management* (17:1), pp. 99-120.

Battleson, D. A., West, B. C., Kim, J., Ramesh, B., and Robinson, P. S. 2016. "Achieving Dynamic Capabilities with Cloud Computing: An Empirical Investigation," *European Journal of Information Systems* (25:3), pp. 209-230.

Benlian, A., Kettinger, W. J., Sunyaev, A., Winkler, T. J., and Editors, G. 2018. "The Transformative Value of Cloud Computing: A Decoupling, Platformization, and Recombination Theoretical Framework," *Journal of Management Information Systems* (35:3), pp. 719-739.

Benlian, A., Koufaris, M., and Hess, T. 2011. "Service Quality in Software-as-a-Service: Developing the Saas-Qual Measure and Examining Its Role in Usage Continuance," *Journal of Management Information Systems* (28:3), pp. 85-126.

Blili, S., and Raymond, L. 1993. "Information Technology: Threats and Opportunities for Small and Medium-Sized Enterprises," *International Journal of Information Management* (13:6), pp. 439-448.

Chen, M.-J., and Hambrick, D. C. 1995. "Speed, Stealth, and Selective Attack: How Small Firms Differ from Large Firms in Competitive Behavior," *Academy of Management Journal* (38:2), pp. 453-482.

Choudhary, V., and Vithayathil, J. 2013. "The Impact of Cloud Computing: Should the It Department Be Organized as a Cost Center or a Profit Center?," *Journal of Management Information Systems* (30:2), pp. 67-100.

Chowdhury, S. D., and Lang, J. R. 1996. "The Decline of Small Firms: A Preliminary Investigation into the Concept of Complacency," *Canadian Journal of Administrative Sciences/Revue Canadienne des Sciences de l'Administration* (13:4), pp. 321-331.

Cragg, P. B., and King, M. 1993. "Small-Firm Computing: Motivators and Inhibitors," *MIS Quarterly* (17:1), pp. 47-60.

Dasgupta, A., Karhade, P., Kathuria, A., and Konsynski, B. 2021. "Holding Space for Voices That Do Not Speak: Design Reform of Rating Systems for Platforms in Great Economies," *Hawaii International Conference on System Sciences*.

Dibrell, C., Davis, P. S., and Craig, J. 2008. "Fueling Innovation through Information Technology in Smes*," *Journal of Small Business Management* (46:2), pp. 203-218.

Garrison, G., Kim, S., and Wakefield, R. L. 2012. "Success Factors for Deploying Cloud Computing," *Communications of the ACM* (55:9), pp. 62-68.

Gomes- Casseres, B. 1997. "Alliance Strategies of Small Firms," *Small Business Economics* (9:1), pp. 33-44.

Hansen, B. E. 1999. "Threshold Effects in Non-Dynamic Panels: Estimation, Testing, and Inference," *Journal of Econometrics* (93:2), pp. 345-368.

Harrison, D. A., Mykytyn, P. P., and Riemenschneider, C. K. 1997. "Executive Decisions About Adoption of Information Technology in Small Business: Theory and Empirical Tests," *Information Systems Research* (8:2), pp. 171-195.

Henseler, J., Ringle, C. M., and Sinkovics, R. R. 2009. "The Use of Partial Least Squares Path Modeling in International Marketing," in *New Challenges to International Marketing,* R.R. Sinkovics and P.N. Ghauri (eds.). Emerald Group Publishing Limited, pp. 277-319.

Hult, G. T. M., Ketchen Jr, D. J., and Slater, S. F. 2005. "Market Orientation and Performance: An Integration of Disparate Approaches," *Strategic Management Journal* (26:12), pp. 1173-1181.

Iyer, B., and Henderson, J. C. 2012. "Business Value from Clouds: Learning from Users," *MIS Quarterly Executive* (11:1).

Kale, S., and Arditi, D. 1998. "Business Failures: Liabilities of Newness, Adolescence, and Smallness," *Journal of Construction Engineering and Management* (124:6), pp. 458-464.

Karhade, P., and Kathuria, A. 2020. "Missing Impact of Ratings on Platform Participation in India: A Call for Research in Great Domains," *Communications of the Association for Information Systems* (47:1), p. 19.

Karhade, P. P., and Dong, J. Q. 2021. "Information Technology Investment and Commercialized Innovation Performance: Dynamic Adjustment Costs and Curvilinear Impacts," *MIS Quarterly* (45:3), pp. 1007-1024.

Karhade, P. P., and John Qi, D. 2021. "Innovation Outcomes of Digitally Enabled Collaborative Problemistic Search Capability," *MIS Quarterly* (45:2).

Kathuria, A., and Karhade, P. P. 2018. "You Are Not You When You Are Hungry: Machine Learning Investigation of Impact of Ratings on Ratee Decision Making," *Workshop on E-Business*: Springer, pp. 151-161.

Kathuria, A., Mann, A., Khuntia, J., Saldanha, T. J., and Kauffman, R. J. 2018. "A Strategic Value Appropriation Path for Cloud Computing," *Journal of Management Information Systems* (35:3), pp. 740-775.

Kathuria, A., Saldanha, T., Khuntia, J., and Rojas, M. 2016. "How Information Management Capability Affects Innovation Capability and Firm Performance under Turbulence: Evidence from India," *International Conference on Information Systems*.

Khajeh-Hosseini, A., Greenwood, D., and Sommerville, I. 2010. "Cloud Migration: A Case Study of Migrating an Enterprise It System to Iaas," *2010 IEEE 3rd International Conference on cloud computing*: IEEE, pp. 450-457.

Khuntia, J., Kathuria, A., Andrade-Rojas, M. G., Saldanha, T., and Celly, N. 2021. "How Foreign and Domestic Firms Differ in Leveraging It-Enabled Supply Chain Information Integration in Bop Markets: The Role of Supplier and Client Business Collaboration," *Journal of the Association for Information Systems* (22:3), p. 6.

Kimberly, J. R. 1976. "Organizational Size and the Structuralist Perspective: A Review, Critique, and Proposal," *Administrative Science Quarterly* (21:4), pp. 571-597.

Koehler, P., Anandasivam, A., Dan, M., and Weinhardt, C. 2010. "Customer Heterogeneity and Tariff Biases in Cloud Computing," in: *Proceedings of the International Conference on Information Systems,* Saint Louis, Missouri, USA.

Lacity, M. C., and Reynolds, P. 2014. "Cloud Services Practices for Small and Medium-Sized Enterprises," *MIS Quarterly Executive* (13:1).

Lin, A., and Chen, N.-C. 2012. "Cloud Computing as an Innovation: Percepetion, Attitude, and Adoption," *International Journal of Information Management* (32:6), pp. 533-540.

Loebbecke, C., Thomas, B., and Ullrich, T. 2012. "Assessing Cloud Readiness at Continental AG," *MIS Quarterly Executive* (11:1), pp. 11-23.

MacGregor, R. C., and Vrazalic, L. 2005. "A Basic Model of Electronic Commerce Adoption Barriers: A Study of Regional Small Businesses in Sweden and Australia," *Journal of Small Business and Enterprise Development* (4:12).

Mann, A., Kathuria, A., Khuntia, J., and Saldanha, T. 2016. "Cloud-Integration and Business Flexibility: The Mediating Role of Cloud Functional Capabilities," *Americas Conference on Information Systems*.

Marston, S., Li, Z., Bandyopadhyay, S., Zhang, J., and Ghalsasi, A. 2011. "Cloud Computing—the Business Perspective," *Decision Support Systems* (51:1), pp. 176-189.
McAfee, A. 2011. "What Every Ceo Needs to Know About the Cloud," *Harvard Business Review* (89:11), pp. 124-132.
Mell, P. M., and Grance, T. 2011. *The Nist Definition of Cloud Computing*, (SP 800-145. ed.). National Institute of Standards & Technology.
Mithas, S., Ramasubbu, N., and Sambamurthy, V. 2011. "How Information Management Capability Influences Firm Performance," *MIS Quarterly* (35:1), pp. 237-256.
Nichter, S., and Goldmark, L. 2009. "Small Firm Growth in Developing Countries," *World Development* (37:9), pp. 1453-1464.
Ojala, A., and Tyrvainen, P. 2011. "Developing Cloud Business Models: A Case Study on Cloud Gaming," *IEEE Software* (28:4), pp. 42-47.
Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., and Podsakoff, N. P. 2003. "Common Method Biases in Behavioral Research: A Critical Review of the Literature and Recommended Remedies," *Journal of Applied Psychology* (88:5), pp. 879-903.
Podsakoff, P. M., and Organ, D. W. 1986. "Self-Reports in Organizational Research: Problems and Prospects," *Journal of Management* (12:4), pp. 531-544.
Pradhan, A., Kathuria, A., and Khuntia, J. 2021. "Partner Informedness, Relational Capability, and Performance of Small and Large Firms," *Americas Conference on Information System*.
Rai, A., Patnayakuni, R., and Seth, N. 2006. "Firm Performance Impacts of Digitally Enabled Supply Chain Integration Capabilities," *MIS quarterly* (30:2), pp. 225-246.
Ramakrishnan, T., Khuntia, J., Kathuria, A., and Saldanha, T. J. 2020. "An Integrated Model of Business Intelligence & Analytics Capabilities and Organizational Performance," *Communications of the Association for Information Systems* (46:1), p. 31.
Ringle, C. M., and Sarstedt, M. 2016. "Gain More Insight from Your PLS-SEM Results: The Importance-Performance Map Analysis," *Industrial Management & Data Systems* (116:9), pp. 1865-1886.
Riquelme, H. 2002. "Commercial Internet Adoption in China: Comparing the Experience of Small, Medium and Large Businesses," *Internet Research* (12:3), pp. 276-286.
Rothwell, R. 1989. "Small Firms, Innovation and Industrial Change," *Small Business Economics* (1), pp. 51-64.
Saldanha, T., Kathuria, A., Khuntia, J., and Konsynski, B. 2021. "It's a Dangerous Business, Going out Your Door: Overcoming Institutional Distances through Is," *International Conference on Information Systems*.
Saldanha, T., Kathuria, A., Khuntia, J., and Konsynski, B. 2022. "Ghosts in the Machine: How Marketing and Human Capital Investments Enhance Customer Growth When Innovative Services Leverage Self-Service Technologies," *Information Systems Research* (33:1), pp. 76-109.
Saldanha, T. J. V., Sahaym, A., Mithas, S., Andrade-Rojas, M. G., Kathuria, A., and Lee, H.-H. 2020. "Turning Liabilities of Global Operations into Assets: It-Enabled Social Integration Capacity and Exploratory Innovation," *Information Systems Research* (31:2), pp. 361-382.
Sambamurthy, V., Bharadwaj, A., and Grover, V. 2003. "Shaping Agility through Digital Options: Reconceptualizing the Role of Information Technology in Contemporary Firms," *MIS Quarterly* (27:2), pp. 237–263
Sarstedt, M., Henseler, J., and Ringle, C. M. 2011. "Multigroup Analysis in Partial Least Squares (Pls) Path Modeling: Alternative Methods and Empirical Results," in *Measurement and Research Methods in International Marketing,* M. Sarstedt, M. Schwaiger and C.R. Taylor (eds.). Emerald Group Publishing Limited, pp. 195-218.
Street, C. T., and Cameron, A. f. 2007. "External Relationships and the Small Business: A Review of Small Business Alliance and Network Research*," *Journal of Small Business Management* (45:2), pp. 239-266.
Tiwana, A., and Kim, S. K. 2015. "Discriminating II Governance," *Information Systems Research* (26:4), pp. 656-674.
Tiwana, A., and Konsynski, B. 2010. "Complementarities between Organizational It Architecture and Governance Structure," *Information Systems Research* (21:2), pp. 288-304.
Vossen, R. W. 1998. "Relative Strengths and Weaknesses of Small Firms in Innovation," *International Small Business Journal* (16:3), pp. 88-94.