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The Moderating Effect of Intrinsic Motivation on the Relationship between Psychological Capital and Organizational Citizenship Behaviors

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ABSTRACT

The present study was conducted to measure the intrinsic motivation effects on the relationship between psychological capital (PsyCap) and organizational citizenship behaviors (OCBs). Data were gathered from (335) employees working in Telecom Egypt Company in Cairo. The factual examination confirmed that the estimation scales utilized met the worthy gauges of validity and reliability analysis. Our results revealed that psychological capital is significantly correlated to organizational citizenship behaviors. Moreover, there are mediating effects of intrinsic motivation on the relationship between Psychological Capital and Organizational Citizenship Behaviors. Thus, the intrinsic motivation of the individual - as a mediator – may have a significant effect on the relationship between psychological capital
of the individual and organizational citizenship behaviors in the studied companies. Additionally, it was concluded that the vital role of psychological capital (PsyCap) and organizational citizenship behaviors (OCBs) in attracting and up regulating the work environment conditions concerned with psychological capabilities and power of individuals outcomes, relation to their jobs, productivity, and desire to provide more tasks than that required in their basic role and defined in their job description.

**Keywords:** Psychological Capital, Organizational Citizenship Behaviors, Intrinsic Motivation

**INTRODUCTION**

The outstanding human element has become the way for organizations’ excellence, competence and continuity in the face of global competition, the tremendous development of information technology and communications, and the proliferation of alliances and mergers between organizations. So, organizations need to recruit people that have a high flexibility, creativity, innovation and effective contribution behavior to execute its goals and competitiveness (Jassim, 1998). In these circumstances, the organizations should focus on positive human strengths that can be developed for their performance impact. Psychological capital is a viable resource in this context because it makes people have strength and ability to counter an upcoming problems with a positive features such as self-efficacy, optimism, hope, and resilience (Hodges, 2010). Organizational citizenship behaviors improve the effectiveness and efficiency of organizational performance (Sadeghi, et al. 2016; Lee & Allen, 2002). Employee who behaves like a good citizen within the organization are expected not only to perform his/her obligation but also can does
other positive behaviors that can boost the success of the organization where he/she works (Korkmaz & Arpacı, 2009).

Several studies have discussed the relationship between psychological capital and organizational outcomes with concern of the organizational citizenship behaviors; (Etebarian, et al., 2012; Pradhan et al., 2016; Mellão & Mónico ,2013; Kaplan & Bickes 2013) without any studies among the Egyptian community. In addition, few studies have examined the effect of intrinsic motivation on the psychological capital and also on the organizational citizenship behaviors.

This study aims to examine: 1) the relationship between psychological capital and organizational citizenship behaviors; 2) the intermediate effect of intrinsic motivation on the relationship between psychological capital and organizational citizenship behaviors in Telecom Egypt Company. It is expected that intrinsic motivation of the individual affects the relationship between psychological capital and organizational citizenship behaviors.

LITERATURE REVIEW AND HYPOTHESES

Psychological Capital
Psychological Capital (PsyCap) considered one of the main economic factors that influence the rate of productivity and attributed to positive psychology (Goldsmith, 1997). Seligman (2002) explained psychological capital based on positive psychology and positive organizational behavior through focusing more on individual's behavioral aspects than focusing on the problems. In addition, organizations must be interested in research that is focusing on psychological elements that triggers individuals positively. Avolio and Luthans (2006) believed that psychological capital represents "who you are" and "what you can become through positive development", and hence it differs from human
capital which expresses "what you know", and also differs from social capital which expresses "who you know", and differs from financial capital which expresses "what do you own." The concept of psychological capital highlights a series of capabilities possessed by individuals (Luthans et al., 2004); which create and promote a supportive working environment to study and apply the strengths of human resources that is directed positively, as well as to measure and develop its psychosocial abilities and manage it effectively to improve performance. Psychological capital has been identified in the form of a framework and dimensions by Luthans, Youssef and Avolio (2007) through their study of positive organizational behavior.

Psychological Capital (PsyCap) consists of four dimensions (self-efficacy, optimism, hope and resilience) which can be illustrated as follows: Self-efficacy: refers to an man or woman's self-assurance in their potential to mobilize their motivation, cognitive resources and courses of motion to be able to achieve excessive ranges of performance (Stajkovic & Luthans, 1998). Hope: represents the perseverance of working individuals towards achieving organizational goals, as well as individuals' ability to reorient paths to achieve goals (Luthans et al, 2008). Millard (2011) describes hope as the positive state of motivation and power that individuals draw from their perception of success and achieving goals; it is also characterized by continuation. Optimism can be representing our thoughts of the future constrained by a combination of negative emotions and positive emotions that making individuals frustrated or opposite with positive emotions increase their hope, respectively (Al-Kordawi, 2013). Moreover, Luthans & Youssef (2004) defined optimism as an interpretive pattern that refers positive events to several permanent and internal causes, and negative events to one specific, temporary and external situation. Optimists care about good things that happen
to raise their spirits, and they turn away from bad things that happen. Optimism therefore is linked to performance improvement (Martin et al., 2003). Moreover, resilience cited the capability of an individual to get better from adversity, uncertainty, risk or failure, and adapt to changing and annoying lifestyles demands (Masten & Reed, 2002; Tugade & Fredrickson, 2004).

The literatures of PsyCap have shown that psychological capital dimensions play a vital role in improving the attitudes, behaviors, and creative performance of employees (Sweetman et al. 2011; Wright et al., 2007; Luthans & Youssef, 2004). Companies should not only recruit the best talent, but also make sure that this talent inspires and empowers employees to apply their full potential in their work (Bakker et al. 2011). Additionally, it was found that dimensions of psychological capital (self-efficacy, optimism, hope, and resilience) are significantly correlated with performance and job attitudes: such as job Satisfaction, commitment, engagement and Employee Well-Being (Luthans et al., 2008; Luthans & Youssef, 2004; Youssef & Luthans, 2007; Luthans & Jensen, 2002; Peterson & Luthans, 2003 Luthans et al., 2006; Luthans et al., 2005).

**Organizational Citizenship Behavior**

Organizational Citizenship Behavior (OCB) indicates to the voluntary behaviors of employees in the workplace to execute tasks not included in their job descriptions (Bateman & Organ, 1983; Smith et al., 1983). Furthermore, Organ (1988) defined it as “individual behavior that is discretionary, not directly or explicitly recognized by the formal reward system, and that in the aggregate promotes the effective functioning of the organization”.

These behaviors exceed the required performance stated in employees’ job descriptions and have a great benefit to both organizations and employees. Many studies proved that
organizations dependence on OCBs enhances the positive working environment and helps increasing organization productivity; reserving organizational resources; coordinating activities within and across work groups; enabling the organization to adapt more effectively to environmental changes; directing and assisting new employees to do their jobs; helping co-workers with a heavy workload; and discovering and optimal use of employees' potentials and capabilities, Increasing job relevant knowledge and expertise of employees. (Witt, 1991; Becker & Randall, 1994; Podsakoff, et al., 2000; Turnipseed & Rassuli, 2005; Ibrahim, 2014).

According to Organ, D. (1988) organizational citizenship behaviors include five types of behavior: (a) Altruism: behavior directed to help others within the organization in carrying out their job tasks without expecting any reward. (b) Conscientiousness: it expresses voluntary behavior that goes beyond the minimum functions of the official role of the individual (such as working extra hours without pay). (c) Courtesy: a behavior that aims to solve problems between employees, and between them and customers. (d) Sportsmanship: it expresses individual's desire to perform tasks required from him under any circumstances and without any complaint or grumbling. (e) Civic virtue: refers to individual's effective involvement in the organization and its interest (e.g. Making proposals that advantage the organization development).

Moreover, numerous studies have examined the connection among psychological capital and organizational citizenship behaviors. (George& Brief, 1992; Avey et al., 2008) found that there is a direct relationship between workers with a positive psychological conditions and intention to help co-workers or supervisors. (Smith et al., 1983) also noted that organizational citizenship behaviors are a positive attitude towards the organization. Therefore, Psychological capital can be regarded as one of the initiators of organizational citizenship behaviors.
(Ahmadizadeh et al., 2014) found that a positive organizational atmosphere for workers in the workplace or the positive feeling of employees is reflected in increased organizational citizenship behaviors.

Studies generally confirm that psychological capital is positively correlated with organizational citizenship behaviors (Shaheen, Sidra et al., 2016; Golestaneh, S. M., 2014; Pradhan, R. K. et al., 2016; Lather & Kaur, 2015). However, no Egyptian study has dealt with the relationship between psychological capital and organizational citizenship behaviors. This study aims to examine the relationship between psychological capital and organizational citizenship behaviors in Telecom Egypt Company.

Based on the previous discussion, the first hypothesis of the study could be stated as follows:

**H1**: Psychological capital has a positive relationship with organizational citizenship behaviors.

**Intrinsic Motivation**

In the framework of human self-understanding, motivation occupies a distinct place as a fundamental determinant of behavior. The performance of an individual is largely dependent on his/her motivation and its degree, in addition, the improvement in individual's behavior at the quantitative and qualitative levels is attributed quite a bit to motivation.

Intrinsic motivation is defined as the subjective factors influencing an individual's attitude, his/her strength, and his/her determination to act or work. An intrinsic motive is an internal state that directs behavior and causes it: any activity begins and continues because of motivation. Studies show that there is a strong correlation between intrinsic motivation and organizational citizenship behaviors (Saavedra & Kwun, 2000; Bolino, Turnley &
Bloodgood, 2002). Moreover, studies have found that intrinsic motivation is positively correlated with psychological capital (Siu, Bakker & Jiang, 2014; Ibrahim, 2014).

One of the important criticisms of the studies on the relationship between psychological capital and organizational citizenship is that most of these studies have tended to examine the linear relation with a limited estimation of the context effect, especially the variables that have a mediating effect on this relationship. For example, many studies haven’t covered some important questions about the relationship between dependent and intermediate variables such as: "When does positivity matter more or less?". The present study suggests that there is an intermediate effect of individual intrinsic motivation on the relationship between psychological capital and organizational citizenship behavior (PsyCap and OCB). Therefore, the second objective of this study is to examine the intermediate effect of intrinsic motivation on the relationship between psychological capital and organizational citizenship behaviors.

Based on the previous discussion, the second hypothesis of the study could be stated as follows:

H2: Intrinsic motivation of the individual has moderating affects on the relationship between psychological capital and organizational citizenship behaviors.

Therefore, the current study was also applied on one of the most important sectors in Egypt, the telecommunications sector.

METHODS

Sample

A total of (335) surveys were distributed to employees working
in the branches of Telecom Egypt Company located in Greater Cairo Governorate (including Cairo, Giza and Qalioubya), 245 of which were retrieved with a response rate (73%). Table 1 shows the functional and demographic characteristics of the study sample.

**Table 1: The Functional and Demographic Characteristics of the Study Sample**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>169</td>
<td>69.00</td>
</tr>
<tr>
<td>Female</td>
<td>79</td>
<td>31.00</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>From 20 to under 30</td>
<td>19</td>
<td>7.8</td>
</tr>
<tr>
<td>From 30 to under 40</td>
<td>127</td>
<td>51.8</td>
</tr>
<tr>
<td>From 40 to under 50</td>
<td>78</td>
<td>31.8</td>
</tr>
<tr>
<td>50 years and over</td>
<td>21</td>
<td>8.6</td>
</tr>
<tr>
<td><strong>Education Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PhD</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Master</td>
<td>10</td>
<td>4.1</td>
</tr>
<tr>
<td>Diploma</td>
<td>74</td>
<td>30.2</td>
</tr>
<tr>
<td>BA</td>
<td>161</td>
<td>65.7</td>
</tr>
<tr>
<td><strong>Career Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sector Manager</td>
<td>13</td>
<td>5.3</td>
</tr>
<tr>
<td>Vice Sector Manager</td>
<td>3</td>
<td>1.2</td>
</tr>
<tr>
<td>Department manger</td>
<td>46</td>
<td>18.8</td>
</tr>
<tr>
<td>Supervisor</td>
<td>2</td>
<td>0.8</td>
</tr>
<tr>
<td>Employees</td>
<td>181</td>
<td>72.9</td>
</tr>
<tr>
<td><strong>Years of Experience</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 5 years</td>
<td>9</td>
<td>3.7</td>
</tr>
<tr>
<td>From 5 to under 10</td>
<td>23</td>
<td>9.4</td>
</tr>
<tr>
<td>From 10 to under 15</td>
<td>117</td>
<td>47.8</td>
</tr>
<tr>
<td>15 years and over</td>
<td>96</td>
<td>39.2</td>
</tr>
<tr>
<td><strong>Salary</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 2000 EGP</td>
<td>12</td>
<td>4.9</td>
</tr>
<tr>
<td>Characteristic</td>
<td>Frequency</td>
<td>Percentage%</td>
</tr>
<tr>
<td>------------------------------------</td>
<td>-----------</td>
<td>-------------</td>
</tr>
<tr>
<td>- From 2000 EGP to less than 4000</td>
<td>150</td>
<td>612</td>
</tr>
<tr>
<td>- From 4,000 EGP to less than 6000</td>
<td>73</td>
<td>29.8</td>
</tr>
<tr>
<td>- From 6,000 EGP to less than 8,000</td>
<td>7</td>
<td>2.9</td>
</tr>
<tr>
<td>- More than 8,000</td>
<td>3</td>
<td>1.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>245</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

**Source:** Results of the statistical analysis of the research data

**MEASURES**

The questionnaire was designed depending upon three instruments to measure psychological capital, organizational citizenship behaviors, and intrinsic motivation. The five-point Likert scale was used in the development of the study instruments and each choice of them and was given a weight as follows: 5 = always, 4 = often, 3 = sometimes, 2 = rarely, 1 = never.

Questionnaire design, credibility and reliability tests of the study instruments are discussed as follows:

**Psychological capital scale**

To measure Psychological Capital, the scale proposed by Luthan, Yousef & Avolio, (2007) is used. The scale was used to analyze four dimensions of Psychological Capital: self-efficacy, Hope, Optimism, and resilience. The scale consists of 24 items; 6 items for each dimension.
Organizational Citizenship Behavior scale
Organizational citizenship behaviors (OCBs) were measured with a scale consisting of the five dimensions identified by Organ (1988b). It has 25 items, five for each of the five dimensions (altruism, courtesy, civic virtue, sportsmanship, and conscientiousness) (Podsakoff et al., 1990; Kumar, Bakshi & Rani, 2009).

Intrinsic motivation scale
This scale aims at measuring the level of intrinsic motivation of employees working in the Egyptian Telecom Company. It consists of seven statements and it was specially prepared for this research after viewing and taking advantage of some other scales such as: (MAWS) Scale developed by Gagné, Forest, Aubé, Morin and Malorni (2010), the intrinsic motivation scale developed by Tekin (2010), and the scale developed by Chair (1993).

Figure 1 Theoretical model of the proposed study
RESULTS

Reliability and validity of scales

Scales coefficient of stability was calculated using Alpha Kronbach method, and the researchers found that: Alpha value for psychological capital scale is 0.899, alpha value for organizational citizenship behaviors scale is 0.866, and alpha value for intrinsic motivation scale is 0.6274. These are robust stability coefficients, and also indicate the internal consistency of the scales.

Correlation coefficient correction of the scale as a whole was calculated using Spearman Brown equation and the stability coefficient was 0.90, which is an acceptable and statistically significant stability coefficient.

Descriptive Analyses

Table 2 shows the means and standard deviations of respondents' responses on the terms of the psychological capital, citizenship behaviors and intrinsic measures.

About the PsyCap Scale, the results revealed that that the hope dimension was the most significant dimensions of psychological capital (M = 4.153) and the standard deviation = 0.4907, the self-efficacy dimension comes in the second level (M = 4.152) and SD = 0.6278, the resilience dimension comes in the third level (M = 4.030) and SD = 0.5648 and the Optimism dimension comes at the last level (M = 3.519) and SD = 0.5606. The total mean score of psychological capital (3.920) referred to the high psychological capital of the managers and employees in the Telecom Egypt Company and SD = 0.4729.

Analyzing the values of the OCB Scale, it is possible to see on the table 2 that, among the five dimensions, the Conscientiousness dimension was the most significant dimensions of organizational citizenship behaviors (M = 4.402) and the SD = 0.4726, courtesy
dimension comes in the second level ($M = 4.380$) and $SD = 0.4794$, the altruism dimension comes in the third level ($M = 4.314$) and $SD = 0.5048$, the sportsmanship dimension comes in the fourth level ($M = 4.014$) and $SD = 0.5282$, and the lower is the civic virtue ($M = 3.590$) and $SD = 0.6289$. The total mean score of the organizational citizenship behaviors ($M = 4.139$) referred to the managers and employees have high OCB in the Telecom Egypt Company and $SD = 0.4072$.

**Table 2**: Mean scores and standard deviations of the scales of psychological capital, organizational citizenship behaviors and intrinsic motivation

<table>
<thead>
<tr>
<th>Variables</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>psychological capital</strong></td>
<td>3.92</td>
<td>0.4729</td>
</tr>
<tr>
<td>• self-efficacy</td>
<td>4.152</td>
<td>0.6278</td>
</tr>
<tr>
<td>• hope</td>
<td>4.153</td>
<td>0.4907</td>
</tr>
<tr>
<td>• resiliency</td>
<td>4.03</td>
<td>0.5648</td>
</tr>
<tr>
<td>• optimism</td>
<td>3.519</td>
<td>0.5606</td>
</tr>
<tr>
<td><strong>Organizational citizenship behaviors</strong></td>
<td>4.139</td>
<td>0.4072</td>
</tr>
<tr>
<td>• Altruism</td>
<td>4.314</td>
<td>0.5048</td>
</tr>
<tr>
<td>• Conscientiousness</td>
<td>4.402</td>
<td>0.4726</td>
</tr>
<tr>
<td>• Courtesy</td>
<td>4.38</td>
<td>0.4794</td>
</tr>
<tr>
<td>• Civic Virtue</td>
<td>3.59</td>
<td>0.6289</td>
</tr>
<tr>
<td>• Sportsmanship</td>
<td>4.014</td>
<td>0.5282</td>
</tr>
<tr>
<td><strong>Intrinsic Motivation</strong></td>
<td>4.32</td>
<td>0.4574</td>
</tr>
</tbody>
</table>

Table 2 also shows that the intrinsic motivation of the managers and employees was high ($M=4.320$) and $SD= 0.4574$. The standard deviation of the all scales shows the small dispersion.
Relationship Analysis between PsyCap and OCB

The study used Pearson correlation to determine the relationship between OCB and PsyCap. In Table 3, it can be seen that there is a significant and positive correlation between OCB and PsyCap (r = 0.708, p < 0.01) because the significance value of less than 0.01. Therefore, H1 was accepted.

The results in the table 3 also showed positive and significant correlation between PsyCap’ dimensions and OCB. Moreover, the resilience had the biggest correlation compared to the other dimensions of PsyCap (r = 0.635, p < .01).

Table 3: The correlations among PsyCap and OCB

<table>
<thead>
<tr>
<th>Variable</th>
<th>OCB</th>
<th>PsyCap</th>
<th>self-efficacy</th>
<th>hope</th>
<th>resilience</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCB</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PsyCap</td>
<td>0.708**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>self-efficacy</td>
<td>0.612**</td>
<td>0.900**</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>hope</td>
<td>0.616**</td>
<td>0.856**</td>
<td>0.714**</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>resilience</td>
<td>0.635**</td>
<td>0.874**</td>
<td>0.737** 0.748**</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>optimism</td>
<td>0.524**</td>
<td>0.736**</td>
<td>0.549** 0.461**</td>
<td>0.463**</td>
<td></td>
</tr>
</tbody>
</table>

Note: N = 135. ** p < .01.
OCB = Organizational Citizenship Behavior;
PsyCap = Psychological Capital.

Coefficient of determination (R2)

The results of Coefficient of determination suggest that the PsyCap explains 50 % of the variance in OCB and P-value was =0.001; so, the higher PsyCap that employee had, the more likely to display OCB. The remaining percentage (0.50) is due to random
error in the equation, or perhaps due to excluding other independent variables that should have been included in the model, or due to the differences between the regression model and the linear model. Table 4 shows the t-value and sig 0.000 evidence that positive influence of PsyCap on OCB. This can be considered a strong support for the hypothesis (H1).

**Table 4: Coefficients a**

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>1.750</td>
<td>.154</td>
<td>11.352</td>
<td>.000</td>
</tr>
<tr>
<td>1</td>
<td>psycap</td>
<td>.609</td>
<td>.039</td>
<td>.708</td>
</tr>
</tbody>
</table>

a. Dependent Variable: OCB

**The Moderating Effect of intrinsic motivation**

To examine the moderating effect of intrinsic motivation on the relationship between psychological capital and organizational citizenship behaviors, we conducted hierarchic regression. The results of the moderated hierarchical regression analysis are given in Table 5. The results of Table 5 show that psychological capital has a significant impact on intrinsic motivation as it explains 48% of the variance in this relationship, meanwhile it significantly affects organizational citizenship behaviors as it explains 50% of the variance in organizational citizenship behavior. Intrinsic motivation affects organizational citizenship behavior and explains 42% of the variance in this relationship. When the intermediate variable (intrinsic motivation) is introduced in the fourth regression equation, the impact of psychological capital on
the dependent variable (organizational citizenship behavior) disappears.

Table 5: Analysis of multiple regression of the effect of intrinsic motivation on the relationship between PsyCap and OCB

<table>
<thead>
<tr>
<th>Description</th>
<th>First Equation (PsyCap /Intrinsic Motivation)</th>
<th>Second Equation (Intrinsic Motivation/OCB)</th>
<th>Third Equation (PsyCap / OCB)</th>
<th>Fourth Equation (PsyCap /Intrinsic Motivation/OCB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beta value</td>
<td>0.48</td>
<td>0.731</td>
<td>1.61</td>
<td>0.44</td>
</tr>
<tr>
<td>R2</td>
<td>0.27</td>
<td>0.42</td>
<td>0.50</td>
<td>0.62</td>
</tr>
<tr>
<td>F value for model</td>
<td>79.51</td>
<td>178.41</td>
<td>243.77</td>
<td>197.15</td>
</tr>
<tr>
<td>Significance</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
</tbody>
</table>

In addition, the explanatory power of the model is increased in the fourth equation than in the third equation (from 50% to 62%), this means that intrinsic motivation, as an intermediary variable, affects the relationship between psychological capital (independent variable) and organizational citizenship behavior (dependent variable). Thus, regarding the hypothesis H2, intrinsic motivation moderated the relationship between the psychological capital and organizational citizenship behaviors. Thus, the hypothesis was supported.

DISCUSSION

The purpose of this study is to examine the correlation between psychological capital and organizational citizenship behaviors and the intermediate effect of intrinsic motivation on the relationship
between PsyCap and OCB among employees in Telecom Egypt Company. Psychological capital focuses on the positive individuals’ personal characteristics and activities that will influence the rate of productivity, which may contribute to the whole organization economic progress. Therefore, organizations must be interested in research aspects focus on triggering the individual positive psychological behavior.

The results show a high level of PsyCap and its four dimensions; the hope dimension was the most significant dimensions of psychological capital indicates that the sample used its energy towards achieving the goals by creating alternative paths in case of not successful parallel plans, with their continuous recognition of success to a high degree. The self-efficacy dimension was in the second level indicating that the people' confidence in their abilities makes to carry out the required tasks to a high degree. The resiliency dimension occupies the third level asserted that the sample can return from the setbacks and problems facing them to resume its work well. The Optimism dimension conquers the lowest level that reflects the interest of the study sample in detecting the positive aspects and expecting the good results for the work (Çavuş & Gökçen, 2015; Karmakar, 2016; Malik, 2013).

Therefore, these results reveal the characteristics of the company' members such as their desire to employ their energies, the flexibility of thinking, the keenness to seek alternative solutions to the problems facing them in their work, the confidence in their ability to achieve the goals, as well as the high level of optimism about successful of their careers and company in the future. The results also showed a high level of OCB and its five dimensions; the conscientiousness behaviors were the most organizational citizenship behaviors practiced by the sample individuals. This indicates that the sample individuals are organized, accountable, hardworking, dedicating themselves to the
job which exceed formal requirements and volunteer to perform tasks besides duties.

The courtesy dimension was in the second level; it indicates that the employees of the company are very keen and can solve problems among themselves and between customers. The altruism dimension comes in the third place; it indicates the interest of company' employees to assist others (colleagues or managers) in the enterprise in the performance of their works without waiting for any reward. The sportsmanship dimension comes in the fourth place refers to the interest of the study sample in carrying out the tasks required under any circumstances without any complaint, with accept the criticism. The civic virtue occupied the last level reflecting the interest of the study sample to participate effectively in the organization caring (Chiun & Ramayah, 2009; Podsakoff, et al., 2000). Thus, the results of the study revealed that the company's members have desire to carry out voluntary behaviors useful to work, are not part of their job description.

The relation between OCB and OCB is significant, positive and strength \( r = 0.708, p=0.00 \). Based on this result, it can be concluded that the higher PsyCap that employees had, the higher OCB that they would demonstrate. In consequence, organizations should concern about the employees’ PsyCap to enhance OCB among managers and employees. This result is consistent with the findings of (Lifeng 2007, Avey et al., 2008, Luthans et al., 2008, Avey et al., 2011); and contradictory with study of Shahnawaz & Jafri, (2009), who indicated that organizational citizenship behaviors are not fully predicted by psychological capital. However the positive relationship between psychosocial capital components and organizational citizenship behaviors can be predicted if each component is measured separately with organizational citizenship behaviors. The value of the coefficient of determination \( r^2 = 0.501 \) which means that OCB is affected by PsyCap of 50% and the rest
50% is influenced by other factors. So it can be said that 0.50 of changes in organizational citizenship behaviors are related to psychological capital. Thus, it is expected that OCB increases by strengthening PsyCap.

This study is also analyzing the relationship between each dimension of PsyCap, which are self-efficacy, hope, resilience, and optimism, toward OCB. The largest correlation between PsyCap’s dimension and OCB is found in the correlation between resilience and OCB. Resilience has a significant and positive relationship toward OCB (r = 0.635, p < .01). Based on this, it can be said that the higher resilience that owned by managers and employees in Telecom Egypt Company, the higher OCB that they showed. This result is not consistent with results of (Cintantya, H. & Salendu, A., 2017; Shukla, A. & Singh, S., 2013), their studies showed largest correlation between PsyCap’s dimension and OCB in the correlation between self-efficacy and OCB.

This study also found that one of PsyCap dimensions, hope, has the second greatest relationship when correlated with OCB (r = 0.616, p < .01), while self-efficacy dimension has the third greatest relationship when correlated with OCB (r = 0.612, p < .01). In addition, the study also found that optimism has a significant and positive relationship to OCB (r = .524, p <.01) even though it has the smallest correlation compared to the other dimensions of PsyCap, suggesting that the higher optimism level will also increases the possibility of OCB.

Additionally, our results show a high level of intrinsic motivation of the managers and employees of the Telecom Egypt Company. Having a high level of intrinsic motivation is valuable matter for all Individuals of organization. Individuals who have high level of intrinsic motivation demonstrate a peak performance (Shernoff & Csikszentmihalyi,2009) and they are more creative they welcome large number of roles, responsibilities and
innovative ideas (Shu, 2015). The results of study indicated that the relationship between PsyCap and OCB in the studied companies is influenced by individual's intrinsic motivation. This means that organization's interest in developing the spirit of hope, optimism, resilience, and self-efficacy in individuals contributes to increase individual's desire in voluntary behaviors that is not part of his or her contractual tasks within a company, even if it require working for extra time without pay. That’s all is affected by individual’s perception and belief that his/her job is always an enjoyable experience which motivates him/her to improve his/her skills and perform it better.

Although previous studies have indicated a positive effect of intrinsic motivation on both psychological capital and citizenship behaviors (Ibrahim, 2014; Siu, et al., 2014), the present study revealed that the there is significant intrinsic motivation effect on the relationship between the two variables (psychological capital and citizenship behaviors); this means that individual's belief in his/her job increases the impact of psychological capital on organizational citizenship behaviors.

The primary objectives of this research were two, to examine the moderating role of intrinsic motivation in the relationship between psychological capital and OCBs, and to derive practical implications which telecom managers can rely on for improving employees OCBs and intrinsic motivation; in other word to improve telecom employees’ organizational citizenship and intrinsic motivation.

The primary objective of this research is examining the impact of intrinsic motivation in the relationship between psychological capital and OCBs, then deriving practical implications which telecom managers can rely on for improving employees OCBs and intrinsic motivation; in other word to improve telecom employees’ organizational citizenship and intrinsic motivation.
Firstly, managers must adopt firm selective staffing in order to ensure gathering individuals with high psychological capital behavior. The need of training interventions should be checked during and after the selection process using a psychological capital questionnaire. If the results showed that there is a need for training, then management can help employees set challenging goals and provide advice about how to overcome various obstacles in the workplace. Luthans et al. (2006) noted 3% increase in psychological capital of managers from all types of organizations after a two-hour macro intervention session that consisted of individual and group exercises. Secondly, the selection process should be based primarily on the psychological capital characteristics. This will send a strong message to potential employees that such characteristics are of great importance to the company, and hence they will work hard to maintain and improve them once they start their jobs.

Thirdly, building a supportive culture to enhance the intrinsic motivation of employee through. For empowerment perspective, it refers to giving employees the resources, tools, training which enhance their ability to achieve their company’s strategies and goals. The pivot role of training appears here as it helps employees to understand the basics of their jobs, and to use their Knowledge in different situations. Honest communication can also be used by managers to encourage employees to make suggestions for work improvement and hence apply the most beneficial. For partnering perspective, employees’ partnering in organizational strategy formation and goals setting increases their motivation. Such partnering makes employees feel appreciation and recognition, and hence search for the best methods to enhance the strategy of their organization and act as if the organization belongs to them.

*Recognition*: It represents employees’ need to feel that their efforts are highly appreciated, Praised, and acknowledged by their
managers those feelings at the end will rise up their motivation to work.

CONCLUSION

The main objective of this study is to examine the relationship between OCB and PsyCap and the intermediate effect of intrinsic motivation on the relationship between PsyCap and OCB among employees in Telecom Egypt Company. Based on the results, it can be concluded that OCB has a positive and significant correlation with the PsyCap of employees in Telecom Egypt Company. This relationship showed that the higher PsyCap owned by employees in Company, the higher their OCB. Vice versa, the lower PsyCap owned by employees in Company, the lower their OCB too. This study also analyzed the relationship PsyCap’s dimensions with OCB. Based on this research’s result, all dimensions of PsyCap have a positive and significant relationship with OCB. From the four dimensions of PsyCap, the dimension that has the biggest correlation to the OCB among employees is resilience. According to the findings, PsyCap must be considered as an important issue to foster employees’ organizational citizenship behaviors.

As a contribution to the literature, no study has examined the relationship between PsyCap and OCB before in Egypt, in addition, this study has examined the moderating effect of intrinsic motivation on the relationship between PsyCap and OCB and showed moderating effect of intrinsic motivation on that relationship. We recommend to future studies to include other variables as individual variables (as personality) and other moderator variables (as organizational justice). This study has limitations. Firstly, Orange, Mobinil (Orange) and Vodafone refused to cooperate with the researchers, so this study was conducted only at TE. Moreover, this study conducted in
telecommunication field, future studies could be conducted in companies operating in other fields in Egypt.

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The Influence of Purchasing Strategies on Company Performance: Oil and Gas Engineering and Construction Company Case Study

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ABSTRACT

This research tries to determine the impact of various supply chain strategies and the impact of the company's interactions with suppliers on the firm's performance. The effect of these factors on the company's performance is analyzed using the structural equation modeling approach by partial least squares method (PLS). One of the main goals of a supply chain is to use a method that can bring the most and the best performance to the company. This paper reports on an applied research using survey method. 49 questions are designed to evaluate the variables. 7-point Likert scale is used to measure the questionnaire items. 300 completed questionnaires are collected and confirmed. In order to select the appropriate statistical method for testing the hypotheses, first the normality of the distribution of data has been tested using the Kolmogorov Smirnov method. Then, according to the results of this test, the nonparametric Spearman correlation coefficient and the structural equation modeling are used to analyze the data. The result of the hypothesis test shows a significant relationship between the variables. This study shows that the presence of a competitive business leads the company to invest in different situations in the supply chain, which improve company’s services and performance. In order to improve the company’s performance, managers also need to feel the need for long-term strategies for the supply chain that fits the overall business strategy rather than mid-term strategies. Researches show that it is very difficult to develop a single strategy in the purchasing process that can act as an all-inclusive strategy. Limitation to access company’s financial information is the main limitation of this research. Two types of purchase strategies were found in this research which could be the guide for Oil & Gas companies to impellent as their future purchasing strategies. The research has allowed testing and
validating the impact of purchasing strategies (Mid-Term & Long-Term) on Company’s Performance.

**Keywords:** Strategy, Supply Chain Management, Mid-term Strategy, Long-term Strategy, Company Interactions with Suppliers, Company Performance.

**INTRODUCTION**

The business environment and the level of competition that exists in the domestic and global markets require a variety of applicable strategic planning in the field of supply chain management (SCM). Firms are currently crafting adaptive supply chain strategies at the business and operations levels to be competitive in the global arena. Many large companies have a long way to know all their capabilities to enhance the supply chain management. Supply chain management system is a continuous transformation that should be facilitated by information technology at every stage. Therefore, operational management, supply chain management, and technology management are inseparable in any efficient transformation (Harps, 2000; Stonebraker & Afifi, 2004).

Although different theories tried to explain the existensial philosophy of the firm (e.g., resource-based, knowledge-based, strategy-based, and entrepreneurial), very few, if not at all, discussed about the strategists and their view of the firm. Strategic leaders’ view of the firm ultimately directs strategies and business models with either flexibility or rigidity (Gross, 2019). The concept of supply-chain (SC) is becoming increasingly important in companies after years of dominating the financial aspects, relevant for shareholders, but that if not used as a resource in business
processes, are poorly effective in creating value (Settembre Blundo et al., 2018).

This study has been conducted in three broad areas: operation’s management, supply chain management, and supplier relationship management in relation to company competitiveness. This study also investigates whether the purchasing strategy should be structured at a single level or a hierarchy of different levels for analysis. Extent body of research on the subject of purchasing strategy is severely disintegrated and dispersed. This has led to an ambiguity of literature that challenges supply chain researchers and professionals (Hesping & Schiele, 2015). In order to address this issue, this research proposes a state of the art framework that provides a multi-level understanding of the development and implementation of strategy in purchasing.

Recent studies argue that in the field of purchasing, it is difficult to develop a single, all-encompassing strategy (Hesping & Schiele, 2015). Every organization or company is a part of bigger supply chain, whether being in service or manufacturing industry. The complexity of designing and managing the supply chain is very different from every company and industry to the other. Each type of supply chain should be strategically planned before any action is taken to give it the necessary influence over the company against its competitors. In today's complex business environment, strategies should be designed as a set of flexible and integrated decisions to meet the goals of the company and business (Gattorna, 2006).

Limited research is conducted on the impact of purchasing strategies on increasing the company's performance. This is especially true for companies’ operation in the field of oil, gas and petrochemicals. This paper attempts to investigate the effect of applying different purchasing strategies on increasing company’s performance. The research data is drawn from a large
multinational consulting and construction company in the field of oil, gas and petrochemicals. The findings of this study could be generalized to use for other companies in this industry. The two main variables of the research are purchasing strategy (independent variable) and the performance of the company (dependent variable). This study also considers the “company’s interactions with suppliers” acts as the intermediate variable.

The purpose of this research is to investigate the factors affecting purchasing and supply strategies and their impact on company performance. Specifically, this paper reports the results of an empirical study that 1) identifies the determinants affecting supply chain strategies, and 2) provides an insight for planning strategic supplier-firm relationships. This study conceptualized and operationalized multiple independent and dependent variables (such as Firm’s interactions with suppliers), in order to develop a measure for SCM performance.

LITERATUR REVIEW

In a given supply chain, different strategies can be applied at different performance levels. Several studies have investigated the impact of different strategies on the efficiency and performance of the company. Among these, the research method of some studies like (Magutu, Aduda, & Nyaoga, 2015) can be noted which examined the impact of the technology agent as a moderating variable on mid-term and long-term purchasing strategies on company performance.

One of such the qualitative research studies (Gottschalg & Zollo, 2007) maps a number of inbound, internal, and outbound “chains and networks” used by a range of companies for competitiveness. That study identifies sixteen types of Supply Chain strategies, based on the intended output companies are seeking to obtain.

The Mid-Range Supply Chain Strategies are operational and will affect midterm firm performance. They include the no need for SC strategy, third-party SC strategy, tie down the firm SC strategy, and the internal system that efficiently feeds production SC strategy (Magutu et al., 2015). The supply chain strategies number 5 through 16 are most representative of how companies articulate their models for competing now and in the future. They are referred to as Long-range Supply Chain Strategies (Magutu et al., 2015).

Firms' strategic efforts to create positional advantages in the marketplace and achieve better performance by improving the efficiency and effectiveness of supply chain activities and processes heavily depend on supply chain integration (SCI). SCI is a firm's strategic collaboration and coordination with its suppliers and customers and the management of internal and external organizational processes. The essence of SCI lies in streamlining core business processes within and between firms. This yields advantages over competitors through cost reduction or superior customer value creation that are associated with superior firm performance (Leuschner, Rogers, & Charvet, 2013; Mackelprang, Robinson, Bernardes, & Webb, 2014).

Advances in technology have simultaneously intensified the need for soft infrastructure. For instance, Beth et al. (Beth et al., 2003) found that superior technology is not the ultimate solution for implementation of SCI and implied that the key to successful SCI lies mainly in organizational structures, relationships, cultures, and people (Huo, et al., 2016).
Another relevant construct in strategic management research is the company's performance. Despite this relevance, it is difficult to find a consensus on a unique definition, dimensions and method of measuring this construct. This severely limits the advancement of research and understanding around this concept.

A research (Santos, 2012), using a model grounded in stakeholder theory and a review of empirical articles explains this phenomenon. This model has six first-order dimensions: profitability, growth, customer satisfaction, employee satisfaction, social performance, and environmental performance. A second-order financial performance construct, influencing growth and profitability, correlated with the first-order inter correlated, non-financial dimensions. Results suggest that these dimensions cannot be used interchangeably, since they represent different aspects of firm’s performance, and corroborate the idea that stakeholders have different demands that need to be managed independently (Santos, 2012).

The relationship between strategic planning and corporate performance has been widely studied in past research (Magutu et al., 2015). However, the findings are still not complete. Some of these studies have proven that strategic planning is related to company performance. While other research has come to the opposite conclusion, that there is no relationship between these two items. Daft, Murphy, & Willmott (2010) defines organizational performance as the ability of an organization to utilize its resources, (e.g. knowledge, people, and raw materials) to achieve organizational goals in effective and efficient way.

Liu (2016) adapt Porter’s value chain reflecting on the context of cross-border e-commerce. In the adapted value chain in this study, primary activities include inbound logistics, marketing, supply chain and sales models, operation, pricing and service.
Firms’ performance could be examined from either an objective or a subjective perspective. However, most studies have only focused on financial measures such as profitability. Although, measurement of financial performance of the organization has long been recognized, but it is insufficient to measure the overall performance of the organization, as non-financial measurements are worth enough to be incorporated. This study highlights that both objective and subjective measures have been treated equivalent. Although, “financial data is preferable, but firms are not often willing to disclose the confidential data unless the laws require them to disclose it to public” (Dess & Robinson, 1984). However, some prior studies state that, it is relatively challenging to find financial record in public domain. In this case, subjective measures are deemed to be fruitful choices to be employed in order to measure organizational performance (Sosiawani, Ramli, Mustafa, & Yusoff, 2015).

Min (2018) indicated that the combination strategy, which refers to implementing both strategies (broadening customer scope and product diversity), improves firm performance under certain conditions. Paek & Lee (2018) explored the five factors of the service quality such as tangibles, reliability, responsiveness, assurance, empathy that can make an influence on customer satisfaction and loyalty. Although in previous studies (Magutu et al., 2015), the effect of each purchasing strategy has been reviewed on company performance, but the impact that long-term and medium-term strategies can have on the firm's performance, and the role that the company's engagement with suppliers can play in this regard and also the amount roll of company interactions with suppliers is not reviewed.
CONCEPTUAL MODEL AND HYPOTHESES

The conceptual model in Figure 1, is developed based on the arguments raised by the literature review. The main claim of this model is that the long-term and mid-term strategies positively increase firm’s performance of company. This conceptual model also argues the argument that firm’s interactions with suppliers mediates the relationship between supply chain strategies and performance of large-scale manufacturing firms in oil, gas, and petrochemicals industry.

This model illustrates the interconnection between the Supply Chain Strategies, Firm’s Interactions with Suppliers and Firm Performance in one comprehensive framework intended to aid the researcher in developing thorough understanding of the linkages between the above concepts.

Independent variables of this research include: Long-Term Purchasing Strategies in the Supply Chain, and Mid-Term Strategies in the Supply Chain. Dependent variable in this study is Company’s Performance, and intermediate variable is Company Interactions with Suppliers. These are shown in Figure 1.

![Figure 1. Conceptual Model](image-url)
Based on observations, the research shows that the interactions between company and suppliers serve as the mediator in the relationship between the long-term and medium-term purchase strategies and company’s performance. Based on this, the following assumptions were tested. Research (Magutu et al., 2015) shows that technology plays an important moderating role in the relationship between purchasing strategies and company’s performance. Another study on the same topic (Liu & Chou, 2016) shows that the company's interaction with suppliers has a positive impact on the company's performance.

Magutu (Magutu et al., 2015) performed his research on large factories in Kenya and examined the role of the company's interactions with suppliers on the company's performance. This study examines the mediating role of the company's interactions with suppliers on the relationship between the purchasing strategies and performance of the company. Therefore, this study posits:

H1: Long-term purchasing strategies in the supply chain have a positive association with the company's performance.
H2: Mid-term purchasing strategies in the supply chain have a positive association with the company's performance.
H3: Long-term purchasing strategies in the supply chain have a positive association with the company's interaction with suppliers.
H4: Mid-term purchasing strategies in the supply chain have a positive association with the company's interactions with suppliers.
H5: The Company's interactions with suppliers has a positive association with increasing the company's performance.
METHODOLOGY AND DATA COLLECTION

In this research, according to the goals and intended questions, the population of interest is all employees of the engineering, management and purchasing departments of an Engineering and Construction Company in the Oil, Gas, and Petrochemicals industry. The subject of this research is an engineering, procurement, construction, and project management company with over four decades of experience in the design and development of industrial projects, particularly in the oil, gas and petrochemical fields. This Company was established in early 70’s and provides comprehensive services for the development of industrial projects, from the initial concept of feasibility studies to the provision of license and know-how, basic design, front-end and detail engineering, followed by procurement, supply services, field engineering, construction supervision and project management.

In this research, simple random sampling method is used for sampling among employees. The sample size, calculated using the Morgan table for population of 1400, is 302. Out of all distributed questionnaires, 300 usable questionnaires were collected. In this research, for analyzing the data results has been analyzed by descriptive statistics such as central indices (Mean, Median, mode, percentage, frequency, table, and related graphs) and inferential statistics such as scattering indices, standard deviation, variance, elongation, and skewness, is used and the correlation T test is used to explain the relationship between the two variables. The software used in this study is SPSS and Smart PLS 3 which can test hypotheses and provide descriptive and inferential analyzes.

To be able to accurately generalize the results of this research, it is important to evaluate the respondent's bias (Malhotra & Grover, 1998). Specifically, this test shows the difference between those who are willing and ready to respond to questions and those
who are not interested in responding (Armstrong & Overton, 1977). The principal instrument for collecting data in surveys is the questionnaire. To allow the investigator to collect the most accurate data from respondents, the questionnaire must be unbiased. Bias is a pervasive problem in the design of questionnaires (Choi & Pak, 2005). Typically, respondents who are not biased, are examined by Chi-square test (Meyer & Collier, 2001). The Chi-square test is used to compare actual respondents and reluctant respondents in terms of a set of features, such as size, sales, initial industry segment, etc. However, in some cases, it is almost impossible to use this test to obtain information from unrelated respondents (Huang, 2012).

Figure 3 shows the significant number of research questions whereas figure 4 shows the significant numbers of research questions after implementing statistical control test. By comparing these two results, it becomes obvious that implementing statistic test control test does not have significant changes in “t” values. In other words, respondents’ tendencies to answer questions do not have any impact on their response.

**DATA ANALYSIS**

For data analysis, Kolmogorov-Smirnov test (KS test) and correlation coefficient test using SPSS software has been used. This study used the structural equation modeling software (SMART PLS) to measure the effect of research hypotheses. One of the assumptions about the association is the lack of collinearity or multiple linear relationship between variables. Therefore, the correlation coefficients between the variables used in the research, before the causal analyzes, are calculated in order to examine the absence of a common multiple linear relationship between the variables.
Table 1: Correlation matrix of the research variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall strategy</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(long term and medium term)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long-term strategy</td>
<td>0.78</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mid-term strategy</td>
<td>0.14</td>
<td>0.54</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Company interactions</td>
<td>0.34</td>
<td>0.57</td>
<td>0.60</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Company's performance</td>
<td>0.41</td>
<td>0.46</td>
<td>0.53</td>
<td>0.59</td>
<td>1.00</td>
</tr>
<tr>
<td>Statistical control</td>
<td>0.54</td>
<td>0.55</td>
<td>0.56</td>
<td>0.59</td>
<td>0.50</td>
</tr>
</tbody>
</table>

* All correlations are significant at the level of 0.05

As shown in Table 1, all correlations have values less than 0.8, so the existence of a common multiple linear relationship between variables is rejected. The highest correlation coefficient is the variable of the overall strategy and long-term strategy (r=0.783) at the strong level. And the lowest correlation coefficient is the overall strategy and midterm strategy to the extent (r=0.14), which is at a weak level.

Confirmatory Factor Analysis

Before testing the research hypotheses, significance of the relationship between items and questions should be established. Therefore, a confirmatory factor analysis is used at this stage. The factor analysis measures and quantifies the markers
selected for the given variable, which selectable markers are as accurate or representative as the variable. In the PLS software for factor analysis, it is necessary to connect all variables to each other.

Partial loadings are very important in interpreting the results of factor analysis. This shows the correlation between observed variables (questions) and their related factors. Latent variable depending on how much precision the researcher considers for eliminating the questions, the values from 0.5 to 0.7 are presented for the partial loading, but the lowest limit is 0.4 (Hulland, 1999). This means that questions with partial loading less than 0.4 are not sufficient, to remain in the model and should be eliminated. As it’s visible in Figure 2, all the loadings are higher than 0.4, so no questions will be deleted.

**Structural Model Goodness of Fit**

There are many statistical indexes used to assess the strength of measurement models. There is no standard that clearly indicates how to use indexes for particular research models (Jin, 2008). The Goodness of Fit (GOF) criterion relates to the general section of structural equation models. By this criterion, the researcher can control the fitness of a general part after examining the fitting of the measurement section and the structural part of his overall research model. In Table 2, the GOF value for the structural model of the research is calculated. The GOF criterion for goodness of fit for the model is calculated as 0.36, which indicates the strong fit of the model.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Variance explained</th>
<th>Shared values</th>
<th>GOF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall strategy (long-term and mid-term)</td>
<td>0.813</td>
<td>0.815</td>
<td></td>
</tr>
<tr>
<td>Long-term strategy</td>
<td>0.825</td>
<td>0.820</td>
<td></td>
</tr>
<tr>
<td>Mid-term strategy</td>
<td>0.562</td>
<td>0.574</td>
<td>0.36</td>
</tr>
<tr>
<td>Firm's interactions</td>
<td>0.744</td>
<td>0.801</td>
<td></td>
</tr>
<tr>
<td>Firm's performance</td>
<td>0.787</td>
<td>0.789</td>
<td></td>
</tr>
<tr>
<td>Statistical control</td>
<td>0.640</td>
<td>0.699</td>
<td></td>
</tr>
</tbody>
</table>

**FINDINGS**

The results of this study specifically illustrate the relationship between supply chain strategies and firm performance. For Hypothesis 1, the overall (long-term and middle-term strategy) of supply in the supply chain has a positive effect on the company's performance. As shown in the equations’ table of the results (Table 3), structural equation modeling is used to study the main question. Therefore, according to the variable path coefficient, the overall strategy (long-term and mid-term strategy) and the firm's performance equal to 0.831, as well as the t value of 10.2012, which is out of the significant interval (greater than 1.96) (P<0.05).
Therefore, with a confidence of 95%, we can argue that "the overall strategy (long-term and intermediate strategy) has a significance relationship on the firm's performance".

**Table 3: Results of research hypotheses**

<table>
<thead>
<tr>
<th>Relationship between research variables</th>
<th>t value</th>
<th>Direct Impact (R)</th>
<th>Whole effect</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall strategy (long-term and mid-term strategy) - Company</td>
<td>10.201</td>
<td>0.831</td>
<td>0.831</td>
<td>Approved</td>
</tr>
<tr>
<td>Long-term strategy - Company performance</td>
<td>11.334</td>
<td>0.873</td>
<td>0.873</td>
<td>Approved</td>
</tr>
<tr>
<td>Mid-term strategy - Company performance</td>
<td>7.103</td>
<td>0.499</td>
<td>0.499</td>
<td>Approved</td>
</tr>
<tr>
<td>Long-Term Strategy - Company Interactions</td>
<td>10.036</td>
<td>0.819</td>
<td>0.819</td>
<td>Approved</td>
</tr>
<tr>
<td>Mid-term Strategy - Company Interactions</td>
<td>8.235</td>
<td>0.655</td>
<td>0.655</td>
<td>Approved</td>
</tr>
<tr>
<td>Company Interactions - Company Performance</td>
<td>9.826</td>
<td>0.738</td>
<td>0.738</td>
<td>Approved</td>
</tr>
</tbody>
</table>

For Hypothesis 2, long-term strategy in the supply chain has a positive effect on increasing the firm performance. As shown in the equations' table of the results (Table 3), according to the variable path of the long-term strategy and the firm's performance.
coefficient equal to 0.873, as well as t value of 11.334 which is out of the significant interval (more than 1.96) (P <0.05). Therefore, with a confidence of 95%, we can argue that “the long-term strategy has a significance relationship on firm performance”.

For Hypothesis 3, mid-term strategy in the supply chain has a positive effect on increasing the firm performance. As shown in the equations’ table of the results (Table 3), according to the variable path of the long-term strategy and the firm’s performance coefficient equal to 0.499, as well as t value of 7.103 which is out of the significant interval (more than 1.96) (P <0.05). Therefore, with a confidence of 95%, we can argue that “The mid-term strategy has a significance relationship on firm’s performance.”

For Hypothesis 4, long-term strategy in the supply chain has a positive and significant effect on the interactions of the company with the suppliers. As shown in the equations’ table of the results (Table 3), according to the variable path of the long-term strategy and the firm’s performance coefficient equal to 0.819, as well as t value of 10.036 which is out of the significant interval (more than 1.96) (P <0.05). Therefore, with a confidence of 95%, we can argue that “Long-term strategy has a positive and significance relationship on the company’s interactions with the suppliers.

For Hypothesis 5, the mid-term strategy in the supply chain of the goods has a positive and significant effect on the company's interactions with the suppliers. As shown in the equations’ table of the results (Table 3), according to the variable path of the mid-term strategy and the interactions of the company with the suppliers, which is 0.655 and also t value of the 8.325 is out of the significant interval (more than 1.96) (P <0.05). Therefore, with a confidence of 95%, we can argue that "the middle-term strategy has a significance relationship on the company's interactions with the suppliers".
For, Hypothesis 6, the Company’s interactions with suppliers have a positive and significant effect on increasing of the company’s performance. As shown in the equations’ table of the results (Table 3), according to the variable path of the interactions between the company and the suppliers and the firm’s performance, which is 0.738, as well as t value of 9.826 that is out of the significant interval (greater than 1.96) (P <0.05). Therefore, with a confidence of 95%, we can argue that the company’s interactions with suppliers have a significance relationship on the firm’s
performance. From the information outcomes from above tables and hypotheses, it is concluded that the research variables in the statistical population of study are positive and great. The results show that long-term purchasing strategy in the supply chain has the most impact on firm’s performance and the mid-term purchase strategy in the supply chain has the least effect on the company's performance.

**Figure 3**: The Significant Number of Research Questions
DISCUSSION

Regarding the fact that several indicators were used to measure the studding variables, regression analysis was performed to ensure the accuracy of predicted relationships. Sub-hypotheses were analyzed and it was found that the company's interactions with suppliers had a mediating role in the relationship between purchasing strategies and the firm’s performance.

As shown in hypothesis 1, structural equation modeling is used to study the main question. The result of hypothesis shows that with a confidence of 95%, "the overall strategy (long-term and
intermediate strategy) has a significance relationship on the firm's performance”.

The result of hypothesis 2 shows that with a confidence of 95%, “the long-term strategy has a significance relationship on firm performance”. With considering the result of hypothesis 3, with a confidence of 95%, “The mid-term strategy has a significance relationship on firm’s performance.”

Hypothesis 4 shows with a confidence of 95%, “Long-term strategy has a positive and significance relationship on the company's interactions with the suppliers. As shown in Hypothesis 5, with a confidence of 95%, "the middle-term strategy has a significance relationship on the company's interactions with the suppliers". The result of hypothesis 6 shows with a confidence of 95% "the company's interactions with suppliers have a significance relationship on the firm's performance".

Scientific research should expand the current literature to fill the gaps for both researchers and managers (Varadarajan, 2003). In this section discusses the findings, which are derived from the original research objectives and assumptions. The main purpose of this research is to determine the effect of the utilization of purchase and service strategies on the company's performance. Accordingly, five other sub-hypotheses were proposed and examined whether the company's interaction with suppliers could play a mediating role in the relationship between purchasing strategies and firm’s performance or not. It shows that these interactions will have a positive role in this regard.

The company's performance can be measured by various indicators, including financial and non-financial. Nonfinancial business performances are related with long-term goals and growth potential. Innovative proactiveness affects nonfinancial business performance (Cho & Lee, 2018).
The indicators used in this research are mainly financial indicators by applying the employee's viewpoint. In this paper, drawing on studies in the same field (Magutu et al., 2015), the purchase strategies (long-term and mid-term) has a positive impact on the company's performance. This result suggests that applying a strategy to purchase and services can have a positive impact, though small, on the company's performance. Although each of these strategies alone will increase performance, the results of the research showed that the impact of the long-term strategy's role is far greater than in the mid-term strategies.

In the other part of the study, despite the above research (Magutu et al., 2015) which investigates the moderating role of technology on the company's performance, the role of the company's interactions with suppliers as mediator was found on the relationship between purchasing strategies and firm's performance. This study shows that in addition to technology, other factors, such as the company's interaction with suppliers, have a positive impact on the company's performance.

**CONCLUSION AND IMPLICATIONS**

This study sought to explore what contradictions further to reveal the relationship between the use of supply chain strategies and the performance of the company, especially in the engineering and consulting companies in the field of oil, gas and petrochemicals. The data of this research is provided by a group of employees of the largest companies in this field, which is why it can be a good indicator for other peers and partners.

The results clearly show a strong relationship between the supply chain strategies and the company's overall performance. This study found that the way companies interact with suppliers can play a very meaningful role in the relationship between supply
chain strategies and overall firm's performance. Moreover, the unique effects of independent variables (mid-term and long-term supply chain strategies), as well as their combined effect on the dependent variable (firm's performance) has been determined.

The strategic planning process for companies can be short-term, mid-term, or long-term. Long-term strategy is more competitive than short-term and mid-term strategies. In this research, it has been determined that the overall supply chain strategy (long-term and mid-term strategy) can have a positive impact on firm's performance. Also, the use of long-term strategies can have a positive impact on the company's performance, which will increase the company's performance. Although the use of mid-term strategies has a small impact on the company's performance, however, the use of these strategies can also increase the company's performance. In this research, the positive effect that the use of long-term and mid-term strategies can have on the amount of interactions between the company and suppliers is also noted. The positive impact of the company's interaction with suppliers on the company's performance is the latest achievement of this research.

Companies active in the field of oil, gas and petrochemicals are exposed to the huge amount of purchasing materials and faced with important issues such as purchasing and supplying their own goods. With utilization of the strategic purchasing system, in addition to saving on production costs, they could reduce the cost of distribution of inquiries and purchases of goods as well as design duration. And it causes both sides, namely, the suppliers of goods and companies, to profit and customer loyalty increases in repeat purchases, as a result, improves financial performance of the company.

Therefore, they can benefit from the findings of this study in their policy and management activities of their purchasing
strategies. They can also benefit from the managerial concepts of these findings. They can use them in their long-term planning. Regardless of the activities of a number of intelligent, executives and managers in the field of supply chain strategy, there are few practical studies that can teach managers ideas and applied lessons that can be used as a supply chain strategy that improves the company’s performance. Although initial investments in deploying supply chain has been a major obstacle, the net revenue stream over the investment period should be positive in the long run (Kim, Sung-Ho and Kwon, 2015).

Limitation is one of the issues that negatively affects the quality of the research and research findings. In field research, these limitations are more than laboratory research. All researches are confronted with limitations and are not specific to this research. In general, we can mention the limitations we encountered in this study: Firstly, due to the time limitation, the questionnaires were completed only by a group of employees. Secondly, the tool used in this research is a questionnaire form, which is one of the inherent limitations of the research. Because respondents may respond to the questionnaire based on personal beliefs, the data collected for this research relies on self-reporting data, or it may be completed by other people who are outside the control of the researcher. Thirdly, the best company’s performance measurement tool is studying of the company’s financial information, but companies are often reluctant to disclose their financial information, and this research was no exception. Therefore, in order to assess the company's performance, the increase or decrease of profitability criteria is measured according to the employee’s perspective.

In the process of doing this research, we found some issues that could not be studied in this study. Also, the results of this research
show us new windows on this subject. By presenting these cases, we hope that this finding could be a way for the future researchers.

Firstly, due to the complexities of the project, the present research is conducted only on a sample of oil and gas and petrochemical engineering and consulting companies, so this research can be re-examined for other types of companies in this field, including contractors. Secondly, since this research has been carried out within a certain time frame, it is suggested that the same study be performed again at a different time interval and the results of these two studies be compared. Thirdly, in future research, the role of other variables that can be influential in this regard is also to be considered. Lastly, it is suggested to check the firm’s performance for other companies by studying their financial data in order to obtain a more accurate conclusion about the firm’s performance.

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Impact of Platform on Customer Participation Intention: Co-creation of Open Platform and Closed Platform

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ABSTRACT

It is widely known that open platforms have a positive influence on performance (Chesbrough, 2003; Almirall et al., 2010). However, on the contrary, the argument that closed platforms have a positive influence on performance also exists (open-first, 2010). In this sense, this paper questions whether a platform should be chose into open one or closed. This research claims that both open platform and closed platform can influence to performance. In addition, Identifies and understands the effect of between open platform and closed platform and customer participation intention.

Keywords: Open platform, Closed platform, Customer Participation intention, Co-creation
INTRODUCTION

Companies around the world are competing to survive in the uncertainty of the 4th industrial revolution (Kyung and David, 2018). On the other hand, consumers’ demands are increasing. So companies must acquire suitable strategies for immediate flow of product and information (Rohita, 2009). In this regard, the advent of the Internet and platform business have been acknowledged as successful. According to Kuttner (1998) and the Internet is a nearly perfect market because information is instantaneous and buyers can compare the offerings of sellers worldwide (Ki-Han & Jae-Ik, 2008).

In addition, traditional firms that fail to learn new strategic principles by creating platforms have a difficult time, and if a platform enters into an identical marketplace, the platform mostly succeeds (Van Alstyne, Parker & Choudary, 2016). Calibrating the right level of openness is undoubtedly one of the most complex as well as one of the most critical decisions that a platform business must make, and the decision affects usage, developer participation, monetization, and regulation. In addition, platforms that manage in analogous field can differentiation by apply various levels and kinds of openness (Parker et al., 2016).

In recently papers, there were numerous studies of platform. However, empirically study is rarely happened. Likewise, the prior empirical studies of open platform or closed platform have little experience. Hence, this research suggests empirically study about open platform and closed platform. The objective of this study is identify the effect of between open platform, closed platform and customer participation intention. Our results can become a standard of judgment to platform companies or companies which are adopting their own platform businesses.
This paper is organized into five chapters. Chapter one provides an overview of the field of this research. In chapter two, this research indicates literature review. Chapter three defines theoretical framework. In chapter four, this paper provides discussion and propositions. Lastly, chapter five presents conclusion.

**LITERATURE REVIEW**

Platform is a business ecosystem that matches buyers with suppliers, who transact directly with each other using system resources (Parker, Alstyne & Choudary, 2016). According to Eisenmann, et al. (2008) opening a platform can spur adoption by harnessing network effects, typically reduces users’ switching costs and stimulating production of differentiated goods that meet the needs of user segments. However, on the other hand, West (2003) argues that the most successful platforms were owned by proprietary sponsors that controlled platform evolution and appropriated associated rewards. In this sense, this paper questions whether a platform should be divided only into open one or closed. And this research presents that adamantly regarding a platform as open one or closed could cause confusion. The option between open and closed is not black and white (Parker, et al., 2016).

This research claims that both open platform and closed platform can influence to performance. For the study, firstly this paper investigated precedent studies and measurements of open platform and closed platform (Table 1).
Table 1: Preceding researches of open platform and closed platform

<table>
<thead>
<tr>
<th>Research topic</th>
<th>Author (year)</th>
<th>Finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open platform</td>
<td>Chesbrough (2003)</td>
<td>The open innovation model has many advantages over the closed model.</td>
</tr>
<tr>
<td></td>
<td>Eisenmann, et al. (2008)</td>
<td>Opening a platform can spur adoption by harnessing network effects, typically reduces users’ switching costs. And stimulating production of differentiated goods that meet the needs of user segments.</td>
</tr>
<tr>
<td></td>
<td>Almirall et al., (2010)</td>
<td>Open platforms have a positive influence on performance.</td>
</tr>
<tr>
<td>Closed platform</td>
<td>West (2003)</td>
<td>The most successful platforms were owned by proprietary sponsors that controlled platform evolution and appropriated associated rewards.</td>
</tr>
<tr>
<td></td>
<td>Open-First (2010)</td>
<td>Developer satisfaction and user loyalty are higher in closed environments.</td>
</tr>
<tr>
<td></td>
<td>Song, Park &amp; Kim (2013)</td>
<td>Closed platform generates higher levels of app sales than open platform, and is more effective.</td>
</tr>
</tbody>
</table>

Prior studies might regarded the closed platform to the opposite of open, nevertheless, both open and closed are undoubtedly
different being. Thus, this paper claims both platform openness and closed-ness, and proceeds as like this: Both open platform and closed platform will have a positive effect on performance of platform.

In addition, this paper argues that brand awareness of platform company can adjust influence between platform and customer participation intention. According to Hellofs & Jacobson (1999), Customers mostly want to get popular brands when lacking product experience because they “incur psychological benefits from using brands that are popular”.

THEORETICAL FRAMEWORK

Open platform
For free participation, a prior research of platform openness regards non-limiting participation of each stakeholder to open. For usefulness of information exchange, a platform is basically an infrastructure for facilitate interaction among supply-side user and demand-side users of value, and these two stakeholder connect with each other and exchanges through participation in platform—an exchange of information, products or services. Through this interaction, increased utility and further, the platform company can attract other participants (Parker et al., 2016). For open source, an open means that platform creators are willing to give up some of their own profits in order to seed interest, increase overall value and build an ecosystem through others (Parker, 2012).

Closed platform
For, distinctiveness of restrictions, according to Choudary, et al. (2016), a platform is “open” to the extent that: 1) No restrictions are placed on participation in its development, commercialization or use. 2) The limits (e.g. pay licensing fees) are reasonable and
non-discriminatory, that is, they are applied uniformly to all potential platform participants. However, this paper ascribed the criteria to closed-ness. For product pre-screening, according to Song (2013), pre-screening of product reduces consumer uncertainty about product quality. On the other hand, in case of a firm doesn’t pre-screen their product, and any product can be accepted openly, the firm will increase risk. For customer participation intention, one of the features of successful platform is structure which can generate a series of word of mouth as a network effect by interactions between groups of user (Eisenmann, et al., 2008). Network effect (Shapino & Varian, 1998) means the more user numbers who spend on same products increase, the utility that gets by consuming the product.

**PROPOSITIONS DEVELOPMENT**

Figure shows theoretical framework of the effect of between open platform and closed platform with customer participation intention.

![Figure 1: Theoretical framework of the effect of between open platform and closed platform with customer participation intention](image-url)
Based on the literature review and study model, propositions are suggested as follows:

P1. Open platform has a positive effect on customer participation intention.

P2. Closed platform has a positive effect on customer participation intention.

P3. The association between open platform and customer participation intention is mediated by the brand awareness.

P4. The association between closed platform and customer participation intention is mediated by the brand awareness.

CONCLUSION

This paper examined the determinants of open platform and closed platform based on the literature review. Firstly, open platform has a positive effect on customer participation intention. Secondly, closed platform has a positive effect on customer participation intention. Thirdly, the association between open platform and customer participation intention is mediated by the brand awareness. Fourthly, the association between closed platform and customer participation intention is mediated by the brand awareness. Our research can become a standard of judgment to platform companies or companies which are adopting their own platform businesses.

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ABSTRACT

This article investigates if reforms of financial markets in Costa Rica have reduced the concentration of the financial industry and the interest-rate spread, two desirable outcomes of financial reforms. Our investigation shows that the concentration of the financial industry, measured by the Herfindhal-Hirschman index, fell notably after the conclusion of the reforms, suggesting an
increased competition among financial institutions. Our research, however, does not support the view that the fall in concentration led to a reduction in the interest-rate spread. We provide explanations for the results and suggest avenues for future research.

Keywords: Reform of financial markets, concentration of financial markets, interest-rate spread, economic policy, Costa Rica financial markets

INTRODUCTION

This study aims to scrutinize some of the possible consequences of the financial reforms in Costa Rica, i.e. the changes in the regulatory framework of the financial system of Costa Rica that took place after the mid-1980s. Paramount among those measures were the removal of non-market setting of loans and interest rates, the abolition of the monopoly of State-owned banks to issue checking and savings accounts, as well as the creation of a regulator with enhanced powers and its own board (Rivera & Rodríguez, 2008).

More specifically, we seek to analyze whether financial liberalization enhanced competition among Costa Rican financial institutions, and if this greater competition resulted in a reduced interest-rate spread in the Costa Rican economy during the period 1996-2017. We employ the terms “interest-rate margin” or “interest-rate spread” interchangeably to designate the difference between the rates charged on average by financial institutions for the loans that they provide to their customers and the average of the interest rates that they pay to the holders of deposits and savings.
The issue under discussion is of great importance for decision-makers and deserves scholarly attention. According to Faizan Iftikhar (2016) the conventional wisdom is that banks’ interest margins have become important to examine, because they contain essential elements concerning the performance and efficiency of the banking system. González-Vega contends that the primary target of a financial reform must be a reduction in the cost of transactions for all participants in the formal financial markets. This reduction could decrease the total cost of debt for the investors, and improve the net return for depositors, fostering simultaneously savings and investment (González-Vega, 1994). Empirical research does not necessarily give credence to the view that liberalization of financial markets, at least in Latin America, has been necessarily followed by a reduction in the interest-rate spreads. Brock & Rojas (2000) report that such spreads were higher in Latin American countries during the first half of the 1990s, than those prevailing in industrial countries. Barajas et al. (1999, cited by Faizan Iftikhar, 2016) found that interest-rate spreads in Colombia before liberalization did not differ from those corresponding to the post-liberalization period. These insights are the main motivation for the present article.

The contribution of this paper to the literature is multipronged. Firstly, it reports about the evolution of the concentration of the financial industry in Costa Rica, measured by the Herfindhal-Hirschman index (henceforth, HHI), an indicator that has a potential impact on the degree of competition of that industry. Moreover, our article tackles that question in the context of a wide time span, more than two decades. Secondly, our article presents two measures of the concentration in the financial industry. We measure it in terms of a limited definition of the financial industry, comprised solely of banks, and a larger definition of the financial industry that takes into consideration the growing presence of
other non-banking institutions in the financial landscape of Costa Rica, such as credit unions. Thirdly, we revisit the connection between the concentration in financial industry and the interest-rate spread in the economy. The topic has been examined before in the context of the individual banks and for shorter periods of time by Barquero & Segura (2011), Alfaro & Muñoz (2012), and Castro & Serrano (2013).

The remainder of the article goes as follows. The next section presents a review of the literature, and succinctly presents the evolution of the Costa Rican financial system, highlighting the main traits of the reforms. The third section discusses the methodology of the study, including the definition of variables as well as the sources of the data employed in the study. A fourth section presents the results of the study. The fifth section discusses the results of our investigation. A last section wraps up the article, offering conclusions and suggesting avenues for future research.

LITERATURE REVIEW

McKinnon (1973) and Shaw (1973) asserted that financial repression was a widespread trait of financial systems in developing countries. According to Goldstein (2001) the approach of these authors emphasizes the negative effects of governmental intervention on financial markets, such as low levels of financial intermediation, fragmented capital markets, capital flight, preferential treatment of well-connected groups, and large interest-rate margins. In Costa Rica, financial repression was facilitated by the Decree of Nationalization of the Commercial Banks, issued on June 19, 1948. Franklin (1998) reports that nationalization of the banks was one of the first measures undertaken by the junta that assumed power after the end of the civil war. The decree permitted, in the first place, the nationalization of three private-sector banks.
It also established that the newly nationalized banks, along with the Banco Nacional de Costa Rica, founded as a State-owned bank in 1914, were the only ones with the legal privilege of issuing checking accounts. A small bank, the Banco Lyon, was not nationalized, but it was not authorized to mobilize resources from the public (González-Vega, 1990; González-Vega & Mesalles, 1988).

González-Vega (1990) argues that the nationalization of banks attempted to sort out the dilemma between stability of the monetary system and sufficient risk-taking by banks, able to promote economic development.

The laudable intentions of the nationalization of commercial banks in Costa Rica, however, encountered great difficulties in being realized in practice (González-Vega & Mesalles, 1988). The emerging groups that pushed for the nationalization of the banks looked for economic opportunities of investment that the private banks would have avoided, given their risk. Over time, the Central Bank of Costa Rica set up quantitative controls in the loan portfolios of State-owned banks, the so-called “topes de cartera.” The operation of these quantitative controls was complex. Every year, the Central Bank of Costa Rica designed a “programa de crédito” (credit plan) containing ceilings for activities that were deemed to be strategic by the monetary authorities of the country. In practice, these ceilings gradually became an entitlement, in the sense that commercial banks were obliged to lend at least the credit volume of the previous year for a specific activity, even if the economic prospects for the activity had changed. The result was a rigid allocation of credit, which tended to replicate itself every year and a low innovative capacity of State-owned commercial banks. The Central Bank had the legal ability to set the deposit and loan interest rates. There was, in fact, a different interest rate for each item in the credit programming, creating ample room for rent-seeking activities (González-Vega & Mesalles, 1988). The
commercial banks largely became institutions dominated by borrowers, who took advantage of implicit subsidies, to the detriment of deposit-holders. It has been estimated that in 1974 lenders of the agricultural sectors benefited from an implicit subsidy that was equivalent to a fifth of the valued added by the agricultural sector that year (González-Vega, 1990).

During the period 1948-1978, Costa Rica saw important economic growth, based on agricultural exports and industrialization supported by the substitution of imports. Nevertheless, at the end of the 1970s, Costa Rica entered a strong economic crisis, without precedent since the Great Depression in the 1930s. In July 1981, the country stopped servicing its external debt. The economic decline that ensued was massive. In just two years, the per capita gross domestic product and the private consumption per capita fell 10% and 20%, respectively. Inflation reached 100%, while a strong devaluation of the local currency, the Costa Rican colón, took place. The rate of open unemployment also doubled during 1982. To confront this economic decline, the authorities implemented stabilization policies, followed by structural adjustments, leading to a new model of development, based on the liberalization of international trade, the promotion of exports, as well as the reform of the financial sector and the State agencies (Sauma & Trejos, 1999).

We argue that there were two waves of reform of the financial sector. The first wave took place during the mid and late 1980s. Between 1984 and 1987, the Central Bank stopped setting ceilings on the loan portfolios of commercial banks. The private sector banks were authorized to have access to rediscount at the Central Bank in the case of foreign sources. They were also authorized to mobilize funds from donor agencies which were destined for the private sector, with the guarantee of the Central Bank. Regulation of financial players was strengthened as well, using funds from a
structural-adjustment loan provided by the World Bank (Lizano, 2004).

Reform of the financial sector in Costa Rica was greatly deepened in 1995 when a law abolished the exclusivity of State-owned commercial banks to issue checking accounts (García Soto, 2004; Goldstein, 2001; Cerdas, 2015). As pointed out above, the privilege granted to State-owned banks to be the sole entities able to issue checking accounts had a significant economic impact. By 1992 deposits on checking accounts absorbed 40.5% of liabilities connected with financial intermediation of the State-owned banks. Moreover, at the beginning of the 1990s these banks also had the exclusive right to issue savings accounts. The latter source of funds absorbed 15.7% of the liabilities of State-owned banks (Camacho & Mesalles, 1994).

In 1995 the Auditoría General de Entidades Financieras (AGEF) was transformed into the Superintendencia General de Entidades Financieras (SUGEF), as an independent body with its own board. SUGEF received the mandate to implement an ex ante prudential supervision, which replaced the ex post, repressive model, of supervision that prevailed until then (SUGEF, 2018). The end of the monopoly of State-owned commercial banks in issuing checking and savings accounts and the creation of SUGEF constitute what we call the second wave of financial reforms in Costa Rica. Given the depth of the two waves of reform, and the time elapsed since their implementation, we consider it worth inquiring into the capacity of those reforms to foster competition in the Costa Rican financial system. We also set out as an objective of the study to analyze if a more competitive environment in the financial industry has been able to reduce the interest-rate spread in Costa Rica.

The impact of the concentration in the Costa Rican financial industry, measured by the Herfindhal-Hirschman index (HHI), on the interest-rate margins of individual institutions in Costa Rica
has been previously explored by Alfaro & Muñoz (2012). Their study covers data from the years 1995 to 2010. The authors reported a positive and significant relationship between HHI and their measures of the margins of banks, supporting the view that a greater concentration of the financial industry leads to greater interest-rate margins. Barquero & Segura (2011), using monthly data of Costa Rican banks for the period 1994-2011 also concluded that HHI had a positive and significant relationship with the interest-rate margins. This is congruent with Demirgüç-Kunt, Laeven, & Levine (2004), who argue that the regulatory impediments to competition and monopolistic power create an environment in which a few powerful banks hamper competition with deleterious consequences for efficiency. In their view, high concentration is a useful sign of an uncompetitive and hence inefficient market. However, other researchers, such as Barajas (1999, cited by Faizan Iftikhar, 2016) report that liberalization of the financial sector does not seem able to lower the interest-rate spread. If the latter is the case, we reason that reduction in the concentration of the financial industry, resulting from liberalization, might not have any significant impact on the interest-rate spread.

We scrutinize the impact of HHI on the interest-rate margins exhibited by the Costa Rican financial system. We draw on previous literature to identify other variables that can play a role in the determination of interest-rate margins at an economy-wide level of aggregation. Demirgüç-Kunt et al. (2004) reason that countries with high inflation will have underdeveloped financial systems and banks. Their study found a positive and significant relationship between the interest rate margin and inflation, although they considered it to have been moderate in terms of its economic impact. Brock & Rojas (2000) included into their analysis the impact of the ratio of debt in arrears on the interest-rate margin.
They found empirical support for the view that this variable would increase the margin in just one country in their sample, out of six countries that they analyzed. We decided to analyze the impact of the ratio of debt in arrears to total assets, for two reasons. González-Vega & Mesalles (1988) documented an important degree of political interference in decision-making in State-owned commercial banks in Costa Rica. Given that this type of bank accounted for nearly 40% of the financial system in 2016 (data not shown for the sake of saving space), we wonder if their ratio of debt in arrears to assets could tilt upwards the margin of the interest rates for the whole financial system. Thus, for the sake of brevity, we attempt here to estimate a simple linear model. It can be stated algebraically as follows:

\[
\text{interest rate margin}_i = \beta_0 + \beta_1 HHI_i + \beta_2 \text{Inf}_i + \beta_3 \text{Ratio DiA}_i + \epsilon_i
\]

In this model, the dependant variable is the interest-rate margin, which denotes the difference between the average of the loan and deposit interest-rates in the economy; HHI denotes the value of the Herfindhal-Hirschman index, Inf; represents the level of the inflation in year \(i\); Ratio DiA represents the ratio of debt in arrears to total assets of the financial sector, and \(\epsilon_i\) is a stochastic disturbance.

**METHODOLOGY**

All data reported in our study are annual and refer to the period from 1996 to 2017. The interest-rate margin was taken from the International Financial Statistics (IFS) database, put together by the International Monetary Fund (no date). It is the result of subtracting the deposit rate (line 60l) from the lending rate (line
Inflation comes from the consumer price index reported by the IFS database (line 64). We follow McMillan & McMillan (2016) and Hirschman (1965) in computing HHI which is defined as indicated in equation 2:

$$\text{HHI} = \sum_{i}^{N} \frac{S_i^2}{N}$$

where \(N\) equals the number of financial institutions; \(S_i\) denotes the market share of each institution, measured in terms of the ratio of the accounting value of total assets of the financial institution \(i\) to the accounting value of total assets of the ensemble of institutions. We drew on the database of SUGEF (no date) to retrieve the data needed to calculate the HHI. We retrieved the accounting value of total assets for all financial institutions regulated by SUGEF, except for offices of exchange, which are also regulated by SUGEF. The latter were excluded because their income data revealed that they do not mobilize resources from the public. We also retrieved the accounting value of debt that has been in arrears for 90 days or more from the database of SUGEF and also report the ratio of that latter value to the accounting value of total assets of the financial sector as a whole.

RESULTS

Table 1 shows data from the variables selected for our study. It is worth underscoring the sharp reduction in the HHI. It went down, from 0.2344 in 1996 to 0.1072 in 2017, if we calculate it for the ensemble of the financial institutions. When a subsample comprising solely commercial banks is considered, our metric for concentration also shows a clear drop, from 0.3250 in 1996 to 0.1844 in 2017. HHI ranges from a value approaching to 0, as the
numbers of firms with small shares of the market becomes very large, to 1, when a market is dominated by a single firm. It is not possible to set theoretically any threshold serving as an indicator of when competition begins to be impaired. The Federal Trade Commission of the United States uses HHI, among other criteria, to assess if a proposed horizontal merger may adversely affect competition, as does its sister agency, the Department of Justice (Coate, Kleit, & Bustamente, 1995). According to the guidelines issued by the latter, a HHI between 0.15 and 0.25 is considered to be “moderately concentrated,” while an industry exhibiting a HHI that exceeds 0.25 is regarded as “highly concentrated.” Merger transactions that would increase the HHI in a highly concentrated market by 0.02 are presumed likely to enhance the market power of the resulting firm (Department of Justice, 2018). By these standards, the concentration of the Costa Rican financial industry looked in 1996 to be as “highly concentrated” if only banks were included in the calculation of HHI and “moderately concentrated” for a wider definition of the financial system. The values of HHI fell during the period under scrutiny, for most years. In 2017 the value of HHI calculated for commercial banks was 0.1844, falling under the category of “moderately concentrated.” The metric exhibited a value of just 0.1072 in 2017, for the ensemble of actors in the financial system.

Visual inspection yields a less clear-cut picture of other variables incorporated in our analysis. The interest-rate spread that started at 8.98% in 1996 ended up at 8.58% in 2017, with multiple ups and downs during the period under scrutiny. Most of the time, inflation stayed above the two digits until 2009, and it shows a downturn afterwards. The ratio of the debt that has been in arrears for 90 days or more to total assets shows no discernible pattern, with multiple ups and downs along the period. It is possible to observe, nevertheless, that the ratios of bad debt were
higher during the period 1996-2000, when they reached on average 1.99% of total assets.

Table 1: Evolution of concentration of the financial industry, measured by the Herfindhal-Hirschman index, and other key indicators, 1996-2017

<table>
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<tbody>
<tr>
<td>Growth rate</td>
<td>2.02</td>
<td>2.04</td>
<td>2.07</td>
<td>2.04</td>
<td>2.03</td>
<td>2.04</td>
<td>2.02</td>
<td>2.01</td>
<td>1.98</td>
<td>1.97</td>
<td>1.95</td>
<td>1.93</td>
<td>1.92</td>
<td>1.90</td>
<td>1.88</td>
<td>1.86</td>
<td>1.85</td>
<td>1.82</td>
<td>1.80</td>
<td>1.78</td>
<td>1.77</td>
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<tr>
<td>Interest rate spread</td>
<td>2.08</td>
<td>1.97</td>
<td>1.87</td>
<td>1.75</td>
<td>1.65</td>
<td>1.57</td>
<td>1.49</td>
<td>1.42</td>
<td>1.35</td>
<td>1.30</td>
<td>1.27</td>
<td>1.26</td>
<td>1.25</td>
<td>1.24</td>
<td>1.24</td>
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<td>1.24</td>
<td>1.24</td>
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<tr>
<td>HHI (all institutions)</td>
<td>0.284</td>
<td>0.281</td>
<td>0.280</td>
<td>0.279</td>
<td>0.278</td>
<td>0.277</td>
<td>0.275</td>
<td>0.273</td>
<td>0.272</td>
<td>0.272</td>
<td>0.272</td>
<td>0.272</td>
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<tr>
<td>No of reported institutions</td>
<td>57</td>
<td>56</td>
<td>54</td>
<td>53</td>
<td>51</td>
<td>49</td>
<td>48</td>
<td>47</td>
<td>45</td>
<td>44</td>
<td>43</td>
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<td>40</td>
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<td>36</td>
<td>35</td>
<td>34</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>HHI (commercial banks only)</td>
<td>0.259</td>
<td>0.254</td>
<td>0.250</td>
<td>0.246</td>
<td>0.242</td>
<td>0.238</td>
<td>0.235</td>
<td>0.232</td>
<td>0.229</td>
<td>0.226</td>
<td>0.223</td>
<td>0.221</td>
<td>0.219</td>
<td>0.217</td>
<td>0.215</td>
<td>0.214</td>
<td>0.213</td>
<td>0.212</td>
<td>0.211</td>
<td>0.211</td>
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</table>

1/Millions of current Costa Rican colones

We ran several ordinary-least-squares regressions to test the relationship between the dependent variable, i.e. the spread of interest rates, and our set of independent variables, namely the two versions of HHI (for the ensemble of actors in the financial market, and only for banks), the inflation rate and the ratio of debt that had been in arrears for 90 days or more or that is being collected in the judicial system. For simplicity, we call the latter “bad debt.”

Table 2 presents the results of the different models that we estimated. It is important to highlight from models one and four in Table 2 that HHI, in the versions that we calculated, does not appear to have an impact on the value of the interest-rate spread, because the coefficients are not significant at any of the conventional thresholds of statistical confidence. Adding to the regression, the other independent variables (inflation rate and bad-debt ratio), does not yield better results: none of the coefficients are statistically significant, independently of the definition of HHI that we employ (see the results for models two and five).
The results just described allow us to safely conclude that there is absence of a linear relationship between the interest-rate margin and the HHI, in both of the two versions of the latter presented in this study. To test the possibility of a non-linear relationship between the interest-rate spread and HHI, we estimate the parameters of a model that includes as independent variables the value for each year of HHI and its square, as described in equation (3).

$$\text{interest-rate margin}_i = \beta_0 + \beta_1 \text{HHI}_i + \beta_2 \text{HHI}_i^2 + \epsilon_i \quad (3)$$

### Table 2. Estimation of coefficients, least-squares regressions, dependent variable: interest-rate spread

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
<th>Model 6</th>
</tr>
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<tbody>
<tr>
<td>HHI (all institutions)</td>
<td>-10.918</td>
<td>-22.579</td>
<td>182.167*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HHI (commercial banks only)</td>
<td>-.833</td>
<td>-.663</td>
<td>1.9</td>
<td></td>
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<tr>
<td>Inflation rate</td>
<td>.198</td>
<td>.993</td>
<td>.185</td>
<td>.986</td>
<td>.599</td>
<td>.693</td>
</tr>
<tr>
<td>Bad debt ratio</td>
<td>-.941</td>
<td>-.986</td>
<td>.599</td>
<td>-.693</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Squared-HHI (all institutions)</td>
<td>607.706*</td>
<td></td>
<td></td>
<td></td>
<td>-2.030</td>
<td></td>
</tr>
<tr>
<td>Squared-HHI (commercial banks only)</td>
<td></td>
<td></td>
<td>470.341*</td>
<td></td>
<td>-1.996</td>
<td></td>
</tr>
</tbody>
</table>

Note: ***, **, * indicate coefficients which are significant at the 99, 95 and 90 percent levels of significance, t-statistics appear beneath the coefficients. We do not report the values for the constants of the models.
Model three and six present the estimated values for equation 3, for HHI calculated for the ensemble of actors in the financial market and for banks only. Table 2 suggests that there is indeed a non-linear relationship between the two variables, independently of the definition that we employ to calculate HHI. The coefficients are statistically significant at the 90 percent level.

If the stochastic errors are on average zero, we calculate the values of the interest-rate spread for a number of values of HHI, using for that purpose the values of the estimated parameters presented in model three of Table 2. The results, not presented for the sake of saving space, suggest a concave relationship between HHI and the dependent variable, with an inflexion point that must be located between the values of 0.15 and 0.20 of HHI.

DISCUSSION

This article aimed to analyze the evolution of the concentration of the financial industry in Costa Rica resulting from the financial reforms, and its potential impact on the interest-rate margin.

Our results clearly show that the sweeping reforms of the financial sector brought about a clear reduction in the concentration of the financial industry from 1996 to 2017. We reported that the Herfindhal-Hirschman index (HHI), our indicator of concentration, fell sharply after 1996. The metric was 0.325 in 1996, if only banks were included in its calculation. It fell to 0.1844 in 2017. When all other players of the financial sector were included in the calculation of HHI, the reduction was even more drastic. HHI was 0.2364 in 1996 in this case, and it fell in 2017 to 0.1072. Measured by this standard, the financial reform of Costa Rica looks like a resounding success.

However, our regressions showed no significant linear connection between the HHI as independent variable and the
interest-rate margin. Inflation and bad debt, which presumably should have a positive relationship with the margin, failed to exhibit any linear relationship as well.

Our results give support the view that financial reforms in Latin America had failed to bring about changes in the interest-rate spread, a possibility suggested by Brock & Rojas (2000). Our research provides evidence that is also consistent with the findings of Rivera & Rodríguez (2008), who argue that in spite of the reforms, foreign banks exhibited a limited presence in Costa Rica and other Central American countries, a factor that may cripple competition for clients among banks and other financial institutions. The authors also report that, while economic agents perceive that the financial systems of Central American countries facilitate investing abroad, companies still depend on local institutions to secure credit.

There also other aspects that may explain our results. One possibility is that HHI while reflecting concentration fails to describe the desire of actors in the financial sector to compete among themselves. The lack of a linear relationship between HHI and the interest-rate margin may also reflect the fact that, while the reforms levelled the playing field among actors in the financial system, they left untouched an important number of distortions that impair competition. A recent report suggests that the diverse players of the industry are confronted by numerous different rules (Academia de Centroamérica, 2018). For instance, the deposits of the public in the State-owned commercial banks can be guaranteed by the government, if it so decides. Deposit holders in private banks and credit unions cannot benefit from any governmental guarantee. Therefore, in order to cope with a higher risk, depositors should demand higher interest rates for their deposits, limiting the capacity of private banks and credit unions to reduce the interest rates that they charge for their loans. Also, private-
sector banks can issue checking accounts only if they devote 17 percent of the amount that they mobilize from the public to development banking projects or if they transfer the funds for that purpose to the State-owned banks, a regulation that obviously increases their costs of operation. State-owned corporations should open checking accounts only in State-owned banks. Those and other distortions created by an asymmetrical regulatory system are possibly constraining the ability of previous financial reforms to have an impact on the spread margins of the economy.

It is worth to mention that we found a statistically significant non-linear relationship between HHI and the interest-rate margin. Using the estimated parameters of the equation, we calculate values that seem to predict a concave relationship between HHI and the interest-rate margin. Explanations for that behaviour are not easy to find or to intuit. One possibility could be that smaller financial actors in a low-concentrated financial market tend to compete with each other on the basis of service or other non-pricing attributes, until the market is controlled by a few oligopolies, concentration becomes higher and competition on price is stronger, leading to a fall in the interest-rate spread. Previous literature suggests that actors in the financial industry experience economies of scale (Cole, 1974; Noulas, Ray & Miller, 1990), but it is not clear why economies of scale might only work to diminish the interest-rate spread after a level of concentration has been reached. This result is puzzling, and we do not have a ready-made explanation for it. We recognize that the explanation is incomplete at best, and that the topic clearly demands more reflection.

CONCLUDING REMARKS

Since the mid-1980s Costa Rica embarked on a deep reform of its financial markets. In a first step, the non-market setting of
interest-rates and governmental intervention in the allocation of credit were abolished. A stronger regulator of financial actors was set up in 1995, at the same time that the monopoly of State-owned commercial banks to issue checking accounts and savings accounts was abolished.

We must acknowledge that we have a limited number of observations. Our study could be replicated putting together data for several countries. In spite of the possible shortcomings of the article, it also provides support for the view that the reform of the financial markets of Costa Rica has not been able to reduce the interest-rate spread. Regulators could draw on this conclusion to envisage new policies that are able to attain a reduction of the spread, an outcome that could simultaneously increase savings and stimulate investment. There are other aspects of the evolution of the Costa Rican financial system that could have changed as a consequence of the reforms, which have not been included in our study. For instance, it has been argued that the stability and soundness of the financial system is critical for developing economies (Oyuntsatsral & Mukhzaya (2012). Future researchers could be interested in exploring that aspect of the evolution of the Costa Rican financial system after the implementation of the reforms.

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Superintendencia General De Entidades Financieras (SUGEF). No date. Database on financial and accounting information of regulated entities. URL: https://www.sugef.fi.cr/reportes/indice%20de%20reportes/index.html

Objectives

Business management is a primary area of market competitiveness and sustainability in all types of industries. Managerial insights in the global and/or local business are major drivers of organizational innovation, business dynamics and business value chain. Managerial review will be an integral player in the 21st knowledge industry and economy.

Nevertheless, how to foster managerial review and insights have not been appropriately explored in terms of global or local business perspectives. In fulfilling of this urgent and timely theme, business management need more sustainable profitability, better operational excellence, higher goods and services quality, more proper market promotion, stronger leaderships, and more accurate financial planning in order that business organizations are more competitive.

This journal’s main objective is to establish an outlet for executives, managers, educators, and researchers interested in a variety of topics in business management and insights in terms of global or local perspectives. Thus, papers will focus on the global or local implications of managerial review and insights in business settings.

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Examples of topics appropriate to the theme of management review include:

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● Information management
● Leadership and organizations
● Market life management
● Management theory and philosophy development
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● Operational excellence with customer intimacy
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● Planning for profit and non-profit business
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● Resource allocation in local and global business
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● Technology and innovation management
● Tutorials in management
● Other related topics

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Management Review: An International Journal

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