



## AN ANALYSIS THE RELATIONSHIP BETWEEN IT-BUSINESS STRATEGIC ALIGNMENT AND INTANGIBLE IT RESOURCES ON THE COMPETITIVE ADVANTAGES SUSTAINABILITY MODERATING EFFECT OF IT PERSONNEL CAPABILITY



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### ABSTRACT

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Understanding the relationship between IT Business Strategic Alignment (ITBSA), IT Personnel Capabilities (ITPC), and Intangible IT Resources (IITR) is utmost important. Strategic scholars and professionals look to these three strategic resources as the main driver of generating distinctive competencies which in turn become the main source of creating sustainable competitive advantages (SCA). The aim of this study is to establish and understand a new path between three strategic inputs on the SCA which overlooked in the literature and thereby there is a need to cover this critical gap. The main objective of this paper is to determine whether IT personnel capability will influence directly and/or indirectly (moderating role) on the relationship between IT business strategic alignment and intangible IT resources towards creating SCA. Hence, this paper question to what extent capability of IT personnel is able to strengthen the relationship between ITBSA and ITPC on the SCA. Applying, Resources-based View (RBV) and Dynamic Capability View (DCV), this paper intended to investigate the role of IT personnel capability on enabling firm's strategic resources such as ITBSA and IITR on SCA achievement. Therefore, in order to achieve the proposed objectives and answering the questions of this study, the author will apply cross sectional survey for collecting appropriate data from IT managers among Algerian high-tech industry. Implications and suggestions will be discussed.

**Contribution/ Originality:** This research is among the very few studies that intended to examine the process of dynamic resource creation through the influence of IT personnel capability as distinctive resources for creating SCA. Executives look to IT personnel capability as the main cause/driver of business growth and sustainability of firm's advantages.

## 1. INTRODUCTION

Achieving valuable alignment between IT and business strategy is a critical issue among successful manufacturers (Jorfi *et al.*, 2011). In addition, creating intangible IT resources is a strategic goal of top management in this new era of Industrial Revolution 4.0. Both IT-business strategic alignment and intangible IT resources are the main issues and serious concerns that face modern organizations (Ashrafi and Mueller, 2015). Strategically

speaking, in order to achieve these kinds of intangible resources which suit VRIN attributes (Valuable, rare, inimitable, and non-substitutable), firms are highly acknowledged the role of IT personnel capability in achieving such strategic planning goals (Barney, 2001). Thus, understanding the process how the capability of IT personnel would be able to affect other organizational capabilities is an overlooked topic that needed to be addressed and well examined (Huang *et al.*, 2006). Hence, this paper intends to examine the role of IT personnel capability in enabling such intangible IT resources such as IT knowledge resources, IT relationship resources, and IT governance. In addition, addressing the effect of these intangible resources on the creating sustainable competitive advantages is un-covered and less-examined issue in prior IT/IS studies particularly in developing countries (Makhloufi *et al.*, 2018).

These intangible IT resources along with effective alignment between IT and business strategy will offer firms with significant benefits such as improving brand reputation to suit changing customer perceptions, cost flexibility, offering specific marketing channels, responsiveness and flexibility delivery and hence, expanding business market penetration opportunities (Law and Jogaratnam, 2005), therefore, firms are able to maintain their SCA over competitors for a long time (Hilty and Aebischer, 2015).

Despite the critical role of these intangible IT resources along with the strategic alignment between IT and business strategy, exploring what is the role of IT personnel capabilities in exploiting these strategic resources is an utmost critical issue that should be covered which in turn lead to affect firms core competencies (Makhloufi and Al-Erjal, 2014) and hence ensure survival and growth as well as achieving SCA. Hence, this research will examine the role of IT personnel capability as an enabling factor (moderating role) between the four building blocks of SCA that are (ITBSA, ITKR, ITRR, and ITG), and as a strategic input that will lead to supporting firm's IT infrastructure (Ashrafi and Mueller, 2015; Héroux and Fortin, 2016).

### 1.1. Problem Statement

Up to date, the debate among strategic scholars still exists concerning the topic of competitive advantages sustainability (SCA). What are the factors that contribute to the SCA with less cost and effective responsiveness is the main critical weaken that manufacturers struggle? However, determining these intangible factors such as IT business strategic alignment, IT knowledge resources, IT relationship resources, and IT governance and their interrelationship significantly provide a great practical and theoretical evidence in the IT/IS literature regarding the sources of SCA and ensuring firms growth. What are the factors that might enable and support firms to formulate these intangible resources are the major challenges toward creating SCA? So, exploring the role of IT personnel capabilities in the formulating and enabling organizations to create these strategic resources that turn to be the major source of SCA is more needed (Makhloufi *et al.*, 2018).

Therefore, this paper questions whether intangible IT resources and IT business strategic alignment are able to influence Algerian high-tech firms to create and maintain SCA. Despite considerable empirical studies (Ashrafi and Mueller, 2015) that examined the relationship between IT personnel capability and IT resources, very few studies if any have analyzed the critical role of IT personnel capability on intangible IT-based resources that are the main source of SCA. Thus, the author found a critical gap that needs to be investigated and question if there is any role of IT personnel capabilities in strengthen/weaken other organizational intangible resources such as ITBSA, ITKR, ITRR, and ITG toward creating SCA? Yet, very few studies that have been particularly emphasized how the capability of IT personnel might influence the firms to be strategically aligned. In addition, the majority of IT/IS studies have examined the influence of IT resources on single SCA, whereas addressing the role of intangible IT resources on multiple SCA dimensions is very rare if any. Lu and Ramamurthy (2011), Huang (2010) and Ashrafi and Mueller (2015) recommended scholars to deeply understand what kind of IT skills are needed for enabling IT-business strategic alignment and intangible IT resources in the subsequent studies. To conclude, this study assumes

that IT personnel capability is a valuable strategic enabler resource for intangible IT-based resources that turn to be the major key of SCA.

### *1.2. Rationale of the Study*

The rationale and reasons behind this research were to determine which intangible factors that significantly contribute to the creation of SCA. To note, very few published studies that have examined what kind of factors that considerably contribute to the creation of intangible IT resources such as IT knowledge resources, IT relationship resources, and IT governance as well as strategic IT alignment especially since these intangible resources are the key driver of SCA. So, knowing and exploring what are the capabilities that must be acquired and deployed which this last enable firms to create intangible IT-based resources is utmost strategically important. In order to add strong evidence to the RBV arguments (VRIN framework), this study will examine four intangible IT resources that suit VRIN attributes on the creation and maintaining SCA. In addition, this study will support Dynamic Capability View (DCV) through examining the role of IT personnel capability on the creation VRIN resources (RBV) such as ITKR, ITRR, ITG, and ITBSA. Therefore, this research will apply two theories in order to cover the issue of SCA in the context of developing countries. Scholars such as [Lu and Ramamurthy \(2011\)](#) suggested that subsequent IT research need to explore the influence of IT personnel on organizational capabilities. RBV and DCV regard to the IT personnel as distinctive capabilities which enable the firms to create unique competencies and thereby offer them the power to be distinguished from rivals without having the potential to understand the strategic resource creation and hence, ultimately turn to be the key source of SCA ([Huang, 2010](#); [Ashrafi and Mueller, 2015](#)). Finding factors that influenced by capabilities of IT personnel would allow IT executives to understand the potential benefits of IT staff on the creation intangible IT resources such as formulating and enabling such critical relationships that might be occurred between the firm and its related partners as well as tracking customer needs (information) and information about competitors strategy, products, design, and quality...etc. Additionally, IT personnel capability might play a significant role in the IT governance which integrating the firm vision and objectives with IT structure and processes. To conclude, this paper will establish the first new path in the IT and strategic management research in order to deeply understand the issue of competitive advantages sustainability among Algerian high-tech industry. Optimal exploitation of opportunities to deploy IT for strategic activities thereby reducing cost and lastly enabling firms to gain SCA through the use of intangible IT-based resources as distinctive competitive capabilities are highly influenced by capabilities of IT personnel. Hence, achieving the strategic planned objectives ([Luftman and Brier, 1999](#)).

## **2. HYPOTHESIS DEVELOPMENT AND RESEARCH MODEL**

### *2.1. Effect of IT-Business Strategic Alignment on Sustainable Competitive Advantages*

Due to the critical effect of strategic alignment on the business operations, achieving and sustaining strategic alignment will significantly influence firms to generate and sustain their advantages. Thus, the firms must properly align its business strategy with valuable IT resources in order to achieve the planned goals. Knowing what kind of competitive advantages that might be generated through the alignment of business strategy along with IT strategy is utmost important and strategically significant since very few studies have been addressed the effects of IT business strategic alignment on SCA. In the end, this research intends to draw a new path between IT business strategic alignment and multiple dimensions of SCA among Algerian high-tech i Dynamic capability theory regards IT-business strategic alignment as firm-unique internal competencies that allow them to align IT strategy with a business strategy which in turn lead to superior performance ([Schwartz and Rivera, 2010](#)). Several studies have examined the role of IT business strategic alignment on organization performance ([Croteau and Bergeron, 2001](#); [Kearns and Lederer, 2003](#); [Huang, 2010](#)) industry ([Jorfi et al., 2011](#)).

Business IT strategic alignment refers to the business objectives and plans that supported by IT vision and plans (Reich and Benbasat, 2000). The importance of the critical role of IT business strategic alignment is due to its influence on business needs, enabling a firm to compete in international dynamic markets, improving firms performance, gaining considerable returns on IT investment, ability to resilient, tracking new opportunities and exploring new markets along with expecting customers preferences which in turn lead to be more flexible with business changes at all levels and scenarios (Jorfi *et al.*, 2011). Therefore, since very few published studies if any have investigated this issue, this paper seeks to address the role of IT business strategic alignment on the creation and maintaining competitive advantages among Algerian high-tech industry.

**Hypothesis 1:** IT business strategic alignment is positively influenced sustainable competitive advantages.

### *2.2. Effect of Intangible IT Resources on Sustainable Competitive Advantages*

The firms that seeking to create and maintain competitive advantages it should implement suitable policies and procedures as well as exploiting and exploring the existing valuable, inimitable, rare, and non-substitutable resource (VRIN attributes) (Barney, 2001; Ashrafi and Mueller, 2015) which in turn lead to improving business performance. Examining intangible IT resources within the VRIN framework enable firms to identify whether or not its intangible IT resources will create SCA (Cao *et al.*, 2011; Makhloufi *et al.*, 2018). However, which intangible IT resources will create SCA is not yet clear and overlooked (Makhloufi and Al-Rejal, 2016). Importantly, as a result of easiness to possess a variety of tangible and intangible IT-based resources such as hardware and software, ERP platform ...etc., only those intangible resources such as IT governance, IT knowledge resources, and IT relationships resources that suit VRIN framework are able to be the key driver of SCA (Kohli and Grover, 2008; Nevo and Wade, 2010). These unique intangible resources are utmost strategically important because of a long time to develop and it is unique to an organization which can't be imitated or easily replaced, thus satisfy VRIN attributes and thereby offer for an organization the potential to creates SCA. Considerable strategic researchers (Huang *et al.*, 2006; Ashrafi and Mueller, 2015) stated that IT governance, IT knowledge resources, and IT relationship resources are important key sources for generating business value, knowing whether or not these resources have the potential to generate and maintain SCA is utmost important and has not been well examined.

**Hypothesis 2:** Intangible IT resources are positively influenced sustainable competitive advantages.

### *2.3. Effect of IT Personnel Capability on Sustainable Competitive Advantages*

The capability of IT personnel is viewed as a strategic key source of maintaining sustainable competitive advantages. These capabilities appear in the deep business knowledge and technical matters, as well as valuable interpersonal skills and thereby, these strong skills, allow IT personnel to be ready with business problems and proposing suitable solutions (Makhloufi *et al.*, 2018) tracking new opportunities along with IT trends, strong responsiveness to business changes and understanding customer needs as well as expecting the reactions of competitors and markets (Ashrafi and Mueller, 2015). More importantly, IT executives and top-management are strongly recognizing that the main concern for success is definitely related to its staff rather than technologies and systems. Thus, acquiring these skills is utmost needed and compulsory for IT personnel in order to perform their tasks more effectively in order for an organization to respond to unexpected circumstances (Fink and Neumann, 2007). In addition, IT personnel are able to enable the firm to possess sufficient and valuable IT knowledge through their deep business knowledge which in turn these valuable resources translated into policies and procedures concerning customers' need and competitors strategy and alternative products from other rivals. Furthermore, IT personnel that having valuable interpersonal skills are able to empower such critical relationships between firm strategy and IT consultants. These three skills run as an organ and complement each other which make IT personnel to be more powerful and perform multiple tasks. To conclude, an organization that has IT personnel

capabilities with these three key skills (technical, business and interpersonal skills) is the main sophisticated pillar for distinguishing successful SCA (Wang *et al.*, 2013). Hence, we hypothesized:

**Hypothesis 3:** IT personnel capability is positively influenced sustainable competitive advantages.

#### *2.4. Moderating Effect of IT Personnel Capability between IT-Business Strategic Alignment and Sustainable Competitive Advantages*

IT business strategic alignment and IT personnel capability are the two serious concern and main challenge of IT executives and top management which they complement each other. The capability of IT personnel with a broad range of skills are able to support firms in several ways which facilitate effective communication between top-management and business units, enhancing employees satisfaction through educating them how to perform such tasks, as well as leading to respond with fast business changes and customer needs which in turn will lead to formulate better and effective decisions to suit such changes. In addition, IT personnel capability offer the firms with the power to connect all business units with its overall strategy and thereby meeting business goals and objectives (Ross *et al.*, 1996; Byrd *et al.*, 2004; Chung *et al.*, 2005). The main pillar of successful alignment between business strategy and IT strategy is the valuable capabilities of IT personnel that will produce this critical link between them. These close interaction between business strategy and IT strategy that would be occurred by the implementation of IT personnel will lead to creating considerable advantages which ensuring growth and survival (Luftman and Brier, 1999; Chung *et al.*, 2005).

An empirical study by Reich and Benbasat (2000) found that four factors such as "shared domain knowledge, IT implementation success, communication between business and IT executives, and connections between business and IT planning" were influenced short-term alignment. Whereas, investigation the critical role of IT personnel capability on the successful alignment is utmost important. Yet, very few studies (Wade and Hulland, 2004) have examined this issue and hence, this study will cover this gap by reviewing and testing which skills of IT personnel that is able to enable IT-business strategic alignment toward creating SCA. Following the aforementioned discussion, we hypothesize:

**Hypothesis 4:** IT personnel capability is significantly moderate the relationship between IT-business strategic alignment and sustainable competitive advantage.

#### *2.5. Moderating Effect of IT Personnel Capability between Intangible IT Resources and Sustainable Competitive Advantages*

Successful IT executives that seeking to enable their organizations to achieve business value behind deploying intangible IT resources are highly relying on the capabilities of IT personnel since they are unable to be replaced by others (Makhloufi *et al.*, 2017). Therefore, due to this critical role of IT personnel and their deep business knowledge and long-time of experience, managers and scholars considered them as a valuable and strategic resource in strengthening the firm's internal resources. They track customer needs and competitors strategies which ultimately lead to generate valuable knowledge based-IT, facilitating and formulating critical relationships between IT consultant and firms, suiting business needs along with firms IT structure and processes (Fink and Neumann, 2007). Importantly, scholars considered intangible IT-based resources such as IT knowledge, IT business relationship, and IT governance as a valuable and inimitable asset which these intangible resources have a significant effect on competitive advantages sustainability (Bhatt and Grover, 2005; Ashrafi and Mueller, 2015). Thus, examining intangible IT-based resources within the VRIN framework enable firms to explore whether or not these resources are a source of SCA (Cao *et al.*, 2011) and if so, how to achieve it? Thereby, which intangible IT resources create business value is not yet clear and ambiguous (Ashrafi and Mueller, 2015). Critically, identifying what kind of intangible IT resources and its implications for creating SCA is strategically important in support top-management decision making. So, analyzing the relationship between IT personnel capability and the three proposed intangible IT resources is yet to be explored. Also, knowing the effect of IT personnel capability on the



knowledge creation based IT and established business relationship is yet to be examined. Consequently, this research will bridge this emerged gaps by testing the impact of IT personnel on strengthen these three main intangible resources that tend to be the major driver of SCA. Hence, we proposed the following hypothesis:

**Hypothesis 5:** IT personnel capability is significantly moderate the relationship be-tween intangible IT resources and sustainable competitive advantages.

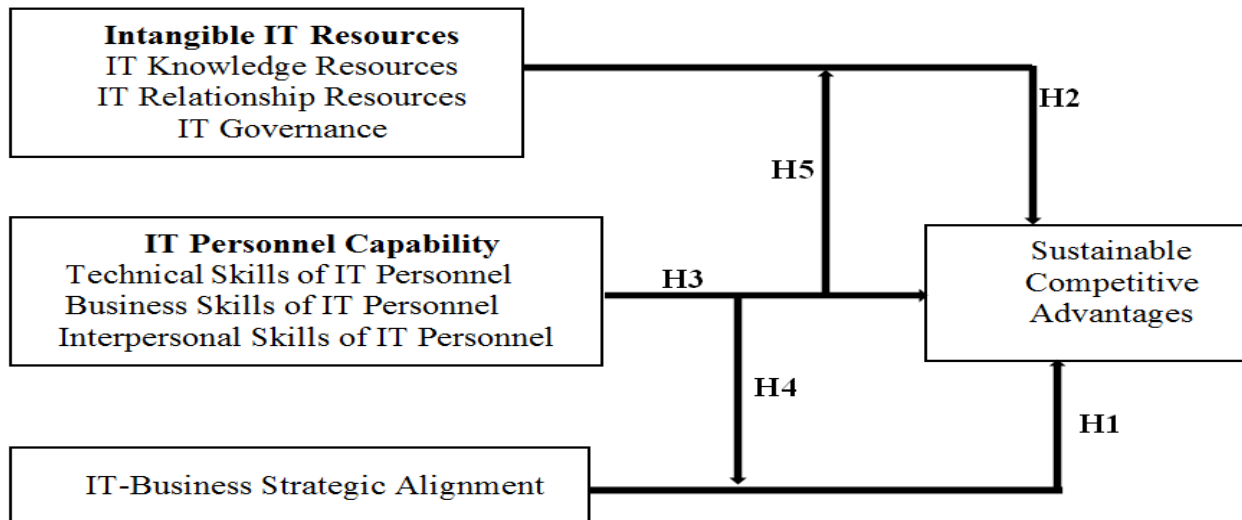


Fig-1. Research Model of the Study

### 3. METHODOLOGY

#### 3.1. Data Collection and Sample Size

This research will apply cross-sectional survey method since it is the suitable technique for collecting primary data in the strategic management studies. To assess the proposed constructs, the majority of the measurement scales were adapted from previous IT/IS studies. To validate this instrument, the pre-test should be applied by emailing hard and soft copy to five MIS lecturers as well as conducting a semi-structured interview with two IT managers in order to confirm the easiness of questions and avoiding any ambiguous items which in turn would increase in the response rate and useful data. Hence, after reviewing and modifying the non-suitable items by managers and academic lecturers, the final questionnaire was formulated and IT managers will be the targeted respondents by this study. Furthermore, to increase the response rate, the author will attach a cover letter with each questionnaire explaining the importance of this study which would enhance the awareness of respondents and hence we expected to get better feedback (data). Contextually, this study will be applied among Algerian high-tech industry as recommended by several IT scholars for further examinations in the developing countries (Bhatt *et al.*, 2010; Ashrafi and Mueller, 2015). The population of this study contains all Algerian private high-tech industry that has been registered under Algerian Ministry of Industry and Commerce. Senior IT managers will be targeted for data collection to test the five proposed hypotheses by distributing the questionnaire online and personal self-administered. Senior IT managers as a respondent's include (directors of IT department and CIOs) which represent a useful source of information regarding IT intangible resources and capabilities in the firm (Byrd and Turner, 2001).

#### 3.2. Measurement of Variables

The survey contained one section for business and personal information and four sections for evaluating constructs. The constructs will be measured through questions that based upon a seven-point Likert scale from one being "strongly disagree" and seven being "strongly agree" (Dawes, 2008). Also, based on previous IT/IS studies, the elements, and scales that applied for each construct was determined. Intangible IT resources that contain three

dimensions namely IT governance, IT knowledge resources, and IT relationship resources were adapted from studies (Ashrafi and Mueller, 2015; Héroux and Fortin, 2016). IT-business strategic alignment measurement, items were adapted from a study by Kearns and Sabherwal (2007); Preston and Karahanna (2009). To measure moderating variable, IT personnel capability measured by using three dimensions which adapted from studies (Terry Anthony Byrd, 2000; Fink and Neumann, 2009). Lastly, to measure sustainable competitive advantages, we propose four dimensions namely cost efficiency, market position, organizational flexibility, and growth referring to the studies (Rackoff *et al.*, 1985; Byrd and Turner, 2001; Palanisamy and Sushil, 2003; Gebauer and Schober, 2006). To improve survey response, researchers need to avoid any ambiguous and double-barreled questions (Tourangeau *et al.*, 2000).

#### 4. DISCUSSION AND CONCLUSION

This study intends to analyses the interrelationship between Intangible IT resources, IT business strategic alignment, and IT personnel capability toward creating sustainable competitive advantages. Also, this study examines the causal relationships among IT intangible along with IT business strategic alignment on SCA. Importantly, previous IT studies found that intangible IT resources tend to influence firm competitive advantages, so far, what kind of these intangible resources that would create SCA is still overlooked. Hence, this research comes out to fill this crucial gap. In addition, this study will provide significant evidence to practically increase the awareness of IT executives and top-management regarding the strategic benefits of IT personnel capability and IT business strategic alignment as the key drivers of SCA. Hence, the results of this research will offer noble evidence in management information system and strategic management studies concerning the issue of competitive advantages sustainability that might be generated by deploying intangible VRIN resources which in turn become the foundation for subsequent research. Yet, very few studies if any have examined the role of these three intangible resources on SCA particularly within developing countries, as well as no published study, has addressed the effect of IT personnel capability on strengthening the relationship between intangible resources and SCA. Furthermore, knowing the influence of IT personnel capability on the two main pillar of SCA such as IT business strategy alignment and intangible IT resources is utmost needed. Moreover, understanding the role of IT personnel capability on strengthen other resources and capabilities in order to generate SCA is strategically significant. To what extent the alignment of IT business strategy will be increased by the capability of IT personnel is important in order to allow firms to respond to business changes and customer needs as well as markets trends.

To conclude, this study will test tow theories namely RBV and DCV. First, will test intangible IT resource (VRIN) which in turn provide evidence for RBV about its potential on explaining the critical role of resource selection for creating SCA. Second, will test DCV through examining the role of IT personnel capability in achieving interaction with other organizational capabilities which in turn will result in creating new ones and hence leading to generating SCA. Practically, in order to ensure growth and survival, Algerian manufacturers should be more aware regarding the role of IT personnel capability and IT business strategic alignment as the main backbones of flexible IS infrastructure as well as the main source of SCA.

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