The impact of knowledge management capability, organizational learning, and supply chain management practices on organizational performance

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Knowledge management capability, Organizational learning, Supply chain management practices, Organizational performance

Abstract

The focus of this research is developing and examining a conceptual framework relating resource-based organizational capabilities and inter-organizational practices with organizational performance. Specifically, it investigates the relationship between knowledge management capability, organizational learning, supply chain management practices and organizational performance. Such a study is important as it contributes to the growing body of literature that links organizational capabilities and practices with organizational performance. In addition, it also contributes to empirical knowledge by applying the proposed conceptual framework in the Egyptian context, which is currently under-researched. The research approach adopted in this research includes empirical examination of the hypothesized relationships among research variables applied on 63 factories with more than 100 employees located at the New Borg Al-Arab industrial city using self-administrated questionnaires. The findings of this research provide evidence that knowledge management capability has an impact on organizational learning as well as on supply chain management practices. However, none of the research variables; i.e. knowledge management capability, organizational learning and supply chain management practices have an impact on organizational performance. The main conclusion drawn from this study is that knowledge management capability may be useful to managers for predicting organizational learning and coordinating supply chain management practices between supply chain members. In addition, it could be concluded that organizational performance, in the factories under study, is affected by variables other than knowledge management capability, organizational learning and supply chain management practices.

1. Introduction

Organizations are operating in a global business environment characterized by changes, technological advancement, changing customer needs and higher competition (Bolívar-Ramos et al., 2012). In order for organizations to survive in such a turbulent environment, they must promote their capacity to learn new practices and technologies in order to improve their performance and long-term organizational success. The resource-based view (RBV) theory, which originated from the strategic management literature, suggests that firms compete on the basis of their resources and capabilities. Organizations can obtain common resources, however the differentiation and heterogeneity can be achieved through their capabilities to configure and deploy these resources (Bitar and Hafsi, 2007). Organizational capabilities are considered essential organizational resources, both internal and external, that would assist a firm in achieving competitive advantage as well as improving performance (Barney, 1991; Liang et al., 2010).

Knowledge is viewed as a key strategic resource for organizational survival, stability, growth and improvement (Hassan and Al-Hakim, 2011). In addition, knowledge is considered the basis for the development of core competencies that will create competitive advantage as well as improve organizational performance (Halley and Beaulieu, 2005). Knowledge management (KM) would assist organizations to remain competitive, through sharing information with the external partners and knowing their competitors' products, services, strategies and best practices (Kyobe, 2010).

The link between organizational capabilities and organizational performance is developed based on a well-established literature. Researchers have argued that organizational capabilities enhance organizational performance, because they are firm specific and difficult to be duplicated by competitors (Theriou and Chatzoglou, 2008; Liang et al., 2010; Tan et al., 2011; Huo, 2012; Tseng and Lee, 2014). KM and organizational learning are considered complementary organizational capabilities that contribute to organizational success (Yang and Chen, 2009; San-Valle et al., 2011; Jain and Moreno 2015).

In order for organizations to improve their performance and survive in a competitive environment, they also have to collaborate and build long-term relationships with upstream and downstream partners in the supply chain (Huo, 2012; Xu et al., 2014). KM capability is viewed as a fundamental strategic asset that facilitates the coordination and integration between supply chain members (Rashed et al., 2010; Samuel et al., 2011; Tan and Cross, 2012; Xu et al., 2014).

The number of empirical studies on how such concepts relate to each other and their effect on organizational performance is scarce, especially in relation to the manufacturing sector in the developing countries, such as Egypt. Accordingly, the current study attempts to investigate the relationships between KM capability, organizational learning and supply chain management (SCM) practices and their impact on organizational performance in a number of factories located in the New Borg Al-Arab industrial city.

The paper is structured as follows. In Section 2, a review of the literature related to the research variables, research hypotheses and research model are presented. In Section 3, the research methodology is provided, followed by the results of the analysis in Section 4. Finally, the conclusions, as well as the limitations of the study and opportunities for future research are discussed.

2. Literature Review

KM and organizational learning are considered complementary organizational capabilities that contribute to organizational success (Yang and Chen, 2009; San-Valle et al., 2011; Jain and Moreno 2015). Successful organizational learning process depends on well-established KM infrastructure; which includes both social and technical enablers. In addition, in order for organizations to improve their performance and survive in a competitive environment, they have to collaborate and build long-term relationships with upstream and downstream partners in the supply chain (Huo, 2012; Xu et al., 2014).

2.1 Knowledge Management Capability

KM capability is the ability of an organization to acquire, create, transfer, integrate, share and apply knowledge related resources and activities across functional boundaries to generate new knowledge (Chuang, 2004) continuously (Lee and Lee, 2007; Tseng and Lee, 2014). This would enable the organization to gain sustainable competitive advantage, as well as, to improve organizational effectiveness (Yang and Chen, 2007). Following the resource-based and knowledge-based view of the firm, this research considers KM infrastructure capability from a socio-technical perspective, rather than a process perspective. This perspective considers the combination of technical infrastructure and social infrastructure as the sources of strategic assets (Bhatt, 2001; Lee and Choi, 2003).

2.2 Organizational Learning

It is argued that an organization should learn, through acquiring new knowledge and skills, in order to cope with the challenging business environment and as a result improve its performance (Salim and Sulaiman, 2011). Organizational learning is considered to be a dynamic process that moves from the individual to the group level, and then to the organizational level and back again (Jerez-Gómez et al., 2005). Organizational learning process includes activities such as training,

teamwork, e-learning, job rotation, career planning, and others, which in turn enhances organizational performance, whether they are performed on individual or organizational basis (Tamayo-Torres et al., 2016). López et al., (2005) defined organizational learning as the "dynamic process of creation, acquisition, and integration of knowledge aimed at the development of resources and capabilities that contribute to better organizational performance".

2.3 Supply Chain Management Practices

Through SCM independent organizations can have collaborative management relationships as well as integrated coordination of processes between their supply chain members. This will lead to creating more value for customers, as well as for the supply chain partner, which will result in improving performance for individual organizations and the whole supply chain (Okongwu et al., 2015; Kaliani Sundram et al., 2016). Thus, supply chain partners share information, risks and rewards, have same goals and customer focus. They also engage in long-term relationships with the aim of improving their overall performance and competitive advantage (Giunipero et al., 2008).

SCM practices integrate between business units, suppliers and customers in order to promote effective SCM (Khang et al., 2010). SCM practices are defined as "the set of activities undertaken in an organization to promote effective management of its supply chain" (Donlon, 1996). They are set of processes and practices that integrate internal business processes of the organization with its suppliers and customers (Sundram et al., 2011) in order to improve the performance of both an individual organization as well as the whole supply chain (Wong et al., 2005).

2.4 Organizational Performance

According to Richard et al., (2009), organizational performance is considered to be the ultimate dependent variable that is of interest to researchers in various management fields. Organizational performance indicates how well an organization achieves its objectives (Khang et al., 2010). It refers to an organizational efficiency and effectiveness in achieving its financial, operational and market-oriented goals (Li et al., 2006; Ho, 2008; Liang et al., 2010; Wong and Wong, 2011).

3. Methodology

3.1 Hypotheses

3.1.1 Knowledge Management Capability and Organizational Learning

Previous studies provided evidence that implementing KM or organizational learning systems with other organizational systems and practices, such as innovation, human resource management, culture, information technology, structure and leadership would enable organizations to enhance their organizational performance (Yang and Chen, 2009). Researchers conducted several studies to examine the impact of key KM enablers and capabilities on organizational learning. These KM capabilities included for example organizational culture (López et al., 2004; Sanz-Valle et al., 2011) and IT (Tippins and Sohi, 2003; Ruiz-Mercader et al., 2006).

Some researchers believe that KM enablers facilitate organizational learning or KM is the result of organizational learning. However, most of the empirical studies have considered KM from the process perspective rather than from the socio-technical perspective. Specifically, little research has been done to investigate the impact of KM capability on organizational learning processes from a socio-technical perspective (Yang and Chen, 2009; Sanz-Valle et al, 2011; Noruzy et al., 2013). However, other studies examined the link between KM and organizational learning process from a socio-technical perspective using KM infrastructure capabilities. These studies confirmed that effective KM infrastructure capabilities would enable a successful organizational learning process (Yang and Chen, 2009; Handzic, 2011; Lee et al., 2012). Therefore, this hypothesis is addressed as follows:

H1: Knowledge management capability has an impact on organizational learning.

3.1.2 Knowledge Management Capability and Supply Chain Management Practices

KM capability is viewed as a fundamental strategic asset that facilitates the coordination and integration between supply chain members (Rashed et al., 2010; Samuel et al., 2011; Tan and Cross, 2012; Xu et al., 2014, Bhosale and Kant, 2016). Previous studies have investigated the relationship between KM processes and organizational capabilities with different supply chain constructs. For example, researchers have examined the relationship between KM and supply chain performance (Schoenherr et al., 2014); supplier's operational performance (Rashed et al., 2010); supply chain integration (Prajogo and Olhager, 2012); and supply chain agility (Liu et al., 2013).

To date, only a few studies have examined the relationship between KM infrastructure capability and SCM practices. Wong and Wong (2011) examined the impact of both KM capability and SCM practices on organizational performance in Malaysia. They confirmed that the implementation of SCM practices will interact with KM capability to influence firm performance. They also concluded that technological and process capabilities facilitate knowledge sharing as well as building long-term relationships between supply chain partners. In addition, results showed that these KM capabilities have direct impact on organizational performance as well as indirect impact, through SCM practices. Therefore, this hypothesis is addressed as follows:

H2: Knowledge management capability has an impact on supply chain management practices.

3.1.3 Knowledge Management Capability and Organizational Performance

Previous studies that examined the relationship between KM capability and organizational performance considered the term KM capability from different perspectives. Specifically, researchers refer to it as: KM infrastructure and KM processes (Gold et al, 2001; Tanriverdi, 2005; Mills and Smith, 2011); KM infrastructure or enablers (Chuang, 2004; Lee and Lee, 2007; Chang and Chuang, 2011; Andreeva and Kianto, 2012); or KM processes (Gharakhani and Mousakhani, 2012; Tseng and Lee, 2014).

Gold et al. (2001) confirmed that knowledge infrastructure capability and knowledge process capability are positively related to organizational performance. Lee and Choi (2003) provided evidence for the positive relationship between knowledge enablers (culture, structure, people and technology) and organizational performance. Also, Jantunen (2005) and Mills and Smith (2011) found a positive relationship between the two variables. Therefore, this hypothesis is addressed as follows:

H3: Knowledge management capability has an impact on organizational performance.

3.1.4 Organizational Learning and Organizational Performance

A large and growing body of literature has investigated the impact of organizational learning on organizational performance; including for example (Lópezet al., 2005; Škerlavaj and Dimovski, 2009; Bolívar-Ramos et al., 2012, Jain and Moreno, 2015). Huber (1991) argued that organizational learning enhances an organization's ability to innovate, which consequently improves organizational competitiveness and performance. López et al. (2005) proposed that organizational learning contributes positively to innovation, competitiveness and business performance. In addition, Ruiz-Mercader et al. (2006) confirmed that individual and organizational learning have significant and positive effects on organizational performance. Rhodes et al. (2008) argued that organizational learning has the greatest positive relationship with knowledge transfer which enhances organizational performance. Theriou and Chatzoglou (2008) proposed that KM and organizational learning play their own unique role in creating organizational capabilities, which lead to superior performance. Therefore, this hypothesis is addressed as follows:

H4: Organizational learning has an impact on organizational performance.

3.1.5 Supply Chain Management Practices and Organizational Performance

Several studies have been conducted in different countries to explore the relationship between SCM practices and organizational performance in manufacturing organizations. For

example, Li et al. (2006) developed five dimensions of SCM practices and found that higher levels of SCM practices lead to enhanced competitive advantage and improved organizational performance. Also, Robb et al. (2008) suggested that the impact of supply chain practices on business performance is mediated by capabilities and operations dimension. Cook et al. (2011) proposed that supply chain role for a company affects the impact of supply chain practices and organizational performance. Therefore, this hypothesis is addressed as follows:

H5: Supply chain management practices have an impact on organizational performance.

The interrelationships among research variables as presented by the above hypotheses can be displayed in the following proposed conceptual framework (Figure 1):

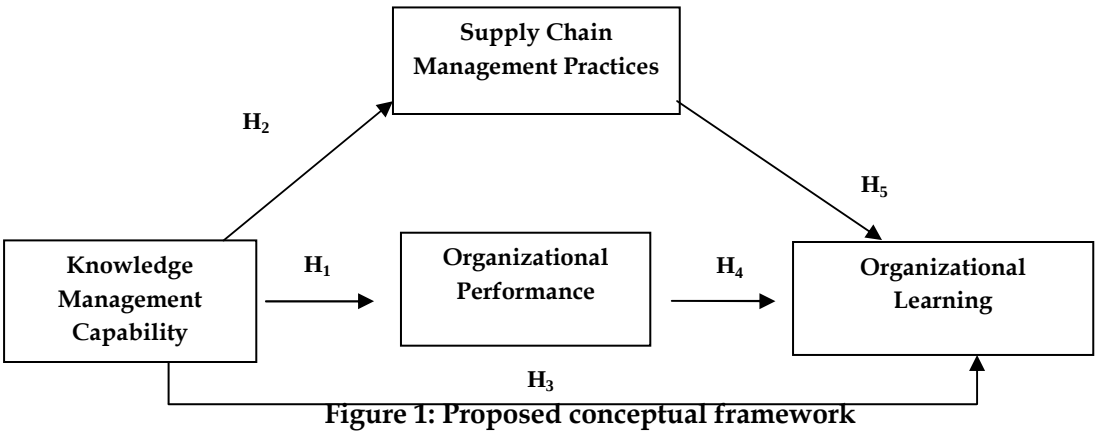

Figure 1: Proposed conceptual framework

3.2 Target Population and Survey Procedure

An empirical study has been carried out among Egyptian manufacturing companies located at the New Borg Al-Arab industrial city. The research sample comprises manufacturing organizations with more than 100 employees, i.e. 84 organizations. Previous research argued that organizations with less than 100 employees are not likely to engage in formalized organizational capabilities, processes and practices (Li, et al., 2006; López et al., 2005). A total of 79 questionnaires were distributed to those organizations, which accepted to participate in the research. Sixty nine questionnaires were returned (87.3% response rate). Six of these were excluded due to incomplete answers or inadequacy, 63 responses were valid. All research variables are measured using multi-item scales, which are adopted from previous studies. Items are measured based on five point Likert scale ranging from (1) 'strongly disagree' to (5) 'strongly agree'.

3.3 Sample Distribution

The sample's distribution by the type of industry was as follows: Almost half of the sample (46%) comprises factories from the food and beverage and textile sector. The other types of industries were represented as follows: paper (14.3%), healthcare and pharmaceutical (11.1%), metal (9.5%), chemical (8.0%), plastic (6.3%), personal and household products (1.6%), building materials (1.6%) and others (1.6%). Not all types of industries were well represented, due to the fact that only those factories met the chosen criteria of research sample (factories with more than 100 employees). In addition, the sample's distribution by the number of employees was: 54% of the factories have number of employees between 101-250, while the 46% of the factories are almost equally divided having 251-500 and over 500 employees.

3.4 Measures

All research variables were measured using validated measurement instruments adopted from previous studies.

Knowledge management capability comprises sources of strategic assets that are classified into technical and social resources. Technical resources include physical information technology (IT)

infrastructure, while social resources include the structural, cultural and human resources (Pan and Scarbrouth, 1998). Technical KM resource is concerned with codifying, organizing, and storing knowledge through information and communication technologies (ICT), while social KM resource focuses on acquiring and sharing knowledge through socially interactive processes to support KM activities (Yang and Chen, 2009). In this research, the measurement instrument for KM infrastructure capability was adopted from (Gold et al., 2001) and (Lee and Choi, 2003). KM capability scale consists of 20 items; including four components: technical KM resource, structural KM resource, cultural KM resource and human KM resource.

Organizational learning. As proposed by Huber (1991), organizational learning is comprised of four main dimensions: knowledge acquisition, knowledge distribution, knowledge interpretation and organizational memory. In this study, organizational learning was measured using the scale developed by (Huber, 1991) and (López et al., 2005). Organizational learning scale includes 14 items; including four components: knowledge acquisition, knowledge distribution, knowledge interpretation and organizational memory.

Supply chain management practices. Successful SCM practices require high levels of communication, trust, interdependence, long-term commitment, shared vision, cooperative relationships and continuous improvement (Ding et al., 2014). This research adopted a comprehensive model of SCM practices developed by Li et al. (2006). SCM practices were measured using a 25 item scale; including five components: strategic supplier partnership, strategic customer partnership, level of information sharing, quality of information sharing and postponement.

Organizational Performance. In this research, organizational performance was measured in terms of the most dominant performance criteria used in the literature, i.e. financial and market criteria (Li et al., 2006; Ho, 2008; Richard et al., 2009; García-Morales et al., 2012). Organizational performance was measured using a 7 item scale adopted from (Li et al., 2006) and (Ho, 2008). These include return on investment (ROI), market share, profit margin on sales, the growth of ROI, the growth of sales, the growth of market share, and the overall competitive position.

4. Data analysis

4.1 Reliability Analysis and Validity Analysis

Reliability analysis. Cronbach's alpha is considered to be the most common measure of reliability. An acceptable reliability coefficient is 0.65, but lower thresholds are sometimes used in the literature (Nunnaly, 1978). Table I provides the reliability of the research variables, as well as the overall reliability of the questionnaire.

Variables	No. of items	Cronbach's Alpha
Technological KM resource	6	0.811
Structural KM resource	5	0.816
Cultural KM resource	5	0.750
Human KM resources	4	0.682
Knowledge Management capability	**20**	**0.811**
Knowledge acquisition	5	0.742
Knowledge distribution	3	0.688
Knowledge interpretation	3	0.641
Organizational memory	3	0.799
Organizational learning	**14**	**0.695**
Strategic supplier partnership	6	0.634
Customer relations	5	0.792
Level of information sharing	6	0.825
Quality of information sharing	5	0.855
Postponement	3	0.796

Supply chain management practices	**25**	**0.760**
Organizational performance	**7**	**0.910**
All	**66**	**0.921**

Table I: The Reliability Analysis

The Cronbach's Alpha of the overall items is 0.921 (Cronbach's Alpha ≥ 0.65) indicating strong reliability of the questionnaire. With respect to the research variables, it can be observed from table (I) that the KM capability dimensions; technical KM resource, structural KM resource, cultural KM resource, and human KM resource all have an acceptable level of reliability (Cronbach's alpha > 0.65). Also, KM capability has a good overall reliability value (Cronbach's alpha > 0.8). Regarding organizational learning dimensions; knowledge acquisition, knowledge distribution, and organizational memory have an acceptable level of reliability (Cronbach's alpha > 0.65), while knowledge interpretation has a poor reliability value (Cronbach's alpha < 0.65). However, the overall Cronbach's alpha coefficient for the variable organizational learning, in the presence of knowledge interpretation as one of its dimensions, is (0.695), which provides an acceptable level of reliability.

SCM practices dimensions; customer relationship, level of information sharing, level of information quality, and postponement have an acceptable level of reliability (Cronbach's alpha > 0.65), while strategic supplier partnership has a poor reliability value (Cronbach's alpha < 0.65). However, the overall Cronbach's alpha coefficient for the variable SCM practices, in the presence of strategic supplier partnership as one of its dimensions, is (0.760), which provides an acceptable level of reliability. Nevertheless, it was found that this acceptable reliability value had been achieved only when deleting the dimension postponement. This result is due to the fact that postponement practice depends on the organization's market characteristics and the product types. It is suitable for make-to-order rather than make-to-stock production systems. Finally, the variable organizational performance has an excellent level of reliability (Cronbach's alpha > 0.9).

Validity analysis. In this research content validity of the measurement instrument is supported, since all constructs are adopted from previous studies, which have been validated by other researchers (Huber, 1991; Gold et al., 2001; Lee and Choi, 2003; Lópezet al., 2005; Li et al., 2006; Ho, 2008).

4.2 Testing the Proposed Model

This section includes the results obtained after analyzing the proposed relationships, using structural equation modeling (SEM) using (AMOS 21.0). In the current study various statistics were examined to conduct the goodness of fit tests for the proposed conceptual framework as shown in the following table (II).

Measure	Model Results	Threshold
Chi-square χ^2	173.517	
Chi-square/df	1.180	< 3 good; < 5 sometimes permissible
GFI	0.793	> 0.80 - 0.95*
AGFI	0.732	> 0.80 - 0.90*
NFI	0.754	> 0.80 - 0.90*
TLI	0.942	> 0.80 - 0.90*
IFI	0.952	> 0.80 - 0.90*
CFI	0.950	> 0.95 great; > 0.90 traditional; > 0.80 sometimes permissible
RMR	0.047	< 0.09
RMSEA	0.054	< 0.05 good; 0.05-0.10 moderate; > 0.10 bad
PNFI	0.648	> 0.50

Table II: Results of Goodness of Fit Test

Sources: Bagozzi and Yi, 1988, Hair, et al., 2010; Aloini et al., 2015

*Fit indices range from 0 to 1. (0 equals a poor fit and 1 equals a perfect fit). The value 0.08 represents a (good fit) and 0.09 (very good fit).

According to (Schermelleh-Engel et al., 2003, p. 52), this rule of thumb cutoff criterion for fit indices may be affected by model misspecification, small sample bias, effects of violation of normality and independence. Therefore, it is always possible that a model may fit the data although one or more fit measures may not suggest accepted fit, i.e. meet the recommended value. It can be depicted from Table (II) that the chi-square/degrees of freedom ratio meets the recommended level (1.180 < 3), indicating an acceptable fit. In addition, most of the goodness-of-fit measures are within the recommended ranges. (TLI) or (NNFI) = 0942, (IFI) = 0.952, (CFI) = 0.950, (RMSEA) = 0.054, (RMR) = 0.047 and (PNFI) = 0.648. However, the (GFI), (AGFI) and (NFI) are just below the cutoff of recommended value of a good fit (> 0.80). Nevertheless, this does not necessarily indicate that the model has a poor fit (Zickmund, 2003). Thus, it could be concluded that the values of the above mentioned indices are almost acceptable, indicating an acceptable fit for the model. Based on the acceptance of the SEM complete model, SEM hypotheses and results are most commonly presented in the form of path diagrams, which are graphic illustrations of the measurement and structural model (Cooper and Schindler, 2011). The results of the paths analysis resulting from the structural modeling analysis using AMOS are displayed in Figure 2 and presented in Table (III).

Table (III) presents the critical values of the standardized regression weights that were examined for the significance of the paths between research variables. The results show that there is a direct, positive and significant impact of KM capability on organizational learning with an estimate of 0.653. In addition, there is a significant impact of KM capability on SCM practices with an estimate of 0.437. However, there is an insignificant impact of KM capability on organizational performance with an estimate of -1.311. Also, there is an insignificant impact of organizational learning on organizational performance with an estimate of 1.826. Finally, there is an insignificant impact of SCM practices on organizational performance with an estimate of 0.308.

Hypothesized Path			Estimate	S.E.	P
KM Capability	→	Organizational learning	0.653	0.205	**0.001**
KM Capability	→	SCM Practices	0.437	0.175	**0.012**
KM Capability	→	Organizational Performance	-1.311	1.391	0.346
Organizational Learning	→	Organizational Performance	1.826	2.037	0.370
SCM Practices	→	Organizational Performance	0.308	0.209	0.141

Table III: Regression Weights: including Estimates, Standard Error, and P-Value

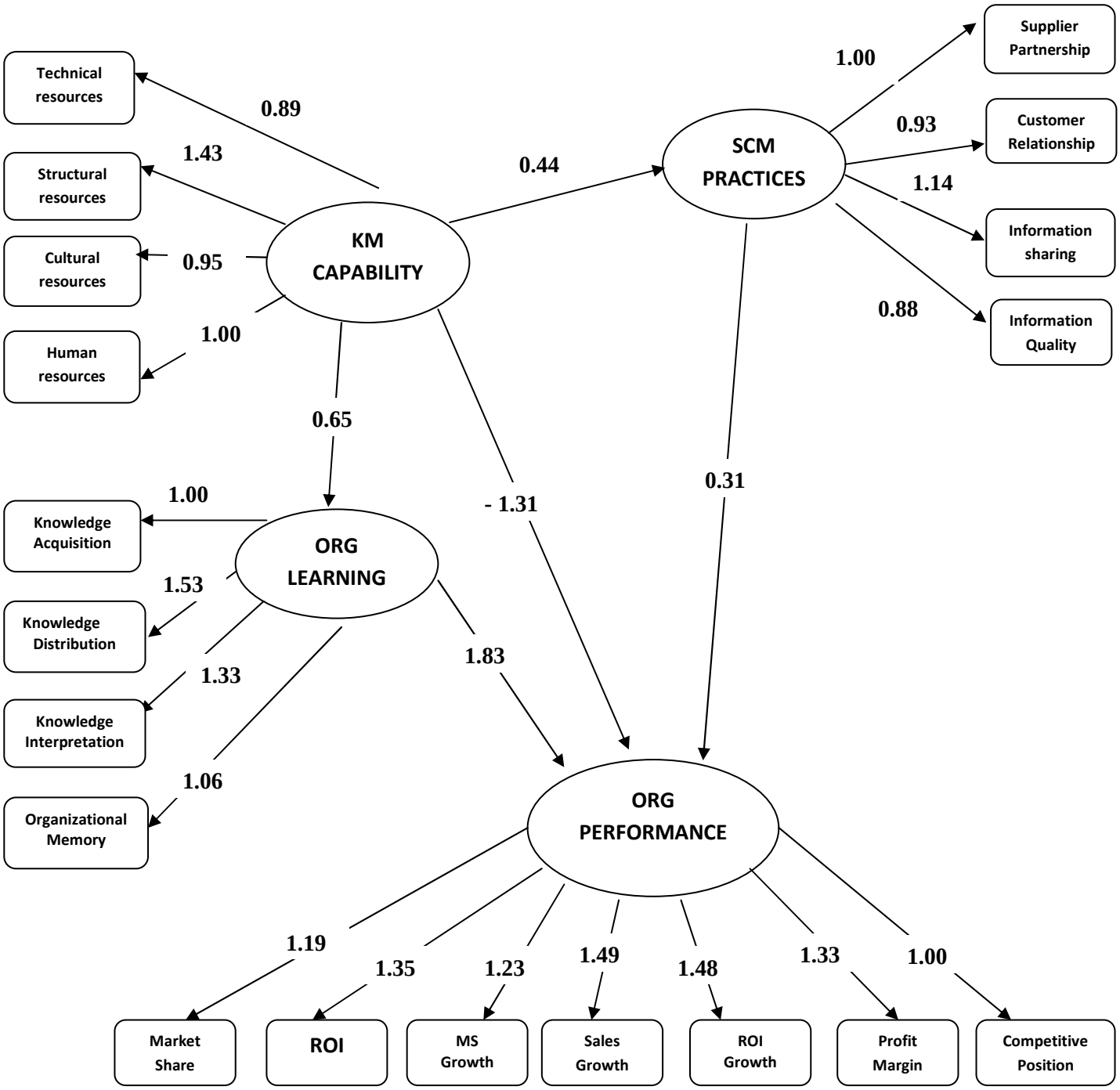

Figure 2: Path Analysis and Factor Loadings

Measurement errors and residual terms are omitted for clarity

5. Discussion and Conclusion

The main aim of this research was to develop and empirically examine a conceptual framework that investigates the relationship between KM capability, organizational learning, SCM

practices and organizational performance. The empirical study focused on factories with more than 100 employees located at the New Borg Al-Arab industrial city.

The results confirmed the effect of KM capability on organizational learning. This means that organizational learning process is influenced by the firm's technical KM resource, structural KM resource, cultural KM resource and human KM resource. This finding is consistent with previous studies by Handzic (2011) and Lee et al. (2012), who suggested that an integrated socio-technical KM model would help managers in implementing organizational learning process. Accordingly, top management should promote and invest in developing knowledge resources and capabilities from a socio-technical perspective, to permit organizational learning processes (Yang and Chen, 2009). The results also confirmed the impact of KM capability on SCM practices. This result is consistent with previous studies (Wong and Wong 2011; Youn et al., 2013). KM is considered a driver and key success factor in supply chains (Rashed et al., 2010; Samuel et al., 2011). Through KM, supply chain partners can share key business processes and coordinate supply chain activities inside the organization as well as across its borders.

However, the results reported no effect of KM capability on organizational performance. This result contradicts with previous research findings, which provided evidence that KM capability has both direct and indirect impact on organizational performance (Tanriverdi, 2005; Lee and Lee, 2007; Chang and Chuang, 2011; Mills and Smith, 2011; Andreeva and Kianto, 2012). Similarly, the results showed no effect of organizational learning on organizational performance. This finding does not support the results from previous research (Huber, 1991; Tippins and Sohi, 2003; Lópezet al., 2004; Ruiz-Mercader et al. 2006; Rhodes et al., 2008; Theriou and Chatzoglou, 2008). Researchers have suggested that organizational learning process would improve employees' capabilities to take better decisions. In addition, it relates an organization with the external environment in order to promote proactive behavior to deal with new events and trends in the marketplace (Lópezet al., 2004; Jiménez-Jiménez and Sanz-Valle, 2011).

Finally, the results showed no impact of SCM practices on organizational performance. Previous studies, however, reported a direct and significant effect of SCM practices and organizational performance, including for example (Kim, 2006; Li et al., 2006; Robb et al., 2008; Cook et al., 2011; Sundram et al., 2011). In order for organizations to remain competitive and achieve sustainable growth, they should realize the importance of SCM practices, which would improve their own performance as well as the whole supply chain. This is achieved through close integration of internal business functions within the firms and the external coordination of their business processes with suppliers, customers, and other supply chain members (Li et al., 2006; Cook et al., 2011; Sundramet al., 2011). However, SCM practices may be affected by other factors, for example the firm size, the type of industry, the firm's position in the supply chain and the type and length of the supply chain (Li et al., 2006).

6. Theoretical and Practical Implications

This research has both academic and practical implications. The academic implication is the contribution to the growing body of literature linking organizational capabilities and practices with organizational performance. Previous studies might have addressed some of these variables, however, to the knowledge of the researcher, none of them sought to examine these different relationships all in one integrated model. In addition to this theoretical contribution, this research also contributes to empirical knowledge on the topic by applying it in the Egyptian context, which is currently under-researched.

With respect to the managerial implications, the most important implication is that organizational performance is influenced by variables other than KM capability, organizational learning and SCM practices. In order to promote KM and organizational learning in organizations, it is essential for managers to benefit from their knowledge resources and realize the importance of both KM infrastructure capability and organizational learning processes. In addition, they have to

encourage their employees to acquire and share knowledge both internally and externally with their supply chain members. Also, managers should value the importance of SCM practices that permit the coordination of business processes with supply chain members in order to realize long- term mutual gains. Therefore, it is important to clarify these organizational capabilities and practices to managers. In addition, managers should be encouraged to implement them in order to realize improvements in performance.

7. Research Limitations and Direction for Further Research

Generally, the conclusions presented in this study are subject to several limitations. First, the main limitation of this study is the small sample size. This research was limited to factories with more than 100 employees, with the expectation that they implement and apply KM capability, organizational learning and SCM practices. However, it should be noted also that KM capability, organizational learning and SCM practices are also important in factories with less than 100 employees. Second, the data collected for this research consisted of responses from "single informant" from each organization which may generate response bias and some measurement inaccuracy. Although such practice is commonly used in survey research, multiple respondents would enhance the validity of the research findings. Third, organizational performance was measured through the managers' perceptions about both the financial and market performance of their factories. Thus, the use of subjective performance indicators might not necessarily coincide exactly with the objective reality. Fourth, this study was conducted only in one Egyptian industrial city. Therefore, the findings may not be generalizable to other Egyptian industrial cities. In order to eliminate these limitations and generalize the current findings, further research is required.

There are several possible directions for extension of this research. The empirical data collection for this study was based on self-administrated questionnaire. However, since the research results showed no significant impact of KM capabilities, organizational learning and SCM practices on organizational performance more research needs to be undertaken in order to investigate what affects the of organizational performance in Egyptian factories. This could be achieved through qualitative method of data collection, including for example interviews and focus groups, in order to add further interpretation and meaning to the quantitative findings. It is also suggested that future research should be applied to small and medium sized organizations in order to collect more responses and increase the generalizability of the results. In addition, researchers interested in studying the variables that affect organizational performance may consider the effect of some variables such as leadership, organizational structure, innovation, human resource management, leadership and corporate strategy. Moreover, further research is recommended to investigate the applicability of the model in other Egyptian industrial cities.

References

Aloini, D., Pellegrini, L., Lazzarotti, V., and Manzini, R. (2015). Technological strategy, open innovation and innovation performance: evidences on the basis of a structural-equation-model approach. *Measuring Business Excellence*, 19(3), pp. 22-41.

Andreeva, T. and Kianto, A. (2012). Does knowledge management really matter? Linking knowledge management practices, competitiveness and economic performance. *Journal of Knowledge Management*, 16(4), pp. 617-636.

Bagozzi, R. P., and Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the academy of marketing science*, 16(1), pp. 74-94.

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

Bhatt, G. (2001). Knowledge management in organizations: examining the interaction between technologies, techniques, and people. *Journal of Knowledge Management*, 5(1), pp. 68-75.

Bhosale, V.A. and Kant, R., 2016. Metadata analysis of knowledge management in supply chain: investigating the past and predicting the future. *Business Process Management Journal*,*22*(1), pp.140-172.

Bitar, J. and Hafsi, T. (2007). Strategizing through the capability lens: sources and outcomes of integration. *Management Decision*, 45(3), pp. 403-419.

Bolívar-Ramos, M., García-Morales, V. and García-Sánchez, E. (2012). Technological distinctive competencies and organizational learning: Effects on organizational innovation to improve firm performance. *Journal of Engineering and Technology Management*, 29(3), pp. 331-357.

Chang, T. and Chuang, S. (2011). Performance implications of knowledge management processes: Examining the roles of infrastructure capability and business strategy. *Expert Systems with Applications*, 38(5), pp. 6170-6178.

Chuang, S. (2004). A resource-based perspective on knowledge management capability and competitive advantage: an empirical investigation. *Expert Systems with Applications*, 27(3), pp. 459-465.

Cook, L., Heiser, D. and Sengupta, K. (2011). The moderating effect of supply chain role on the relationship between supply chain practices and performance. *International Journal of Physical Distribution and Logistics Management*, 41(2), pp. 104-134.

Cooper D. R., Schindler P. S. (2011). *Business Research Methods*. 11th ed. Singapore: McGraw-Hill Education.

Ding, M. J., Jie, F., A. Parton, K. and J. Matanda, M. (2014). Relationships between quality of information sharing and supply chain food quality in the Australian beef processing industry. *The International Journal of Logistics Management*, 25(1), pp. 85-108.

Donlon, J.P. (1996), "Maximizing value in the supply chain", *Chief Executive*, Vol. 117, pp. 54-63.

García-Morales, V., Jiménez-Barrionuevo, M. and Gutiérrez-Gutiérrez, L. (2012). Transformational leadership influence on organizational performance through organizational learning and innovation. *Journal of Business Research*, 65(7), pp. 1040-1050.

Gharakhani, D. and Mousakhani, M. (2012). Knowledge management capabilities and SMEs' organizational performance. *Journal of Chinese Entrepreneurship*, 4(1), pp. 35-49.

Giunipero, L. C., Hooker, R. E., Joseph-Matthews, S. A. C. H. A., Yoon, T. E., and Brudvig, S. (2008). A decade of SCM literature: past, present and future implications. *Journal of Supply Chain Management*, *44*(4), pp. 66-86.

Gold, A. H., and Arvind Malhotra, A. H. S. (2001). Knowledge management: An organizational capabilities perspective. *Journal of management information systems*, *18*(1), pp. 185-214.

Hair, J. (2010). *Multivariate data analysis*. 7th ed. Upper Saddle River, N.J.: Pearson Education.

Halley, A., and Beaulieu, M. (2005). Knowledge management practices in the context of supply chain integration: the Canadian experience. In *Supply Chain Forum: An International Journal* 6 (1), pp. 66-81.

Handzic, M. (2011). Integrated socio-technical knowledge management model: an empirical evaluation. *Journal of Knowledge Management*, 15(2), pp. 198-211.

Hassan, S. and AL-Hakim, L. A. Y. (2011). The relationships among critical success factors of knowledge management, innovation and organizational performance: A conceptual framework. *International Conference on Management and Artificial Intelligence IPEDR* vol.6, pp. 94 -103.

Ho, L. (2008). What affects organizational performance?.*Industrial Management and Data Systems*, 108(9), pp. 1234-1254.

Huber, G. (1991). Organizational Learning: The Contributing Processes and the Literatures. *Organization Science*, 2(1), pp. 88-115.

Huo, B. (2012). The impact of supply chain integration on company performance: an organizational capability perspective. *Supply Chain Management: An International Journal*, 17(6), pp.596-610.

Jain, A. K., and Moreno, A. (2015). Organizational learning, knowledge management practices and firm´ s performance: an empirical study of a heavy engineering firm in India. *The Learning Organization*, *22*(1), pp.14-39.

Jantunen, A. (2005). Knowledge-processing capabilities and innovative performance: an empirical study. *European Journal of Innovation Management*, 8(3), pp.336-349.

Jerez-Gómez, P., Céspedes-Lorente, J. and Valle-Cabrera, R. (2005). Organizational learningand compensation strategies: Evidence from the Spanish chemical industry.*HumanResource Management*, 44(3), pp. 279-299.

Jiménez-Jiménez, D. and Sanz-Valle, R. (2011). Innovation, organizational learning, and performance. *Journal of Business Research*, 64(4), pp.408-417.

KalianiSundram, V.P., Chandran, V.G.R. and Awais Bhatti, M., 2016. Supply chain practices and performance: the indirect effects of supply chain integration. *Benchmarking: An International Journal*, *23*(6), pp.1445-1471.

Khang, T., Arumugam, V., Chong, A. and Chan, F. (2010). Relationship between supply chain management practices and organisation performance: a case study in the Malaysian service industry. *International Journal Modelling in Operations Management*, 1(1), pp. 84-106.

Kim, S. W. (2006). Effects of supply chain management practices, integration and competition capability on performance. *Supply Chain Management: An International Journal*, 11(3), pp. 241-248.

Kyobe, M. (2010). A knowledge management approach to resolving the crises in the information systems discipline. *Journal of Systems and Information Technology*, 12(2), pp.161-173.

Lee, H., and Choi, B. (2003). Knowledge management enablers, processes, and organizational performance: an integrative view and empirical examination. *Journal of management information systems*, *20*(1), pp.179-228.

Lee, S., Gon Kim, B. and Kim, H. (2012). An integrated view of knowledge management for performance. *Journal of Knowledge Management*, 16(2), pp.183-203.

Lee, Y. C., and Lee, S. K. (2007). Capabilities, processes, and performance of knowledge management: a structural approach. *Human Factors and Ergonomics in Manufacturing and Service Industries*, *17*(1), pp.21-41.

Li, S., Ragu-Nathan, B., Ragu-Nathan, T. and Subba Rao, S. (2006). The impact of supply chain management practices on competitive advantage and organizational performance. *Omega*, 34(2), pp.107-124.

Liang, T., You, J. and Liu, C. (2010). A resource-based perspective on information technology and firm performance: a meta analysis. *Industrial Management and Data Systems*, 110(8), pp.1138-1158.

Liu, H., Ke, W., Wei, K. K., and Hua, Z. (2013). The impact of IT capabilities on firm performance: The mediating roles of absorptive capacity and supply chain agility. *Decision Support Systems*, *54*(3), pp.1452-1462.

López, S. P., Peón, J. M. M., and Ordás, C. J. V. (2005). Organizational learning as a determining factor in business performance. *The learning organization*, *12*(3), pp. 227-245.

López, S. P., Peón, J. M. M., and Ordás, C. J. V. (2004). Managing knowledge: the link between culture and organizational learning. *Journal of knowledge management*, 8(6), pp. 93-104.

Mills, A. and Smith, T. (2011). Knowledge management and organizational performance:a decomposed view. *Journal of Knowledge Management*, 15(1), pp. 156-171.

Noruzy, A., Dalfard, V. M., Azhdari, B., Nazari-Shirkouhi, S., and Rezazadeh, A. (2013). Relations between transformational leadership, organizational learning, knowledge management, organizational innovation, and organizational performance: an empirical investigation of manufacturing firms. *The International Journal of Advanced Manufacturing Technology*, 64(5-8), pp. 1073-1085.

Nunnally, J. (1978). Psychometric Theory. *New York: McGraw-Hill*.

Pan, S. and Scarbrouth, H. (1998). A socio-technical view of knowledge-sharing at Buckman laboratories. *Journal of Knowledge Management*, 2 (1), pp. 55–66.

Okongwu, U., Brulhart, F. and Moncef, B., 2015. Causal linkages between supply chain management practices and performance: a balanced scorecard strategy map perspective. *Journal of Manufacturing Technology Management*, *26*(5), pp.678-702.

Prajogo, D. and Olhager, J. (2012). Supply chain integration and performance: The effects of long-term relationships, information technology and sharing, and logistics integration. *International Journal of Production Economics*, 135(1), pp. 514-522.

Rashed, C. A. A., Azeem, A., and Halim, Z. (2010). Effect of information and knowledge sharing on supply chain performance: a survey based approach. *Journal of Operations and Supply Chain Management*, *3*(2), 61-77.

Rhodes, J., Lok, P., Yu-Yuan Hung, R. and Fang, S. (2008). An integrative model of organizational learning and social capital on effective knowledge transfer and perceived organizational performance. *Journal of Workplace Learning*, 20(4), pp. 245-258.

Richard, P. J., Devinney, T., Yip, G., and Johnson, G. (2009). Measuring organizational performance: towards methodological best practice. *Journal of Management*, *35*(3), pp. 718-804.

Robb, D., Xie, B. and Arthanari, T. (2008). Supply chain and operations practice and performance in Chinese furniture manufacturing. *International Journal of Production Economics*, 112(2), pp. 683-699.

Ruiz-Mercader, J., Meroño-Cerdan, A. and Sabater-Sánchez, R. (2006). Information technology and learning: Their relationship and impact on organisationalperformance in small businesses. *International Journal of Information Management*, 26(1), pp. 16-29.

Salim, I. M., and Sulaiman, M. (2011). Organizational learning, innovation and performance: a study of Malaysian small and medium sized enterprises. *International Journal of Business and Management*, *6*(12), pp. 118- 125.

Samuel, K., Goury, M., Gunasekaran, A. and Spalanzani, A. (2011). Knowledge management in supply chain: An empirical study from France. *The Journal of Strategic Information Systems*, 20(3), pp. 283-306.

Sanz-Valle, R., Naranjo-Valencia, J., Jiménez-Jiménez, D. and Perez-Caballero, L. (2011). Linking organizational learning with technical innovation and organizational culture. *Journal of Knowledge Management*, 15(6), pp. 997-1015.

Schermelleh-Engel, K., Moosbrugger, H., and Müller, H. (2003). Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures.*Methods of psychological research online*, 8(2), pp. 23-74.

Schoenherr, T., Griffith, D. A., and Chandra, A. (2014). Knowledge Management in Supply Chains: The Role of Explicit and Tacit Knowledge. *Journal of Business Logistics*, *35*(2), pp. 121-135.

Škerlavaj, M., and Dimovski, V. (2009). *Organizational learning and performance in two national cultures: A multi-group structural equation modeling approach* (pp. 321-367). Springer US.

Sundram, V. P. K., Ibrahim, A. R. and Govindaraju, V. C. (2011). Supply chain management practices in the electronics industry in Malaysia. *Benchmarking*, 18(6), pp. 834-855.

Tamayo-Torres, I., Tamayo-Torres, I., Gutiérrez-Gutiérrez, L.J., Gutiérrez-Gutiérrez, L.J., Llorens-Montes, F.J., Llorens-Montes, F.J., Martínez-López, F.J. and Martínez López, F.J., 2016. Organizational learning and innovation as sources of strategic fit. *Industrial Management & Data Systems*, *116*(8), pp.1445-1467.

Tan, K. C., and Cross, J. (2012). Influence of resource-based capability and inter organizational coordination on SCM. *Industrial Management and Data Systems*, *112*(6), pp. 929-945.

Tan, Y. C., Mavondo, F. and Worthington, S. (2011). Organisational capabilities and relationship quality. *Asia Pacific Journal of Marketing and Logistics*, 23(2), pp. 152-164.

Tanriverdi, H. (2005). Information technology relatedness, knowledge management capability, and performance of multibusiness firms. *MIS quarterly*, 29 (2), pp. 311-334.

Theriou, G. and Chatzoglou, P. (2008). Enhancing performance through best HRM practices, organizational learning and knowledge management. *European Business Review*, 20(3), pp. 185-207.

Tippins, M. and Sohi, R. (2003). IT competency and firm performance: is organizational learning a missing link?.*Strategic Management Journal,* 24(8), pp. 745-761.

Tseng, S. and Lee, P. (2014). The effect of knowledge management capability and dynamic capability on organizational performance. *Journal of Enterprise Information Management*, 27(2), pp. 158-179.

Wong, W. P. and Wong, K. Y. (2011). Supply chain management, knowledge management capability, and their linkages towards firm performance. *Business Process Mgmt Journal*, 17(6), pp. 940-964.

Xu, D., Huo, B., and Sun, L. (2014). Relationships between intra-organizational resources, supply chain integration and business performance: An extended resource-based view. *Industrial Management and Data Systems*, *114*(8), pp. 1186-1206.

Yang, C., and Chen, L. C. (2009). On Using Organizational Knowledge Capabilities to Assist Organizational Learning. In *Knowledge Management and Organizational Learning* (pp. 302-318). Springer US.

Youn, S., Yang, M. G. M., Hong, P., and Park, K. (2013). Strategic supply chain partnership, environmental supply chain management practices, and performance outcomes: an empirical study of Korean firms. *Journal of Cleaner Production*, 56(1), pp. 121-130.

Zikmund, W. G. (2003). *Business research methods*. 7th ed. Mason, OH:Thomson/South-Western.