Impact of IT Competency on Organizational Agility With Mediation Role of Absorptive Capacity: Evidence from the Egyptian High Tech Driven SMEs

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Abstract

The purpose of this research is to empirically investigate the relation among IT competency (ITC) and organizational agility (OA)with mediating role of absorptive capacity (AC) in the Egyptian high tech driven SMEs. The objectives of this research are: to investigate how ITC affects OA in the Egyptian high tech driven SMEs, to examine how ITC affects AC in the Egyptian high tech driven SMEs, to identify how AC affects OA in the Egyptian high tech driven SMEs, to test the mediation role of AC in the relationship between ITC and OA in the Egyptian high tech driven SMEs. The study followed the quantitative approach and data gathered from a survey of 419 acceptable responses. The results were analysed employing by structural equation model analyses (SEM) using analysis of a moment structures (AMOS) software. The main conclusions drawn from this study are: the direct effect among ITCand OA is statistically significant, the direct effect among ITCand ACis statistically significant, the direct effect among ACand OA is statistically significant, Finally, ACpartially mediates the relation among ITCand OA. This paper can provide valuable insights into the influence of ITC on OA within an emerging market context. These insights can enrich current understanding which often focuses on developed economies and shed light on how an organization's ability to learn and adapt from external knowledge sources influences its agility in a dynamic environment. Focusing on the Egyptian High tech driven SMEs. Moreover, the research findings can inform policymakers in Egypt about the importance of fostering IT skills and infrastructure within organizations. This can contribute to creating a more technology-driven and agile business environment for Egyptian companies.

***Keywords**: IT Competency, Absorptive Capacity, Organizational Agility.*

Introduction

Organizational agility (OA) is crucial for modern organizations to not only survive but also thrive in the information era (Felipe et al., 2016; Lu & Ramamurthy, 2011). The 2018 Pulse of the Profession report highlighted an increasing focus on the significance of organizational agility in enabling companies to maintain their competitiveness. In recent years, the impact of information technology (IT) on the creation of organizational agility (OA) has been a prominent focus for both managers and scholars (Queiroz et al., 2018). Contemporary information technology, such as cloud computing and big data analytics, is specifically designed to assist organizations in maintaining competitiveness by swiftly adapting to market changes, executing strategies efficiently, and achieving lucrative business outcomes (Liu et al., 2018). Information technology (IT) is commonly seen as a company's ability to effectively use IT resources to manage information throughout the entire organization (Mao et al., 2016). ITC seems to enhance OA, however this function may not always be evident. Amazon.com, Inc. is a renowned e-commerce corporation that has its own agile IT operations support called Amazon Web Services, as well as offline operations. Amazon.com ceased operations of its China marketplace on July 18, 2019, due to its failure to adjust to local conditions and effectively respond to the dynamic market (Wan, 2019). Researchers have also highlighted the possible

* This article was submitted in April 2024, and accepted for publishing in May 2024.
 DOI: 10.21608/AJA.2024.280800.1622

impact of information technology in hindering open access (Rettig, 2007). Hence, it is imperative to conduct additional inquiries into the correlation between ITC and OA.

Scholars concentrated on the AC theory to address this knowledge gap and proposed that an organization's ability to acquire, assimilate, transform, and use external knowledge can result in innovation, flexibility, and performance (Felipe et al., 2016; Liu et al., 2013; Roberts et al., 2012). The integration of IT with other business processes and resources is crucial to the creation of substantial business value (Chen et al., 2014; Mao et al., 2015; Melville et al., 2004). Therefore, scholars put forth a hierarchical model comprising three distinct levels of capabilities and postulated that OA is induced by ITC through AC (Felipe et al., 2016). The role of AC, nevertheless, in the IT–agile relationship continues to be complex and nuanced. On the one hand, it is unclear how AC takes advantage of a sequence of low-level ITC. Although AC is regarded as a significant method for delivering IT-enabled changes (Cooper and Molla, 2017), numerous procedures for shaping high levels of performance from IT to AC have been identified. There is not always a clear correlation between AC and IT competencies, such as the utilization of data tools (Wang and Byrd, 2017; Wu et al., 2019). The literature, on the other hand, shows that AC has a variety of effects when shaping various high-level organizational capabilities. Arias-Perez et al. (2019) noted that AC is positively associated with the implementation of operational innovation, in contrast to the capability of acquisition, as noted by some scholars. How ITC influences OA via AC should therefore be investigated further. Based on the above, this paper is guided by the following objectives:

1- To investigate how ITC affects OA in the Egyptian high tech driven SMEs.

2- To examine how ITC affects AC in the Egyptian high tech driven SMEs.

3- To identify how AC affects OA in the Egyptian high tech driven SMEs.

4- To test the mediation role of AC in the relationship between ITC and OA in the Egyptian high tech driven SMEs.

Literature Review

IT Competency (IT knowledge, IT operations, IT objects) is considered as the independent variable, Absorptive Capacity is considered as the mediator variable, and Oorganizational Agility is considered as the dependent variable.

IT Competency (ITC)

The literature has represented ITC as an important organizational capability, which fosters a firm's ability to realize superior business value (Bi et al., 2011; Chen et al., 2014; Moraes and Coombs, 2019). According to Bharadwaj (2000), it is defined as the ability of the firm to organize and use IT-based resources in coordination with other organizational capabilities to attain long-run competitive advantages. Although, literature suggests extensive analysis on the IT capability-firm performance relationship (Bharadwaj, 2000; Tallon, 2008), yet, there are very few studies, that explain the contribution of IT capability toward enhanced agility in contemporary business environments (Chen et al., 2014; Panda and Rath, 2016, 2018a). Based on the research conducted by (Lu & Ramamurthy, 2011; Gao et al., 2020).

IT business spanning represents the strategic IT-business integration and partnership, with special focus on efficient exploration and exploitation of IT resources to promote business objectives. Hence, this capability affects the ability of businesses to recognize the value of IT investments is facilitated by IT-business alignment (Weill et al., 2002). The ability of a company to proactively investigate new IT innovations or make the best use of current IT resources in order to identify business opportunities is referred to as IT proactive stance. Thus, this competency reflects the organizations' ability to consistently keep up with IT innovations and to constantly strive for novel ways to enhance the efficient utilization of IT (Galliers, 2006).

Absorptive Capacity (AC)

AC is a primary dynamic capability DC relating to a firm's competence in acquiring, assimilating, transforming and exploiting new external knowledge (Noblet et al., 2011; Teece, 2012). AC pertains to the processes of learning, the accumulation of skills, and the transfer of knowledge. According to Schweisfurth and Raasch (2018), these processes increase a firm's capacity for investigating external knowledge sources, adjusting to changes in the environment, fostering innovation, and meeting customer demands.

AC, as defined by Jansen et al. (2005), is a systematic approach through which multiple components of a firm work together to obtain information from external forces that operate beyond its authorized boundaries. Consequently, the learning process is facilitated by the firm's prior knowledge, which serves as a precursor to the effective assimilation of new information. Knowledge acquisition, knowledge adaptation, knowledge renovation-which supports innovative problem solving, ideation, and creative thinking-and knowledge development are the four subcomponents of absorptive capability (Teece, 2007; Pavlou & El Sawy, 2011; Todorova & Durisin, 2007).

Additionally, the process of AC is supported by the company's socialization, coordination, and integration capabilities, which are ingrained in its internal and external routines. This includes how the company engages in broader external value networks, along with its ability to establish internal systems for continuous learning (Yildiz et al., 2024). The mechanisms facilitating the latter primarily involve a comprehensive and profound internal knowledge base, which is enriched by standards, codes, and frames of reference. This knowledge base facilitates the assimilation of new external knowledge into existing knowledge (Iandolo et al., 2021).

Organizational Agility (OA)

Organizational agility is a capability at the organizational level that empowers a company to identify and capitalize on competitive and innovative opportunities (Felipe et al., 2016). This skill is fundamental to the success of organizations in the twenty-first century when it comes to navigating uncertainty and instability. Change and adaptation, encompassing both proactive and reactive aspects, form the foundation of the OA concept (Felipe et al., 2016). As stated by Lu and Ramamurthy (2011), OA deals with a variety of changes in the internal and external business environment through the implementation of innovative and prompt responses. By assisting organizations in recognizing market-related changes as opportunities, these responses reflect the characteristics of market agility and foster firm growth. Furthermore, agility provides firms with quick and straightforward methods for refining business processes, enabling them to adapt to both volatile internal and external changes (van Oosterhout et al., 2006). The ability of the firm to deal with unforeseen changes in the business environment is defined by OA, which is a dynamic firm-wide capability (Irfan et al., 2019).

In conclusion, based on previous research, ITC refers to a company's ability to regularly keep up with IT advancements and continuously seek new methods to enhance the efficient utilization of IT (Galliers, 2006). Furthermore, the company's AC is enhanced by its ability to socialize, coordinate, and integrate various capabilities that are ingrained in its internal and external routines. This includes its engagement in broader external value networks and its capacity to establish continuous learning systems internally (Yildiz et al., 2024). Additionally, OA refers to the firm's capacity to effectively adapt to unforeseen changes in the business environment (Irfan et al., 2019). The relationship between those variables is anticipated, and this will be elucidated in the subsequent hypotheses.

Conceptual Framework and Hypotheses

Based on the literature review discussed above, the research conceptual framework was formulated as below:

Research Hypotheses

- **H1:** It is expected that, ITC has an impact on OA in the Egyptian companies
- **H2:** It is expected that, ITC has an impact on AC in the Egyptian companies
- **H3:** It is expected that, AC has an impact on OA Egyptian companies
- **H4:** It is expected that, AC mediates the relationship between ITC and OA in the Egyptian companies

The operational definitions for the conceptual framework are illustrated in Table (1).

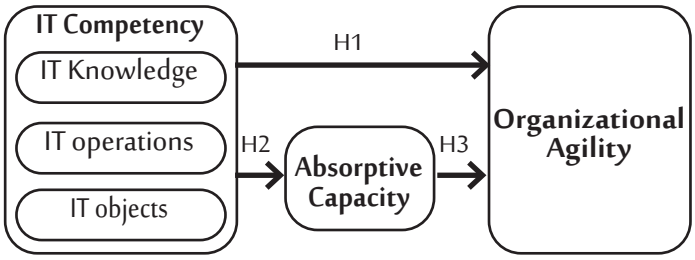

Figure 1 - Conceptual Framework

Operational Definitions

Table 1- Operational Definition

Variables	Dimensions	Source(s)
Independent Variable: IT Competency	IT knowledge IT operations IT objects	Tippins and Sohi (2003); Lu and Ramamurthy (2011)
Mediator Variable: Absorptive Capacity		Jansen et al. (2005), Pavlou & El Sawy (2006)
Dependent Variable: Organizational Agility		Mao et al., (2021)

Research Methodology

According to Creswell (2012) quantitative research is an investigation method that may be used to describe trends and explain the relation among variables found in the literature. A questionnaire is utilised to collect data for this research. The researchers drew a convenience-sample out of the population. The sampling frame of this paper is the Egyptian Business Directory regarding High tech driven SMEs, which is an online database that provides information about the SMEs in Egypt, such as their names, addresses, contact details, industry, size, and age. This sampling frame is chosen because it covers the target population of the study, and it is available and updated regularly and in addition to the limited time and cost. The questionnaire is distributed via (google forms online surveys). The questionnaire's data is analysed using the Statistical Package for Social Sciences (SPSS) to analyse quantitative data, including descriptive statistics (frequencies and percentages) and inferential statistics (correlations), and Structural Equation Model analyses (SEM) using Analysis Moment of Structures (AMOS) software to analyze the hypothesized model.

Results and Findings

The research questionnaire was administered to seven hundred (700) respondents, 450 questionnaires representing 64.3% were returned, and 58 questionnaires representing 8.3% were incomplete or ineligible or refusals and 250 (35.7%) were not reached. There were 419 acceptable responses, a response rate 56%, which is highly adequate for the nature of this study.

Measurement items have standardized loading estimates of 0.5 or higher (ranging from 0.548 to 0.944 at the alpha level of 0.05, indicating the convergent validity of the measurement model.

The Average Variances Extracted (AVE) should always above 0.50 (Hair et al., 2019. AVE of the particular constructs (IT knowledge = 0.805, IT operations =0.721, IT objects =0.586, Absorptive Capacity =0.592, and Organizational Agility =0.750) are more than 0.500. Overall, these measurement results are satisfactory and suggest that it is appropriate to proceed with the evaluation of the structural model.

Composite reliability (CR) assesses the reliability of a construct in the measurement model. CR of (IT knowledge = 0.925, IT operations =0.885, IT objects =0.838, Absorptive Capacity =0.894 and Organizational Agility =0.937). So, it clearly identified that in measurement model all construct have good reliability.

Assessment of Multicollinearity

Tolerance and variance inflation factors (VIF) were assessed to detect multicollinearity. Hair et al. (2011) suggested that multicollinearity should be considered if the VIF value exceeds 5 and the tolerance

value is less than 0.20. Table 2 shows that multicollinearity did not exist among the exogenous latent constructs as all VIF values were <5 and tolerance values exceeded 0.20 as suggested by Hair et al. (2011). Thus, multicollinearity is not an issue in the present study.

Table 2: Assessment of Multicollinearity

Variable	Tolerance	VIF
IT knowledge	.500	2.001
IT operations	.500	1.998
IT objects	.979	1.021

Measurement Model Results:

The 5 factor was subjected to CFA using the AMOS software. DF was 199 (it should be more than 0), c^2 /DF has a value of 2.642, that is less than 3.0 (it should be less than or equal 3.0). The RMSEA was .059 (it should be less than 0.08). The TLI index was .954 which is very close to 1.0 (a value of 1.0 indicates perfect fit). The CFI was .960. All indices are close to a value of 1.0 in CFA, indicating that the measurement models provide good support for the factor structure determined through the CFA.

Structural Model Summary:

The results of structural' model using the AMOS software, shows that DF was 201 (it should be more than 0), c^2 /DF has a value of 2.925, that is less than 3.0 (it should be less than or equal 3.0). The RMSEA was .064 (it should be less than 0.08). The TLI index was .946 which is very close to 1.0 (a value of 1.0 indicates perfect fit). The CFI was .953. All indices are close to a value of 1.0 in CFA, indicating that the measurement models provide good support for the factor structure determined through the CFA.

Table 3: Structural Model - Fit Indices

Goodness of Fit Measures	Name of index	Model Result	Remark
Chi-Square	c^2	587.902	accepted
Degrees of Freedom	DF	201	accepted
Chi-Square/ Degrees of Freedom	c^2 /DF	2.925	accepted
Comparative Fit' Index	CFI	.953	accepted
Tucker Lewis Index	TLI	.946	accepted
Root Mean' Square Error of Approximation	RMSEA	.064	accepted

Structural model

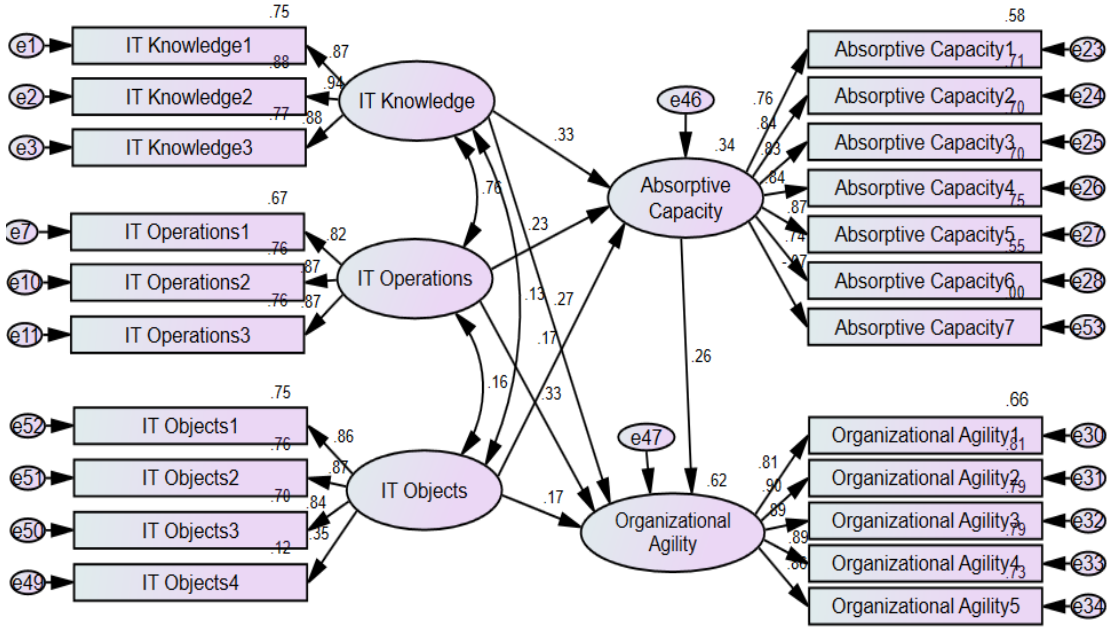

Figure (2) Structural Model (Final Result)

Discussion

This study explores the analytical part performed to test the hypotheses the researcher is seeking to fulfill the research objectives. A discussion of findings and conclusion could now be presented.

Direct Effect Tables

Table 4: Standardized Direct Effects

Variable	IT knowledge	IT operations	IT objects	Absorptive Capacity
Absorptive Capacity	.330	.233	.168	.000
Organizational Agility	.266	.332	.168	.260

Indirect Effect Table

Table 5: Standardized Indirect Effects

Variable	IT knowledge	IT operations	IT objects	Absorptive Capacity
Absorptive Capacity	.000	.000	.000	.000
Organizational Agility	.086	.061	.044	.000

Regarding the first objective: To investigate how ITC affects OA in the Egyptian high tech driven SMEs. Due to the individual tests of significance of the relation among the variables. As expected, a positive relation between IT knowledge and OA (β = 0.266, CR (Critical Ratio) = 7.523, CR > 1.96, p = 0.000, p<0.05). Therefore, (**$H1_{.1}$:** IT knowledge has an impact on OA.) is supported. The level of IT knowledge within an organization is determined by a number of factors, including the caliber of technical and managerial IT skills and IT business experience (Bhatt & Grover, 2005; Ross et al., 1996). Additionally, Tippins & Sohi (2003) and Bhatt & Grover (2005) supported the notion that IT knowledge is the level of technical expertise that an organization possesses.

$H1_{.2}$: IT operations have an impact on OA. (β = 0.332 CR (Critical Ratio) = 6.621, CR > 1.96, p = 0.000, p<0.05) is supported. (Chen et al., 2014) .This type of ITC establishes a technical connection between an organization's IT services and its business processes. IT operations are processes that manage customer and market data through the use of IT (Tippins & Sohi, 2003).

$H1_{.3}$: IT objects have an impact on OA. β = 0.168, CR (Critical Ratio) = 6.213, CR > 1.96, p = 0.000, p<0.05) is supported. Therefore, (**$H1_{.3}$:** IT objects have an impact on OA) is supported. IT objects refer to artifacts that provide a platform for the flow of information, including hardware, software, applications, and IT management services (Tippins & Sohi, 2003).

Based on the results, **H1:** ITC has an impact on OA) is supported. (Liu et al., 2018) The purpose of modern IT, such as cloud computing and big data analytics, is to assist organizations in maintaining their competitive edge by facilitating fast reaction to shifting market conditions, effective strategy execution, and successful business outcomes. Scholars have also drawn attention to the potential role of IT in OA's demise (Overby et al., 2006; Rettig, 2007; van Oosterhout et al., 2006). ITC appears to strengthen OA, but this role may not be observed in all ways, according to Mao et al. (2021). Imprudent IT investments may prevent organizations from sensing and responding effectively and fast (Lu & Ramamurthy, 2011; Rettig, 2007). Furthermore, IT is manifested across various facets, each possessing a distinct characteristic that results in divergent approaches to value generation and long-term viability (Bhatt & Grover, 2005). Different types of IT can also exert unique influences on decision-making processes, which may impact an organization's ability to adapt to changes in an effective and efficient manner (Bloom et al., 2014). ITC is therefore a fundamental functional capability that must be developed in order to construct higher-level organizational capabilities, including AC and OA (Felipe et al., 2016; Lee et al., 2015). Nevertheless, decision makers may encounter challenges and unanticipated errors due to an IT infrastructure that lacks flexibility (Seo & La Paz, 2008). Furthermore, the influence of IT in shaping high-level organizational capabilities may diminish (Wang & Byrd, 2017; Wu et al., 2019).

Regarding the second objective: To examine how ITC affects Absorptive Capacity. The result shows that:

- **$H2_{.1}$:** IT knowledge has an impact on Absorptive Capacity. (β = 0.330, CR (Critical Ratio) = 7.523, CR > 1.96, p = 0.000, p<0.05) is supported.
- **$H2_{.2}$:** IT operations have an impact on Absorptive Capacity. (β = 0.233, CR (Critical Ratio) = 6.213, CR > 1.96, p = 0.000, p<0.05) is supported.

- **$H2_{.3}$:** IT objects have an impact on Absorptive Capacity. (β = 0.168, CR (Critical Ratio) = 3.868, CR > 1.96, p = 0.000, p<0.05). is supported

Based on the results, H2: ITC has an impact on Absorptive Capacity. is supported. In processes that provide value for IT businesses, the role of AC has been emphasized. To achieve distinct business values, ITC and AC should create synergies (Liu et al., 2013; Roberts et al., 2012). Furthermore, since ITC is regarded as a significant originator of AC, the direct effects of ITC on AC have been studied (Iyengar et al., 2015).

Regarding the third objective: To identify how AC affects OA. The result shows that AC has an impact on OA. (β = 0.260, CR (Critical Ratio) = 6.140, CR > 1.96, p = 0.000, p<0.05) is supported. The conceptual explanations of AC outcomes, including innovation, flexibility, and performance, are the focus of research grounded in dynamic capability theories (Iyengar et al., 2015; Joshi et al., 2010). Because of this, researchers have adopted dynamic capabilities theory as a framework to refer to when determining the role of OA, and AC and OA are connected as two work roles. Moreover, the implementation of AC can assist organizations in cultivating enhanced levels of capability and organizational responsiveness to dynamic environments (Cooper and Molla, 2017; Felipe et al., 2016).

Regarding the fourth objective: To test the mediation role of AC in the relationship between ITC and OA. The result shows that A statistically significant indirect impact IT knowledge and OA through AC (P = 0.002, P<0.05). The results of the mediation effect indicate that there is *partial mediation* effect of the ACbetween the relationship of IT knowledge and OA.

A statistically significant indirect impact IT operations and OA through AC(P = 0.002, P<0.05). The results of the mediation effect indicate that there is partial mediation effect of the ACbetween the relationship of IT operations and OA.

A statistically significant indirect impact IT objects and OA through AC(P = 0.001, P<0.05). The results of the mediation effect indicate that there is partial mediation effect of the ACbetween the relationship of IT objects and OA.

Based on the results, (H4: AC mediates the relationship between ITC and OA) is supported. This is in the same vein as the assessment made by Mao et al. (2021) that AC is anticipated to serve as a middleman between ITC and OA. Additionally, there are a number of ways in which ITC might influence OA, including operational ambidexterity, AC, and open innovation capabilities (Cepeda & Arias-Perez, 2018; Felipe et al., 2016; Lee et al., 2015). Additional empirical data is also needed for a crucial strategy that implements IT-enabled changes and assesses the degree to which intermediate AC influences business actions in order to achieve IT-enabled OA (Mao et al., 2021). The route from ITC to OA is further complicated because AC has distinct effects on organizational acquisition and exploitation capacities (Arias-Perez et al., 2019).

Conclusion

The aim of this paper is to investigate the relation among IT Competency and Organizational Agility with mediating role of AC in the Egyptian High tech driven SMEs. It concludes the following: the direct effect between IT knowledge and Organizational Agility is statistically significant, the direct effect between IT operations and Organizational Agility is statistically significant, the direct effect between IT objects and Organizational Agility is statistically significant, the direct effect between IT knowledge and AC is statistically significant, the direct effect between IT operations and AC is statistically significant, the direct effect between IT objects and AC is statistically significant and finally, the direct effect between AC and Organizational Agility is statistically significant.

Authors' Contributions

This paper has dual contributions: both academic and practical.

Regarding the Academic Contribution, this research contributes to the existing body of knowledge on ITC by investigating its multidimensional nature (IT knowledge, IT operations, IT objects) and its relationship with Organizational Agility (OA). The study can strengthen understanding of Absorptive Capacity's role in mediating the relationship between ITC and OA. This can shed light on how an organization's ability to learn and adapt from external knowledge sources influences its agility in a dynamic environment. Focusing on the Egyptian High tech driven SMEs, this paper can provide valuable insights into the influence of ITC on OA within an emerging market context. These insights can enrich current understanding which often focuses on developed economies. Furthermore, the results show that, the estimated structural model corroborated the four hypotheses, as IT Competency (IT knowledge, IT operations and IT objects) construct explained 33.5 % of ACvariance ($R^2 = 0.335$), Besides, IT Competency (IT knowledge, IT operations and IT objects) through ACexplained 62.5 % of OA variance ($R^2 = 0.625$).

Regarding the Practical Contribution, the findings can inform organizational development strategies for enhancing ITC across its three dimensions. This might involve targeted training programs, knowledge management initiatives, and investments in appropriate IT infrastructure. The research can guide organizations in fostering OA by leveraging their IT competency. This could involve strategies for rapid decision-making, embracing new technologies, and adapting to changing market conditions. Furthermore, the research findings can inform policymakers in Egypt about the importance of fostering IT skills and infrastructure within organizations. This can contribute to creating a more technology-driven and agile business environment for Egyptian companies.

Limitations and Suggestions for Future Research

- First: researchers in this study used quantitative approach. Hence, future study should therefore consider adopting a mixed approach to provide richer data and findings on this topic.
- Second, employing a longitudinal research design can track the evolution of ITC and its impact on OA over time. This can provide insights into the long-term benefits of sustained investments in IT capabilities.
- Third, Future research could explore the influence of ITC on OA within specific industries in Egypt, such as tourism, healthcare, or banking. This can reveal potential variations based on industry characteristics.

References:

- Arias-Pérez, J., Alegre, J., & Villar, C. (2019). Triggering Open Innovation Processes Through Organizational Emotional Capability and Rival's Absorptive Capacity Orientation. ***Ieee Transactions on Engineering Management***,69 (2), 388-398., Doi: https://doi.org/10.1109/TEM.2019.2955439
- Bharadwaj, A. S. (2000). A Resource-Based Perspective on Information Technology Capability and Firm Performance: An Empirical Investigation. ***Mis Quarterly***, 169-196. Doi: https://doi.org/10.2307/3250983
- Bhatt, G. D., & Grover, V. (2005). Types of Information Technology Capabilities and their Role in Competitive Advantage: An Empirical Study. ***Journal of Management Information Systems***, 22 (2), 253-277. Doi: https://doi.org/10.1080/07421222.2005.11045844
- Bi, R., Kam, B., & Smyrnios, K. (2011). Building It Capability to Increase Organizational Performance: A Path-oriented Process. ***Pacific Asia Journal of the Association for Information Systems***, 3 (3), 3. Doi: https://aisel.aisnet.org/pajais/vol3/iss3/3/
- Bloom, N., Garicano, L., Sadun, R., & Van Reenen, J. (2014). The Distinct Effects of Information Technology and Communication Technology on Firm Organization. ***Management Science***, 60 (12), 2859-2885. Doi: https://doi.org/10.1287/mnsc.2014.2013
- Cepeda, J., & Arias-Pérez, J. (2019). Information Technology Capabilities and Organizational Agility: The Mediating Effects of Open Innovation Capabilities. ***Multinational Business Review***, 27 (2), 198-216. Doi: https://doi.org/10.1108/MBR-11-2017-0088
- Chen, Y., Wang, Y., Nevo, S., Jin, J., Wang, L., & Chow, W. S. (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: https://doi.org/10.1057/ejis.2013.4
- Cooper, V., & Molla, A. (2017). Information Systems Absorptive Capacity For Environmentally Driven Is-Enabled Transformation. ***Information Systems Journal***, 27(4), 379-425. Doi: https://doi.org/10.1111/isj.12109
- Creswell, J. W. (2012). ***Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research***. 4th ed. Pearson Education.
- Felipe, C. M., Roldán, J. L., & Leal-Rodríguez, A. L. (2016). An Explanatory and Predictive Model for Organizational Agility. ***Journal of Business Research***, 69 (10), 4624-4631. Doi: https://doi.org/10.1016/j.jbusres.2016.04.014
- Galliers, R. D. (2006). ***Strategizing for Agility: Confronting Information Systems Inflexibility in Dynamic Environments 1***. In Agile Information Systems (Pp. 1-15). Routledge. Doi: https://api.taylorfrancis.com/content/chapters/edit/download?identifierName=doi&identifierValue=10.4324/9780080463681-1&type=chapterpdf
- Gao, P., Zhang, J., Gong, Y., & Li, H. (2020). Effects of Technical It Capabilities on Organizational Agility: The Moderating Role of It Business Spanning Capability. ***Industrial Management and Data Systems***, 120 (5), 941–961. Doi: https://doi.org/10.1108/IMDS-08-2019-0433
- Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). Pls-Sem: Indeed A Silver Bullet. ***Journal of Marketing Theory and Practice***, 19 (2), 139-152. Doi: https://doi.org/10.2753/MTP1069-6679190202
- Iandolo, F., Loia, F., Fulco, I., Nespoli, C., & Caputo, F. (2021). Combining Big Data and Artificial Intelligence for Managing Collective Knowledge in Unpredictable Environment: Insights From the Chinese Case in Facing Covid-19. ***Journal of The Knowledge Economy***, 12 (4), 1982-1996. Doi: https://doi.org/10.1007/s13132-020-00703-8

- Irfan, M., Wang, M., & Akhtar, N. (2019). Impact of It Capabilities on Supply Chain Capabilities and Organizational Agility: A Dynamic Capability View. ***Operations Management Research***, 12 (3), 113-128. Doi: https://doi.org/10.1007/s12063-019-00142-y
- Iyengar, K., Sweeney, J. R., & Montealegre, R. (2015). Information Technology Use as A Learning Mechanism. ***Mis Quarterly***, 39 (3), 615-642. Doi: https://www.jstor.org/stable/26629623
- Jansen, J. J., Van Den Bosch, F. A., & Volberda, H. W. (2005). Managing Potential and Realized Absorptive Capacity: How Do Organizational Antecedents Matter?. ***Academy of Management Journal***, 48 (6), 999-1015. Doi: https://doi.org/10.5465/amj.2005.19573106
- Joshi, K. D., Chi, L., Datta, A., & Han, S. (2010). Changing The Competitive Landscape: Continuous Innovation Through it-enabled Knowledge Capabilities. ***Information Systems Research***, 21 (3), 472-495. Doi: https://doi.org/10.1287/isre.1100.0298
- Lee, O. K., Sambamurthy, V., Lim, K. H., & Wei, K. K. (2015). How Does it Ambidexterity Impact Organizational Agility?. ***Information Systems Research***, 26 (2), 398-417. Doi: https://doi.org/10.1287/isre.2015.0577
- Liu, H., Ke, W., Wei, K. K., & Hua, Z. (2013). The Impact of It Capabilities on Firm Performance: The Mediating Roles of Absorptive Capacity and Supply Chain Agility. ***Decision Support Systems***, 54 (3), 1452-1462. Doi: https://doi.org/10.1016/j.dss.2012.12.016
- Liu, S., Chan, F. T., Yang, J., & Niu, B. (2018). Understanding The Effect of Cloud Computing on Organizational Agility: An Empirical Examination. ***International Journal of Information Management***, 43, 98-111. Doi: https://doi.org/10.1016/j.ijinfomgt.2018.07.010
- Lu, Y., & K.(Ram) Ramamurthy. (2011). Understanding the Link between Information Technology Capability and Organizational Agility: An Empirical Examination. ***Mis Quarterly***, 931-954. Doi: https://doi.org/10.2307/41409967
- Mao, H., Liu, S., & Zhang, J. (2015). How the Effects of It and Knowledge Capability on Organizational Agility are Contingent on Environmental Uncertainty and Information Intensity. ***Information Development***, 31 (4), 358-382. Doi: https://doi.org/10.1177/0266666913518059
- Mao, H., Liu, S., Zhang, J., & Deng, Z. (2016). Information Technology Resource, Knowledge Management Capability, and Competitive Advantage: The Moderating Role of Resource Commitment. ***International Journal of Information Management***, 36 (6), 1062-1074. Doi: https://doi.org/10.1016/j.ijinfomgt.2016.07.001
- Mao, H., Liu, S., Zhang, J., Zhang, Y., & Gong, Y. (2021). Information Technology Competency and Organizational Agility: Roles of Absorptive Capacity and Information Intensity. ***Information Technology & People***, 34 (1), 421-451. Doi: https://doi.org/10.1108/ITP-12-2018-0560
- Melville, N., Kraemer, K., & Gurbaxani, V. (2004). Information Technology and Organizational Performance: An Integrative Model of It Business Value. ***Mis Quarterly***, 283-322. Doi: https://doi.org/10.2307/25148636
- Moraes, R., & Coombs, C. (2019). ***Information Technology Capability and Organizational Agility on a Health Company***., Available At: https://aisel.aisnet.org/ukais2019/26
- Noblet, J. P., Simon, E., & Parent, R. (2011). Absorptive Capacity: A Proposed Operationalization. ***Knowledge Management Research & Practice***, 9 (4), 367-377. Doi: https://doi.org/10.1057/kmrp.2011.26
- Overby, E., Bharadwaj, A., & Sambamurthy, V. (2006). Enterprise Agility and the Enabling Role of Information Technology. ***European Journal of Information Systems***, 15, 120-131. Doi: https://doi.org/10.1057/palgrave.ejis.3000600

- Panda, S., & Rath, S. K. (2018a). Information Technology Capability, Knowledge Management Capability, and Organizational Agility: The Role of Environmental Factors. ***Journal of Management and Organization***, 27 (1), 1-27. Doi: https://doi.org/10.1017/jmo.2018.9
- Panda, S., & Rath, S. K. (2016). Investigating the Structural Linkage between it Capability and Organizational Agility: A Study on Indian Financial Enterprises. ***Journal of Enterprise Information Management***, 29 (5), 751—773. Doi: https://doi.org/10.1108/JEIM-04-2015-0033
- Pavlou, P. A., & El Sawy, O. A. (2006). From it Leveraging Competence to Competitive Advantage in Turbulent Environments: The Case of New Product Development. Information ***Systems Research***, 17 (3), 198-227. Doi: https://doi.org/10.1287/isre.1060.0094
- Queiroz, M., Tallon, P. P., Sharma, R., & Coltman, T. (2018). The Role of It Application Orchestration Capability in Improving Agility and Performance. ***The Journal of Strategic Information Systems***, 27 (1), 4-21. Doi: https://doi.org/10.1016/j.jsis.2017.10.002
- Rettig, C. (2007). The Trouble with Enterprise Software. ***Mit Sloan Management Review***, 49 (1), 21. Doi: https://search.proquest.com/openview/e470087b8063ef92857d1a5cabc074d9/1?pq-origsite=gscholar&cbl=26142
- Roberts, N. (2015). Absorptive Capacity, Organizational Antecedents, and Environmental Dynamism. ***Journal of Business Research***, 68 (11), 2426-2433. Doi: https://doi.org/10.1016/j.jbusres.2015.02.019
- Roberts, N., Galluch, P. S., Dinger, M., & Grover, V. (2012). Absorptive Capacity and Information Systems Research: Review, Synthesis, and Directions for Future Research. ***Mis Quarterly***, 625-648. Doi: https://doi.org/10.2307/41703470
- Ross, J. W., Beath, C. M., & Goodhue, D. L. (1996). Develop Long-term Competitiveness Through it Assets. ***Mit Sloan Management Review***. Doi: https://sloanreview.mit.edu/article/develop-longterm-competitiveness-through-it-assets/
- Schweisfurth, T. G., & Raasch, C. (2018). Absorptive Capacity for Need Knowledge: Antecedents and Effects for Employee Innovativeness. ***Research Policy***, 47 (4), 687-699. Doi: https://doi.org/10.1016/j.respol.2018.01.017
- Seo, D., & La Paz, A. I. (2008). Exploring the Dark Side of is in Achieving Organizational Agility. ***Communications of the Acm***, 51 (11), 136-139. Doi: https://doi.org/10.1145/1400214.1400242
- Tallon, P. P. (2008). Inside the Adaptive Enterprise: An Information Technology Capabilities Perspective on Business Process Agility. ***Information Technology and Management***, 9, 21-36. Doi: https://doi.org/10.1007/s10799-007-0024-8
- Teece, D. J. (2007). Explicating Dynamic Capabilities: The Nature and Microfoundations of (Sustainable) Enterprise Performance. ***Strategic Management Journal***, 28 (13), 1319-1350. Doi: https://doi.org/10.1002/smj.640
- Teece, D.J. (2012), Dynamic Capabilities: Routines Versus Entrepreneurial Action, ***Journal of Management Studies***, Vol. 49 No. 8, Pp. 1395-1401 Doi: https://www.emerald.com/insight/content/doi/10.1108/JAOC-11-2016-0066/full/html
- Tippins, M. J., & Sohi, R. S. (2003). It Competency and Firm Performance: Is Organizational Learning a Missing Link?. ***Strategic Management Journal***, 24 (8), 745-761. Doi: https://doi.org/10.1002/smj.337
- Todorova, G., & Durisin, B. (2007). Absorptive Capacity: Valuing a Reconceptualization. ***Academy of Management Review***, 32 (3), 774-786. Doi: https://doi.org/10.5465/amr.2007.25275513

- Van Oosterhout, M., Waarts, E., & Van Hillegersberg, J. (2006). Change Factors Requiring Agility and Implications for it. ***European Journal of Information Systems***, 15, 132-145. Doi: https://link.springer.com/article/10.1057/palgrave.ejis.3000601
- Wan, S. (2019). ***Amazon Quits China Market: Another U.S. E-Commerce Giant Failing in China, Panda***, Available At: https://pandaily.com/amazon-quits-china-market-another-u-s-e-commerce- giant-failing-in-china/ (Accessed 27 September 2019).
- Wang, Y., & Byrd, T. A. (2017). Business Analytics-enabled Decision-making Effectiveness Through Knowledge Absorptive Capacity in Health Care. ***Journal of Knowledge Management***, 21 (3), 517-539. Doi: https://doi.org/10.1108/JKM-08-2015-0301
- Weill, P., Subramani, M., & Broadbent, M. (2002). ***It Infrastructure for Strategic Agility***. Available at Ssrn 317307. Doi: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=317307
- Wu, S., Ding, X., Liu, R. And Gao, H. (2019), "How Does it Capability Affect Open Innovation Performance? The Mediating Effect of Absorptive Capacity", ***European Journal of Innovation Management***, Doi: https://doi.org/10.1108/EJIM-02-2019-0043 .
- Yildiz, H. E., Murtic, A., & Zander, U. (2024). Re-conceptualizing Absorptive Capacity: The Importance of Teams as a Meso-level Context. ***Technological Forecasting and Social Change***, 199, 123039. Doi:https://doi.org/10.1016/j.techfore.2023.123039