

## **Locating IT in the context of Knowledge Management for competitive advantage**

JAMES VINING OLUGBEMI OJO  
Namibia University of Science and Technology, Namibia

### **Abstract**

The possession of IT capability by an organization is not necessarily a “fait accompli” for achievement of competitive advantage as business processes and environmental factors have been identified as significantly impactful in the achievement of this goal (Chen et al., 2014). This opinion paper therefore examines at various factors that have been identified such as dynamic capability, imitation capacity, knowledge management, all in the context of all firms being a ‘collection of activities, a collection of technologies’ (Porter, 1985, pp. 60-78). The extent to which, and how a firm can effectively and efficiently develop, apply and protect its Knowledge Management capability to attain competitive advantage and sustainability is essential and requires further studies rather than IT capability per se. There is relatively little literature in the area of achieving competitive advantage, in the context of IT capability, dynamic capability and knowledge management. This is important for survival and sustainability of Small and Medium Enterprises (SMEs)/Small Medium and Micro Enterprises (SMMEs) who are ab initio disadvantaged with respect to acquisition of IT capabilities.

### **Introduction**

Previous studies have supported positive correlation between information technology capability and firm performance (Bharadwaj, 2000, Santhanam and Hartono, 2003). However, this statistically significant relationship which held for the 1990s when proprietary information systems dominated the IT industry no longer seem to hold. The 2000s are now characterized by more standardized and homogeneous information systems with the rapid adoption of ERP and web technologies. However, recent studies, (See e.g. Chae et al., 2014) surprisingly contradict the earlier findings showing no significant link between IT capability and firm performance. This paper therefore suggests and provides awareness of the fallacy in association and correlation of organizational performance, competitive advantage to IT capability at the exclusion of other factors such as Knowledge Management, Dynamic Capabilities, Imitation Capabilities.

### **Analysis of the Field**

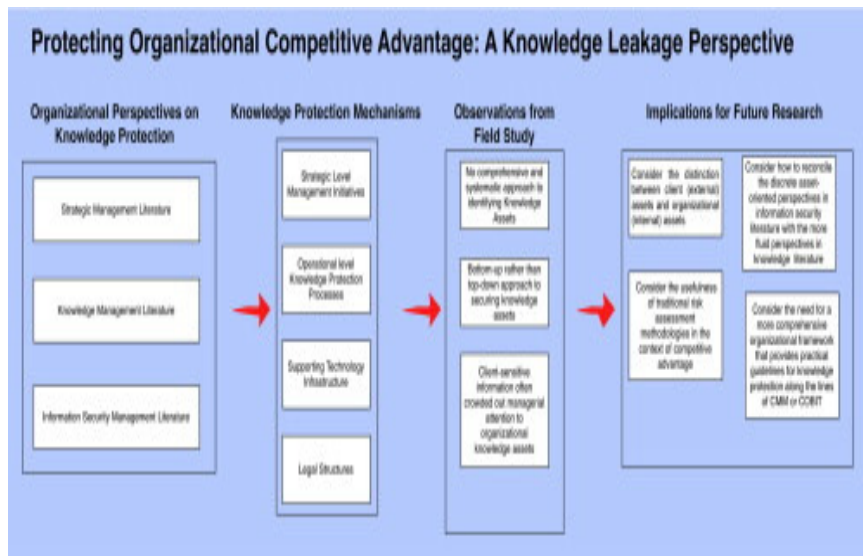
Globalization has opened up most nations to competition and opportunity to gain competitiveness which depends on the ability of the country's industrial capacity to innovate and upgrade (Porter (1990). In the value chain model earlier developed, Porter shows that all firms is a ‘collection of activities, a collection of technologies’ (Porter, 1985, pp. 60-78). Technology is active in every value activity in a company, and

technological change can affect competition through its impact on virtually any of these business processes. Information Technology (IT) can, therefore, affect competitive advantage through determining relative cost position or differentiation.

Understanding sources of sustained competitive advantage has become a major area of research in strategic management (Barney, 1991). Building on the assumptions that strategic resources are heterogeneously distributed across firms and that these differences are stable over time, Barney established a relationship between these firm resources and sustained competitive advantage and furthermore resolved that the four empirical indicators of the potential of firm resources to generate sustained competitive advantage are value, rareness, imitability, and substitutability. It therefore means that competitive advantage is the outcome of effective and efficient use of the several firm resources to produce customer value that is rare, difficult to imitate and substituted.

In the achievement of competitive edge for businesses, knowledge management does play a key role and by extension, therefore, IT equally plays a role. Knowledge Management can generally be described as combined and focused management of a firm's organization's knowledge resources in order to create value, achieve strategic objectives and sustainability. This will therefore ensure that Knowledge Management provides effective and efficient management of the initiatives, processes, strategies, and systems that sustain and enhance the storage, assessment, sharing, refinement, and creation applications must convey two types of information. Based on this premise, Knowledge Management will ensure availability of support information such as who, what, when, where, with what, and why are all business processes in place and continuously improved while effective IT capability will provide guidance and strengthening of competence and capability to accomplish the set tasks. Ahmad et al. (2014) in an Australian field study investigated how and to what extent the resources and business processes were deployed in 11 knowledge-intensive organizations. Surprisingly they found that there was no evidence of a systematic and comprehensive management approach to the identification and protection of knowledge assets essential for the achievement of competitive advantage. Approaches were often haphazard, driven in a bottom-up fashion with much of the responsibility delegated to individual employees and knowledge owners. Secondly, concerns about confidentiality of organizations' operational data (e.g., client details), often crowded out managerial attention to protecting organizations' own knowledge and information assets. Based on these observations, it became obvious that there was need for awareness and protection of comprehensive frameworks to address knowledge leakage from a strategic perspective.

One approach towards achieving this is offered by (Ahmad, Bosua & Scheepers, 2014) who as shown in the diagram below suggest that knowledge protection mechanisms will be addressed from strategic, operational, technology and legal perspectives. They identified established Knowledge Management process as a crucial element in the protection of knowledge and organizational performance.



Taken from Ahmad, A., Bosua, R., & Scheepers, R. (2014). *Protecting organizational competitive advantage: A knowledge leakage perspective*. *Computers & Security*, 42, 27-39.

Another area of topical interest to both researchers and practitioners in recent times involves whether information technology (IT) can serve as a source of sustained competitive advantage and how this can be accomplished. In the study done by Mata et al. (1995), they explored this issue through the adoption of a resource-based view of the firm. Advocates of this theory posit that firms' resources and capabilities can be the foundation of a sustained competitive advantage when one or more of the following conditions apply: (1) a firm is uniquely positioned (being at the "right place at the right time") to acquire the resources/capabilities, (2) the resources/capabilities can only be developed over long periods of time, (3) the resources/capabilities represent taken-for-granted, tacit, unspoken attributes of the firm, (4) the competitive advantage arises through a large number of small decisions and actions rather than through a few large decisions and actions, and (5) the resources/capabilities are socially complex (i.e., such as a firm's culture, reputation, or trustworthiness). The authors then posited that five specific attributes of IT might serve as possible sources of sustained competitive advantage. These are customer switching costs, access to capital, proprietary technology, technical IT skills, and managerial IT skills. They finally concluded that of these five attributes only IT managerial skills is likely to be a source of sustained competitive advantage. This is an attribute that cannot be easily imitated or substituted.

### Preliminary implications

Information technology is generally considered an enabler of a firm's agility. Typically, it is expected that greater IT investment enables a firm to be more agile. However, it is not uncommon that IT can also hinder and sometimes even impede organizational agility. As such, some scholars have proposed that organizations need to develop superior firm-wide IT capability to successfully manage their IT resources (Lu, and Ramamurthy, 2011). The implication is that IT capability needs to be conceptualized and

measured as a latent construct that is reflected in its three dimensions: IT infrastructure capability, IT business spanning capability, and IT proactive stance. This study among others has shown that there is a significant positive relationship between IT capability and the two types of organizational agility. Also, there is a significant positive joint effect of IT capability and IT spending on operational adjustment agility but not on market capitalizing agility. It can therefore be concluded that in the context of the contradictory effect of IT on agility, while more IT spending does not lead to greater agility, spending it in such a way as to enhance and foster IT capabilities does. There is initial empirical evidence to better understand essential IT capabilities and their relationship with organizational agility.

Further evidence in support of this position is presented in the study by Ram, Wu and Tagg (2014). They built a conceptual model, which draws upon information systems implementation theory to investigate the relationship between critical success factors (CSFs) related to the implementation of ERP software and the goal of competitive advantage. The model they developed was tested with data from a survey of 217 Australian organisations, using structural equation modelling (SEM). They found that organisations can best achieve competitive advantage by carefully managing a) training and education, and b) system integration activities. However, well-conducted business process re-engineering or good project management does not necessarily lead to competitive advantage. The conclusion is that some CSFs do influence competitive advantage but that others may not. The results confirm that overall project delivery outcomes can be improved by understanding the influence of factors on both project management performance and post-implementation performance.

### **Future Directions**

The concept of business models has reached global impact, both for company's competitive success and in management science. According to Wirtz et al. (2016), application of business models in diverse areas has led to a previously very heterogeneous comprehension of the concept. Yet, by means of investigating the origin and theoretical development of the concept, they have developed a converging business model view. Furthermore, they were able to identify four essential research foci: innovation, change & evolution, performance & controlling and design. In triangulation with assessing future research perspectives the above-mentioned researchers through a survey of twenty-one international experts, they concluded that the areas of IT in innovation, change & evolution, and design are significant for the future development of the business model research field. However, there is need for extension of this research into the areas of Knowledge Management and Organizational Performance to achieve competitive advantage and sustainability.

Future direction and research on Talent Management (TM) has been lagging behind businesses. This is one vital area for achievement of competitive advantage and the role of IT both at multiple levels and in multiple contexts. Al Ariss, Cascio and Paauwe (2014), have so far developed a model of issues in the study of TM and identified several key trends that are now, and will continue to influence the practice and study of TM in the future.

Another developing area for future research is highlighted in the study by Nam-bisan (2013). He developed the framework that considered the information technology's (IT's) dual roles as operand resource and as operant resource and its impact on innovation process and on innovation outcome. He posited that lots of advance has been made in understanding IT's role as operand resource in innovation and considera-

ble opportunity does exist to explore IT's emerging role as operant resource in innovation. However, knowledge gaps still exist with regards to the potential impact of IT on and contribution to product/service innovation literature.

De Massis et al. (2013), reviewed and systematised prior work on technological innovation in family firms and thereby opened up an agenda to guide future research into this promising area. They showed that family involvement has direct effects on innovation inputs (e.g., R&D expenditures), activities (e.g., leadership in new product development projects), and outputs (e.g., number of new products), as well as moderating effects on the relationships between these steps of technological innovation. The article uses theories applied in family business research (e.g., agency theory) to discuss opportunities for extending technological innovation frameworks by considering family involvement.

As businesses are increasingly becoming conscious of sustainability, global sustainability is increasingly influenced by economic growth and social change in non-OECD countries, especially in Asia, (Berkhout et al., 2017). Growth models suggest that industrializing economies will become first relatively more resource- and pollution-intensive, before becoming more resource-efficient and less polluting, following the pattern of higher-income economies. This 'environmental convergence' is assumed to parallel economic convergence during processes of catching-up by latecomer countries. There is therefore need for future research to accelerate environmental convergence, or to achieve pathways of 'green growth'. Further research and future direction need to place greater emphasis on IT role. Berkhout et al. (2017), have set out a conceptual framework for assessing the role of experiments, and for evaluating how they link with and become anchored in alternative more sustainable regimes. They posited that sustainability experiments represent a potentially significant new source of innovation and capability-formation, linked to global knowledge and technology flows, which could influence emergent socio-technical regimes and thereby contribute to alternative development pathways.

Another area of future research arises from the study of Lim et al. (2013). In the study, they investigated the development and sustainability of a firm's information technology (IT) capability reputation from an IT executive's standpoint. Building on institutional theory, they posited that IT executives will try to achieve external legitimacy (i.e., project an image of superior IT capability to external stakeholders) in the hope that the top management team and board members will reciprocate by elevating the internal legitimacy of IT executives. They hypothesized that firms that develop such a culture of reciprocity with their IT executives are more likely to sustain their IT capability reputation. Econometric results based on panel data for 1,326 large U.S. firms from a wide spectrum of industries over a 13-year period (1997-2009) validated this prediction. More specifically, they found that IT executives with greater structural power (e.g., higher job titles) or IT-related expert power (e.g., IT-related education or experience) are more likely to attract public recognition for their firm's IT capability. This is likely to lead to promotion of their IT executives, and these promoted IT executives are more likely to stay longer with their firms. This continuity in IT strategic leadership is positively associated with the firm's ability to sustain its IT capability reputation. There are therefore further research areas with regards to IT roles in employee motivation and retention to examine issues such as the effect of the creation of a cycle of positive reciprocity with IT executives.

According to Dao et al. (2011), sustainability has increasingly become important to business research and practice over the past decades as a result of rapid depletion of natural resources and concerns over wealth disparity and corporate social

JAMES VINING OLUGBEMI OJO

responsibility. Within this realm, the so-called triple bottom line seeks to evaluate business performance on its impacts on the environment and interested stakeholders besides profitability concerns. Currently Management Information Systems research work done is more constrained to green IT, which focuses mostly on the reduction of energy consumption of corporate IT systems.

### **Conclusion**

In conclusion, it is apparent that achievement/acquisition of IT capability per se will not result in achievement of competitive advantage without taking Knowledge Management into consideration, indeed as the foundation.

### *Correspondence*

James Vining Olugbemi Ojo  
Namibia University of Science and Technology  
Namibia

## References

- Ahmad, A., Bosua, R., & Scheepers, R. (2014). Protecting organizational competitive advantage: A knowledge leakage perspective. *Computers & Security*, 42, 27-39. doi:10.1016/j.cose.2014.01.001
- Al Ariss, A., Cascio, W. F., & Paauwe, J. (2014). Talent management: Current theories and future research directions. *Journal of World Business*, 49(2), 173-179. doi:10.1016/j.jwb.2013.11.001
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of management*, 17(1), 99-120. doi:10.1177/014920639101700108.
- Berkhout, F., Wieczorek, A. J., & Raven, R. (2017). Avoiding environmental convergence: a possible role for sustainability experiments in latecomer countries?. *Institutions and Economies*, 367-385. Retrieved from <http://jice.um.edu.my/>.
- Bharadwaj, A. S. (2000). A Resource-Based Perspective on Information Technology Capability and Firm Performance: An Empirical Investigation. *MIS Quarterly* 24(1), 169-196. doi:10.2307/3250983.
- Chae, H. C., Koh, C. E., & Prybutok, V. R. (2014). Information technology capability and firm performance: Contradictory findings and their possible causes. *MIS Quarterly*, 38(1), 305-326. doi:10.25300/misq/2014/38.1.14.
- De Massis, A., Frattini, F., & Lichtenthaler, U. (2013). Research on technological innovation in family firms: Present debates and future directions. *Family Business Review*, 26(1), 10-31. doi: 10.1177/0894486512466258.
- Dao, V., Langella, I., & Carbo, J. (2011). From green to sustainability: Information Technology and an integrated sustainability framework. *The Journal of Strategic Information Systems*, 20(1), 63-79. doi:10.1016/j.jsis.2011.01.002.
- Lim, J. H., Stratopoulos, T. C., & Wirjanto, T. S. (2013). Sustainability of a firm's reputation for information technology capability: The role of senior IT executives. *Journal of Management Information Systems*, 30(1), 57-96. doi: 10.2753/MIS0742-1222300102.
- Lu, & K. (Ram) Ramamurthy. (2011). Understanding the Link Between Information Technology Capability and Organizational Agility: An Empirical Examination. *MIS Quarterly*, 35(4), 931. doi:10.2307/41409967.
- Mata, F., Fuerst, W., & Barney, J. (1995). Information Technology and Sustained Competitive Advantage: A Resource-Based Analysis. *MIS Quarterly*, 19(4), 487-505. doi:10.2307/249630.
- Nambisan, S. (2013). Information technology and product/service innovation: A brief assessment and some suggestions for future research. *Journal of the Association for Information Systems*, 14(4), 215

Porter, M. E. (1985). *The Competitive Advantage: Creating and Sustaining Superior Performance*. NY: Free Press.

Porter, M. E. (1990). The Competitive Advantage of Nations - *Harvard Business Review*. Retrieved from <https://hbr.org/1990/03/>

Ram, J., Wu, M.-L., & Tagg, R. (2014). Competitive advantage from ERP projects: Examining the role of key implementation drivers. *International Journal of Project Management*, 32(4), 663–675. doi:10.1016/j.ijproman.2013.08.004

Santhanam, R. & Hartono, E. (2003). Issues in Linking Information Technology Capabilities to Firm Performance. *MIS Quarterly*, 27(1), 125-153. doi:10.2307/30036521.

Wirtz, B. W., Pistoia, A., Ullrich, S., & Göttel, V. (2016). Business models: Origin, development and future research perspectives. *Long Range Planning*, 49(1), 36-54. doi: 10.1016/j.lrp.2015.04.001.

Yang Chen, Yi Wang, Saggi Nevo, Jiafei Jin, Luning Wang & Wing S Chow (2014). IT capability and organizational performance: the roles of business process agility and environmental factors, *European Journal of Information Systems*, 23:3, 326-342 doi: 10.1057/ejis.2013.4.