

# The Effect of Top Management Support on Innovation: the Mediating Role of Synergy Between Organizational Structure and Information Technology

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## Abstract

*The study aimed to identify the direct and indirect effect of top management support on innovation through the synergy between organizational structure and information technology. Data were collected from 210 industrial companies. Structural Equation Modeling (SEM) was used to test the hypotheses of the study. In addition, Confirmatory Factor Analysis (CFA analysis) was used to test the validity and reliability of the study instrument. The study concluded that the support of top management affect innovation (product innovation and process innovation). Furthermore, the results showed that top management support affects the synergy between organizational structure and information technology. It was also found that the synergy between organizational structure and information technology affect innovation (product innovation and process innovation). Finally, the study revealed that the synergy between organizational structure and information technology does not mediate the effect of top management support in innovation (product innovation, process innovation).*

**Key Words:** Leadership, Process Innovation, Product Innovation, Organizational Structure, Information Technology, Synergy, Structural Analysis.

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## Introduction

Nowadays companies operate in an environment characterized by increasing competition and the rapid pace of technological change (Agbim, et al., 2013). Companies need to renew themselves, as they face many challenges such as providing new products and services, and changing nature of the management within organizations. This change requires synergy creation between technology, organizational structures, processes, and practices to

generate competitive advantage (Teece, 2007). Organizations are seeking to improve their administrative goals and methods, in accordance with its environmental conditions, by modifying the organizational structures in line with technology. Given that technology progress is accelerating, the subject of technology impact on organizational structure occupies a growing interest (Vaccaro, et al., 2012). The role of top management appears to be crucial in achieving synergy between the activities and operations in the organization, because top management is an important source to achieve organizational goals. Top management is responsible of the understanding the organizational principles and values of its workers, in addition to generating synergy and compatibility between them (Manna, 2012; Turban, 2010, P: 236).

On the other side of information technology, the outstanding role played by the organizational structure became obvious in the success of the various organizations (Chen, 2007). This requires designing and building the organizational structure, to provide and create the success conditions of achieving the goals, to satisfy the needs of individuals, giving them greater autonomy, initiative and creativity (Ifinedo, 2007). Empowerment allows higher participation and contribution in achieving the goals, through coordination and integration between individuals and groups, to achieve synergy and consistency, and create the conditions for participation, self-fulfillment and accomplishment. This leads to more enthusiastic sense of belonging and commitment to the goals (Wiengarten, et al., 2013).

Top management support is an important and critical issue to achieve and maintain a competitive advantage. As there is a continual recognition of the vital role of top management in identifying, exploiting opportunities and making decisions that affect innovation to add value to the businesses (Elenkov, et al., 2005; Ireland and Hitt, 1999; Finkelstein and Hambrick, 1996). The interaction between top management and innovation received significant attention by researchers (West, et al., 2003; Kim, et al., 2012; Sharma and Rai, 2003). Many studies that examined the relationship between top management and innovation indicated that top management positively affects innovation, and that there is a positive relationship between innovation and performance of organizations (Bowen, and Steel 2010; Ryan and Tipu, 2013). The dynamics of working conditions in developing countries pose challenges to top management, where the need for innovation stands out as a major contributing tool to gain a sustainable competitive advantage for survival in the market (Perry-Smith, 2006; Puranam, et al., 2006). Therefore, the current study aims to achieve the following goals:

- 1- Determine the effect of top management in achieving synergy between information technology and organizational structure.
- 2- Determine the effect of top management on innovation.
- 3- Determine the effect of synergy between information technology and organizational structure on innovation.

## Theoretical Framework

### Top Management Support

Top management plays an essential role in generating innovations by providing the appropriate environment, and making decisions that enhance the creation and execution of knowledge successfully (Van de Ven, 1993; Storey, 2000; Aragón-Correa, et al., 2007). Ideal top management shows a deep awareness of its followers needs, and provides an incentive, which is a source of encouragement and motivation for them to innovate and solve problems. Top management helps employees to address their needs for empowerment, improve personality, accomplish achievement, and enhance self-efficacy (Jung, et al., 2003; Ryan and Tipu, 2013; Abrell, et al., 2011; Taylor, et al., 2009). Many researchers pointed out that top management plays an important role in organizational outcomes (Cho and Hambrick, 2006; Kor, 2003; Stam and Elfring, 2008; Smith and Tushman, 2005; Wu, et al., 2005; Oke, et al., 2009; Chahine and Goergen, 2013; Agbim, et al., 2013). Many other researchers suggested that top management support plays a key role in influencing the adoption of innovational activities in organizations (Jung, et al. 2003; Elenkov, et al., 2005; Makri and Scandura, 2010; Denti, 2012; Kim, et al., 2012; Hoang, et al., 2009; Al-Refaie, et al., 2011; Ryan and Tipu, 2013).

### **The organizational structure**

The organizational structure takes an important part of interests of both researchers and practitioners in the field of management, as it plays an important role in achieving the organizational goals. (Daft, 2010, P: 350) defined the organizational structure as a framework that identifies the way tasks and resources are being distributed, in addition to coordinating between the various departments and divisions to achieve specific goals.

Chen (2007) pointed out that the investment in information technology has led to more decentralization by positively reducing the degree of formality in organizational structure. This in turn has a positive effect on the development of new products, leading to better performance. Similarly (Brynjolfsson, et al., 2002) stressed that companies that extensively use information technology are more willing to adopt work practices that involve a larger use of work teams, decentralization and increased staff training. In addition, the synergy between information technology and organizational structure creates more value to organizations (McCullough, et al., 2004). According to Al-Harahsheh and Al-Hiti (2006), in their study found that the organizational support affects innovation. Al-Zubi (2013) and As-Safar et al., (2009) stated that there is an impact for the organizational climate on the adoption of innovative behavior. Saddique, et al., (2013) concluded that the organizational structure affects the creativity of the products. Agbim, et al., (2013) indicated that the organic structure affects the creation of innovative ideas, while the mechanistic structure affects the implementation of innovative ideas.

### **Information Technology**

The importance of information technology infrastructure has increased in today's organizations. With its primary purpose being the provision of rapid information support for the organization and its various units, in order to respond to the dynamic challenges in different environments, to enable the organization to deal with these growing challenges (Zhang et al., 2004).

The growing reliance on information technology has had a clear role in the shape and the structure of the organizational performance, through providing a range of strategic choices, to improve the organizational performance. The application of information technology improves the ability of the organization to innovate, increase its operational efficiency, and its marketing effectiveness (Ramirez, 2010; Gochhait, et al., 2011; Chen, 2012). Information technology occupies advanced and strategic positions in organizations, this demonstrates the strategic direction for industrial and service companies investments in information technology (Peffer and Saarinen, 2002).

### **Synergy between the organizational structure and information technology**

Synergy is defined as creating the congruent environment in which individuals cooperate through the exchange of ideas and information with each other, across organizational units to create a unified force, and achieve the desired objectives of the organization (Siddiqui, et al., 2009; Li, 2006).

The process of creating synergy between organizational structure and information technology is considered as the most important role of the top management. This requires synergizing organizational structure and information technology strategies. It is evident through synergy that the achievement of the strategic advantages cannot be obtained through the separate work of information technology and organizational structure (Lee, et al., 1995; Liao, 2011).

Organizations can improve decentralized decision-making mechanisms, through the application of information technology. Managers at all levels have access to required information, to make effective decisions. In this case, the decision-making authority can be delegated to employees by applying an appropriate technology (Lee, et al., 1995; Li et al, 2006; Camp, 2005).

(Reich and Benbasat, 2000, P: 56) pointed out that the synergy between organizational structure and information technology can be divided into two types; the first is related to understanding and commitment to the plans and short-term objectives. The second is related to long-term shared vision that contributes to the success of the work carried out by the company. (Canato and Corrocher, 2004; Carayannis, 1998) stressed on the importance of the synergy between the organizational structure and information technology in creating a communication network within the organization, as well as to support the re-definition of the overall strategy and the organizational cultural integration. (Enayati and Ghasabeh, 2012) stated that synergy between the organizational structure and information technology helps in knowledge management. The findings by (Zhang and Baden-Fuller, 2010) showed that the synergy between the organizational structure and information technology helps improving the learning process. (Guang-lei, et al., 2010) explained that the synergy between the organizational structure and information technology affects innovation. (McCullough, et al., 2004) pointed out that the synergy between the organizational structure and information technology affects organizational effectiveness.

There have been many attempts to test three models, to explain casual relationship between organizational structure and information technology, as shown in the table (1). The first model is called "The technological imperative" which suggests that technology is the external force that determines the organizational structure. The second model is called the "The organizational imperative" which considers technology as an administrative choice to achieve the organizational needs from information technology. And the third is called "The emerging view" model, which stressed on the lack of a deep-rooted relationship between organizational structure and information technology, because of the complex social interaction between them, which make the relationship unpredictable (Markus and Robey, 1998).

Later on (Gorege and King, 1991) turned the three models to four cases, and all of the four cases were settled under the common assumption that computing is a method to accomplish the administrative goals, and that there is a strong trend to use information technology to enhance decision-making. Table 1 summarizes the essence of the relationship between information technology and organizational structure and the references supporting models and cases.

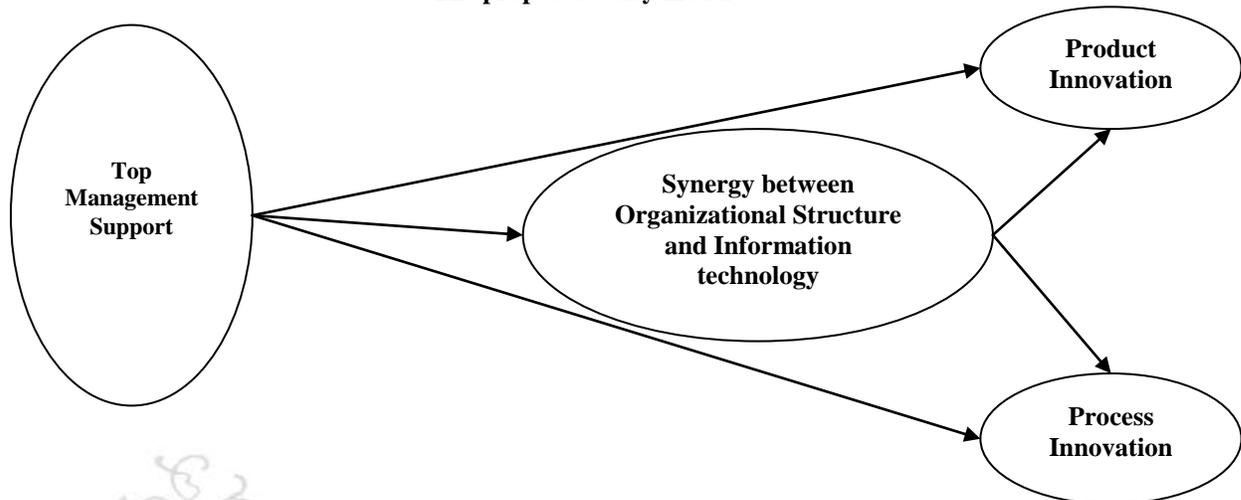
Table (1) The relationship between information technology and organizational structure

Views	Essence	Reference
Technological imperative	Information Technology --- Organization Structure	Simon (1977) Pfeffer (1982) Applegate, et al. (1988)
Information Technology causes centralization	Information Technology--- Centralization	Leavitt and Whisler (1958) Robey (1981)
Information technology causes decentralization	Information Technology--- Decentralization	Anshen (1960) Pfeffer and Leblebici (1977)
Organization or managerial action imperative	Organization needs and Organization Structure managerial choice	Kling (1980) Rowe (1984)
Emergent Perspective	Information Technology × Organization Structure	Dean (1968) Barley (1986)
Reinforcement political interpretation	Environment organization --- information technology and organization structure management	Laudon(1974) Danziger, et al., (1982) Gorege and King (1991)

Source: Lee, A, Cheng, C, and Chdha, G. (1995). Synergism between IT and Organizational Structure, p. 39.

The issue of the synergy between the organizational structure and information technology is not a casual simple thing; this means that there is not a clear uniform and consistent structural outputs between institutions that use the same technology (Gorege and King, 1991).

**The proposed study model**



**Sampling Design and Data Collection**

A questionnaire was used to acquire empirical data related to each of the study variables. The questionnaire was distributed to middle and top managers in the Jordanian industrial organizations. Total of (425) questionnaires were distributed. (227) questionnaires were returned, of which (210) were valid, which represents 49.4% response rate. Previous studies indicated that the appropriate sample size to use structural equations model (SEM) analysis is 10 observations per variable or item (observed variables) used to measure the latent variables (Barclay, et al. 1995; Kahai and Cooper 2003; Chin and Newsted 1999). Since the current study model contains variables (items), the minimum sample size is (10\*4 = 40). The sample size of this study (n = 210) is verified because this size met this criterion.

**Research Methodology**

**Research Design**

This study aimed to identify the direct and indirect effect of top management support on innovation through synergy between the organizational structure and information technology. The survey instrument was developed using a 5-point Likert scale measuring the frequency of practices consisting of: 1 — never, or does not exist; 2 — sometimes; 3 — frequently; 4 — mostly; and 5 — always or definitely exists. The initial survey was tested within Jordanian industrial organizations. Based upon these tests, improvements in wording and format were made to the instrument and several items were eliminated. The top and middle management also reviewed the initial survey instrument. Based on this review, the survey was slightly reorganized to better match the synergy between Organizational Structure and Information Technology model. The questionnaire consists of five sections: Section A: Top Management Support based on (Kaynak, 2003; Kim, et al., 2012; Ryan and Tipu, 2013), Section B: Synergy Between Organizational Structure and Information Technology based on (Lee, et al., 1995, Manna, A., 2012), Section C: Product Innovation, Process Innovation Based on (Kim et al, 2012; Reichstein and Salter, 2006; Costa and Lorente, 2008).

**Reliability**

Cronbach’s alpha is a commonly used measure of reliability of a set of two or more construct indicators. Reliability is a measure of internal consistency of the construct indicators (Streiner, 2003). According to Hair, et al. (2010), reliability refers to the extent to which a set of indicators measure an aggregate construct consistently, alpha value of (.60) is sufficient (Sekaran and Bougie, 2010). An internal consistency analysis was performed separately for the items under each of the criteria. The reliability coefficient (Cronbach’s alpha) was calculated for each variable and ranged between 0.796 (Process Innovation (Procinn)) and 0.876 (Product Innovation (Prodinn)) (Table 2). The alpha values found for each variable indicated that each variable was a reliable measure.

**Convergent and Discriminant Validity**

Validity refers to ensuring that we are measuring the concept we set out and not something else (Sekaran and Bougie, 2013). discriminant validity test is set to verify if the items that were developed to measure different constructs are certainly evaluating different constructs. As shown in Table (2), the loadings of all items were greater than 0.50 on their underlying constructs. Moreover; discriminant validity was considered using several tests. First, it could be examined in the measurement model by investigating the shared average variance extracted (AVE) by the latent constructs. As shown in (Table 2), this study showed that the AVEs of all the constructs were above the suggested level of 0.50, implying that all the constructs that ranged from 0.530 to 0.711 were responsible for more than 50 percent of the variance in their respected measurement items, which met the recommendation that AVE values should be at least 0.50 for each construct (Hair, et al., 2010). Thus, the measures significantly discriminate between the constructs. In addition Constructs have convergent validity when the composite reliability (CR) exceeds the criterion of .70, and the average variance extracted is above .50, as suggested by Kline (2005). As shown in (Table 2) all constructs (top management support, synergy between Organizational Structure and Information Technology, product innovation and process innovation) have conversion validity.

Table (2) Results of reliability and validity

Constructs	Items	Factor loading	KMO	Cronbach’s alpha	CR <sup>1</sup>	AVE <sup>2</sup>
Top Management support (TMS)	TMS1	0.854	<b>0.812</b>	<b>0.855</b>	<b>0.91</b>	<b>0.711</b>
	TMS2	0.880				
	TMS3	0.833				
	TMS4	0.793				
Synergy between Organizational Structure and Information Technology (SOSIT)	SOSIT 1	0.779	<b>0.799</b>	<b>0.849</b>	<b>0.90</b>	<b>0.69</b>
	SOSIT 2	0.866				
	SOSIT 3	0.844				
	SOSIT 4	0.828				
Process Innovation (Procinn)	Procinn1	0.801	<b>0.723</b>	<b>0.796</b>	<b>0.85</b>	<b>0.53</b>
	Procinn2	0.698				
	Procinn3	0.650				
	Procinn4	0.761				
	Procinn5	0.729				

<sup>1</sup> Composite reliability (CR) = (square of summation of factor loadings)/ [(square of summation factor loadings) + (summation of error variances)].

<sup>2</sup> Average variance extracted (AVE) = (summation of the square of factor loadings)/ [(summation of the square of factor loadings) + (summation of error variances)].

Product Innovation (SOSIT)	Prodinn1	0.773	<b>0.862</b>	<b>0.876</b>	<b>0.91</b>	<b>0.67</b>
	Prodinn2	0.831				
	Prodinn3	0.831				
	Prodinn4	0.802				
	Prodinn5	0.855				

**Model fit**

The fit of the measurement model was assessed using the following statistics and indices: Chi square ( $\chi^2$ ), the ratio of the Chi-square to the degrees of freedom (df), Goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), Comparative Fit Index (CFI), Root-mean square residual (RMR), and Root Mean Squared Error (RMSEA). Chi-square/df values less than or equals 3 indicates a good model fit, and between 2.0 and 5.0 is acceptable level (Hair, et al., 2010; Schumacker and Lomax, 2004). GFI, AGFI, CFI values should be greater than 0.8 (Etezadi-Amoli and Farhoomand, 1996; Lau, 2011). The smaller the RMR value, the better the model. A value of less than 0.05 indicates a close fit (Hair, et al., 2010). NFI and TFI values should be greater than 0.9 (Wang and Wang, 2012; Hair, et al., 2010). RMSEA values less than 0.10 indicate good fit (Devaraj, et al., 2002).

The goodness of fit indices of the measurement model is presented in (table 3); according to these results we can infer that the measurement model was reasonably fitted to the data set.

Table (3) Confirmatory factor analysis (CFA) of the structured model (Goodness-Of-Fit indices)

Goodness of fit (GOF) Measure	Conceptual Model	Criterion	Reference
$\chi^2$ / Degree of freedom	1.428	$\leq 3$	Hair, et al., 2010 Schumacker and Lomax, 2004
GFI	0.997	$> 0.8$	Etezadi-Amoli and Farhoomand,1996
AGFI	0.966	$> 0.8$	Etezadi-Amoli and Farhoomand,1996
CFI	0.998	$> 0.8$	Lau, 2011
RMR	0.006	$< 0.05$	Hair, et al., 2010
NFI	0.993	$> 0.9$	Wang and Wang, 2012
TLI	0.986	$> 0.9$	Hair, et al., 2010
RMSEA	0.045	$< 0.10$	Devaraj, et al., 2002

Hypothesis 1: There is a direct significant ( $\alpha < 0.05$ ) effect for Top management support on achieving Synergy between Organizational Structure and Information Technology.

It was hypothesized that there is a direct significant ( $\alpha < 0.05$ ) effect of Top management support on synergy between Organizational Structure and Information Technology. The hypothesis was supported ( $\beta = 0.222$ ;  $t = 3.431$ ), ( $t > 1.96$ ,  $p = 0.00 < 0.001$ ).

Hypothesis 2: There is a direct significant ( $\alpha < 0.05$ ) effect for Top management support on product innovation.

It was hypothesized that there is a direct significant ( $\alpha < 0.05$ ) effect of Top management support on Top management support on product innovation. The hypothesis was supported ( $\beta = 0.472$ ;  $t = 8.166$ ), ( $t > 1.96$ ,  $p = 0.00 < 0.001$ ).

Hypothesis 3: There is a direct significant ( $\alpha < 0.05$ ) effect for Top management support on process innovation.

It was hypothesized that there is a direct significant ( $\alpha < 0.05$ ) effect of Top management support on Top management support on process innovation. The hypothesis was supported ( $\beta = 0.401$ ;  $t = 9.385$ ), ( $t > 1.96$ ,  $p = 0.00 < 0.001$ ).

Hypothesis 4: There is a direct significant ( $\alpha < 0.05$ ) effect for synergy between Organizational Structure and Information Technology on product innovation.

It was hypothesized that there is a direct significant ( $\alpha < 0.05$ ) effect of synergy between Organizational Structure and Information Technology on product innovation. The hypothesis was supported ( $\beta = 0.243$ ;  $t = 4.047$ ), ( $t > 1.96$ ,  $p = 0.00 < 0.001$ ).

Hypothesis 5: There is a direct significant ( $\alpha < 0.05$ ) effect for synergy between Organizational Structure and Information Technology on process innovation.

It was hypothesized that there is a direct significant ( $\alpha < 0.05$ ) effect of synergy between Organizational Structure and Information Technology on process innovation.. The hypothesis was supported ( $\beta = 0.148$ ;  $t = 3.320$ ), ( $t > 1.96$ ,  $p = 0.00 < 0.001$ ).

Hypothesis 6: The synergy between Organizational Structure and Information Technology is significantly mediating ( $\alpha < 0.05$ ) the effect of Top management support on product innovation.

As seen in Table (5), when a variable/construct intervenes between two other related constructs, a mediating effect is created. We tested the mediating effects that the synergy between Organizational Structure and Information Technology had in the relationship between Top management support and product innovation. Our results indicated that synergy between Organizational Structure and Information Technology does not act as a mediator between Top management support to product innovation, and it also has an insignificant indirect effect of (0.043), which does not support our hypothesized model (H6).

Hypothesis 7: The synergy between Organizational Structure and Information Technology is significantly mediating ( $\alpha < 0.05$ ) the effect of Top management support on process innovation.

As seen in Table (6), our results indicated that synergy between Organizational Structure and Information Technology does not act as a mediator between Top management support to process innovation, and it also has an insignificant indirect effect of (0.054), which does not support our hypothesized model (H7).

Table (4) Regression weight for hypotheses testing result

H	Estimate	SE.	C.R.	P	Hypothesis Support
H1	0.222	0.065	3.431	***	Asserted
H2	0.472	0.058	8.166	***	Asserted
H3	0.401	0.043	9.385	***	Asserted
H4	0.243	0.060	4.047	***	Asserted
H5	0.148	0.044	3.320	***	Asserted

\*Sig<.1, \*\*Sig<.05, \*\*\*Sig<.01

Table (5) Standardized Direct, Indirect, and Total Effects of Hypothesized Model Endogenous Variable (Top management support to product innovation)

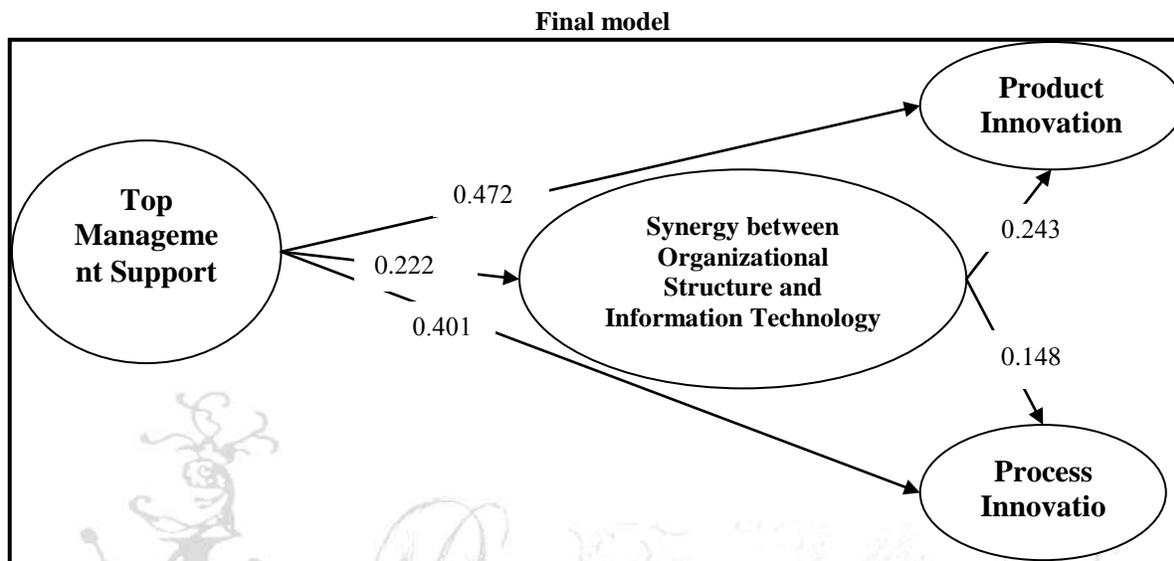
	Indirect effect	Direct effect	Total effect
<b>Top management support</b>	<b>0.043</b>	<b>0.474**</b>	<b>0.529**</b>

\*Sig<.1, \*\*Sig<.05, \*\*\*Sig<.01

Table (6) Standardized Direct, Indirect, and Total Effects of Hypothesized Model Endogenous Variable (Top management support to process innovation)

	Indirect effect	Direct effect	Total effect
Top management support	0.054	0.532**	0.575**

\*Sig<.1, \*\*Sig<.05, \*\*\*Sig<.01



**Discussion**

The technological development that has been achieved in various fields requires continual generation of novel ideas and encouraging innovation in renewable manners. Especially in less fortunate countries, which are striving to catch up with technological development through innovation.

The results indicated the presence of the effect of top management support in achieving synergy between the organizational structure and information technology. Such synergy enables companies to achieve the highest positive performance results. This can be explained by the fact that top management is keen on having an organizational structure in line with information technology, to make accurate business decisions, through the fast and timely flow of information across managerial levels. Top management's keenness to achieve the objectives of the organization through the simultaneous integration between the organizational structure and information technology. This result is consistent with results reached by (Siddiqui, 2009) that showed the role of synergy between IT and organizing partners. This result is also aligned with the result reached by Aiken and Hodgson (1998). Their study showed that the integrated synergy in the application process, and synchronization between re-engineering the organizational processes and information systems re-engineering has a higher positive impact on the organizations than when applied separately. The current study result is also in line with a study conducted by Gochhait (2011), which stated that achieving synergy between information technology and work procedures leads organizations to follow a true regulatory path.

The results from this study showed that there is a presence of the effect of top management support on innovation (product innovation, and process innovation). This is due to the important role played by top management in providing the supportive organizational climate for innovation. Top management is committed to create the necessary infrastructure to support innovational activities such as creating the

appropriate educational environment for employees, providing financial support for training programs, and promoting teamwork. This result is consistent with the results of (Jung, et al. 2003; Elenkov, et al., 2005; Makri and Scandura, 2010; Denti, 2012; Kim, et al., 2012; Hoang, et al., 2009; Al-Refaie, et al., 2011; Ryan and Tipu, 2013).

The results of the study revealed that the synergy between the organizational structure and information technology affects innovation (product innovation, and process innovation), and this result is consistent with the results of (Enayati and Ghasabeh, 2012; Zhang and Baden-Fuller, 2010; Guang-lei, et al., 2010; McCullough, et al., 2004). Poor organizational structure hinders innovative ideas, while rich organizational structure is considered to be the catalyst for the adoption of innovative behavior. Good organizational structure gives the innovator the ability to communicate and share information; this can be achieved through providing incentives. All of this gives an indication of the important role of the top management to find a synergy between organizational structure and information technology. This can be achieved by making the organizational structure and information technology strategies work in a synergistic manner. The presence of synergy makes is significant factor to achieve a strategic advantage that cannot otherwise be obtained by separating organizational structure and information technology. Finally, the results of the study showed that the synergy between the organizational structure and information technology does not mediate the effect of top management support on innovation.

## Conclusion

In order for successful organizations to ensure its powerful and effective survival, it must not stop at just the economic efficiency. Instead innovation should be the hallmark of their products and performance. Innovation allows organizational adaption to changes quickly, and helps them discover new products and markets, which will enable them to protect themselves against the unstable environment. Many organizations have benefited from innovation to increase profits and market share. It is therefore the support of top management that plays an important role in improving the process of innovation. With the beginning of the third millennium the management success indicators started to switch to "competitive advantage" that rely primarily on the ability of the organization and its staff to reach excellence, and innovation.

## The Study Contribution, Implications and Limitations

The behaviors of the effective top management has a positive impact on the individual and organizational results, while the training on leadership and development helps to modify the behavior of top management for greater efficiency (Ryan, and Tipu, 2013; Abrell, et al., 2011; Taylor, et al., 2009). The support of top management has an effect on the ability of organizations to adapt to environmental factors, constraints, and taking advantage of opportunities. Innovation is one of the long-term existing keys for organizations. This requires organizations to focus on the process of selecting directors with creative leadership characteristics. Also, there is a need to pay attention to the process of training middle and lower management on the effective leadership methods.

Top management salaries must be taken into consideration. Several research studies have shown the importance of rewarding top management, to support innovational efforts in their companies as a means to encourage innovation (Makri, et al., 2006; Makri, and Scandura, 2010). The study also showed the vital role of top management in generating innovations through the provision of appropriate environment, and making accurate decisions that enhance the generation and application of knowledge. Innovation needs concrete efforts of organizational learning that is based on continuous teamwork to generate new knowledge. The study gave evidence of the importance of synergy between the organizational structure and information technology and its role in making the company more adaptable. Technology significantly eases the communication and coordination processes between different functions in organizations.

The use of information technology helps business organizations achieve benefits on the organizational and individual levels. It leads to a change in the lives of individuals and in the lives of administrations. Specifically, information technology helps organizations and individuals survive, continue and keep up with developments in the surrounding environments. Information technology use requires the development of administrative and communication systems in place to help organizations benefit from these changes. It is necessary to train the work force and increase their skills and ability. Using information technology also requires the provision of a new working environment that is able to create the appropriate atmosphere for the use of technology. The use of technology efficiently and effectively leads to save time and increase productivity. Less formalized and centralized organizational structures gives teams more freedom that helps create new products (Chen, 2007).

In terms of methodology, a tool to measure the effect of top management support through synergy between organizational structure and information technology on innovation in developing countries has been developed. This will hopefully facilitate future research in this area. The study also contributed in providing some evidence which confirms that the support of top management has a positive effect on innovation. These results have significant impact among managers of the Jordanian industrial organizations. For example, this study will help improve the ability of organizations to provide innovative products or services, or to enhance the manufacturing processes based on the different management techniques. Synergy between organizational structure and information technology can also contribute in promoting innovative thinking, and create a learning base for generating innovative ideas. However, the study sample was limited to industrial organizations in the city of Amman.

## References

- Abrell, C., Rowold, J., Weibler, J., Moeninghoff, M. (2011). Evaluation of a long-term transformational leadership development program. *Zeitschrift Fur Personalforschung*, 25(3), 205–224.
- Agbim, K.C. (2013). The relative contribution of management skills to entrepreneurial success: A survey of small and medium enterprises (SMEs) in the trade sector. *International Organization of Scientific Research Journal of Business and management*, 7(1), 08- 16.
- Aiken, P., and Hodgson, L. (1998). Synergy between Business Process and Systems Reengineering. *Information Systems Management*, 15(4), 55-67.
- Al-Harshah, M., and Al-Hiti, S.A. (2006). The effect of administrative empowerment and organizational support on creative behavior: A field study of the personnel's' attitudes of the Jordanian communication company. *Dirasat: Administrative Science*, 33(2), 240-266.
- Al-Refaie, A., Ghnaimat O., and Ko, J.H. (2011). The effects of quality management practices on customer satisfaction and innovation: a perspective from Jordan. *International Journal of Productivity and Quality Management*, 8(4), 398-415.
- Al-Zubi, M.O. (2013). The impact of organization climate on employees' innovative behavior, the case of orange telecommunication company in Irbid city. *Dirasat: Administrative Science*, 40(2), 277-297.
- Anshen, M. (1960). The manager and the black box. *Harvard Business Review*, 38(6), 85-92.
- Applegate, L.M., Cash J.I., Mills, D.Q. (1988). Information Technology and Tomorrow's Manager. *Harvard Business Review*, 66(6), 128-136.
- Aragón-Correa, J.A., García-Morales, V.J. and Córdón-Pozo, E. (2007). Leadership and organizational learning's role on innovation and performance: lessons from Spain. *Industrial Marketing Management*, 36(3), 349-359.
- As-Safar, A.A., Al-Ajlouni, M.M., Jaradat, A.A., (2009). The role of organizational climate in achieving creative performance and enhancing competitiveness in the North Region. *Jordan Journal of Business Administration*, 5(3), 351-370.
- Barclay, D.W., Higgins, C., Thompson, R. (1995). The partial least squares approach to causal modeling: personal computer adoption and use as illustration. *Technology Studies*, 2(2), 285-309.
- Barley, S.R. (1986). Technology as an occasion for structuring: Evidence from observations of CT scanners and the social order of radiology departments. *Administrative Science Quarterly*, 31(1), 78–108.

- Bowen, F.E., Rostami, M., Steel, P. (2010). Timing is everything: A meta-analysis of the relationships between organizational performance and innovation. *Journal of Business Research*, 63(11), 1179–1185.
- Brynjolfsson, E., Hitt, L., Yang, S., Baily, M. and Hall, R., (2002). Intangible assets: computers and organizational capital/comments and discussion. *Brookings Papers on Economic Activity*, 1(1), 137–198.
- Camp, M. (2005). Computing trends firms can expect. *Accounting Technology*, 21 (1), 28.
- Canato, A., and Corrocher, N. (2004). Information and communication technology: organizational challenges for Italian banks. *Accounting, Business and Financial History*, 14(3), 355-370.
- Carayannis, E.G. (1998). Fostering synergies between information technology and managerial and organizational cognition: The role of knowledge management. *International Journal of Technovation*, 19(4), 219–231.
- Chahine S. and Goergen M. (2013). The effects of management-board ties on IPO performance, *Journal of Corporate Finance*, 21, 153–179.
- Chen, C.J. (2007). Information technology, organizational structure, and new product development—the mediating effect of cross-functional team interaction. *Ieee Transaction on Engineering Management*, 54(4), 687-698.
- Chen, J-L. (2012). The synergistic effects of IT-enabled resources on organizational capabilities and firm performance. *Information and Management*, 49, 142–150.
- Child, J., (1994). *Organization: A guide to problems and practice*. Publications Ltd.
- Chin, W. W., and Newsted, P. R., (1999). Structural equation modeling analysis with small samples using partial least squares. In Rick Hoyle (Eds.), *Statistical strategies for small sample research* (pp.307–341). Thousand Oaks, CA: Sage.
- Cho T.S. and Hambrick D.C. (2006). Attention patterns as mediators between top management team characteristics and strategic change: The case of airline deregulation. *Organization Science*, 17(4), 453-469.
- Costa, M.M., and Lorente, A.R., (2008). Does quality management foster or hinder innovation? An empirical study of Spanish companies. *Total Quality Management*, 19, 209-221.
- Daft, R. L. (2010). *Management*, The Dryden Press, New York.
- Danziger, J., Dutton, W., Kling, R., Kraemer, K.L. (1982). *Computer and politics: high technology in American local governments*. Columbia University Press, New York.
- Dean, J.J. (1968). The computer comes of age. *Harvard Business Review*, 46(1), 83-91.
- Denti, L. (2012). Leadership and innovation in organizations: a systematic review of factors that mediate or moderate the relationship more. *International Journal of Innovation Management*, 16(3), 1240007-1-1240007-20.
- Devaraj, S., Fan, M., Kohli, R. (2002). Antecedents of B2C Channel Satisfaction and Preference: Validating e-commerce metrics. *Information Systems Research*, 13, 316-334.
- Elenkov D.S., Judge W., Wright P. (2005). Strategic leadership and executive innovation influence: An international multi-cluster comparative study. *Strategic Management Journal*, 26(7), 665-682.
- Enayati G. and M. S. Ghasabeh. (2012). Studying the effects of organizational culture, organizational structure, and information technology on effectiveness of knowledge management: Using Khorasan Regional Electricity Company as a case study. *African Journal of Business Management*, 6(24), 7170-7183.
- Etezadi-Amoli, J., and Farhoomand, A. (1996). A structural model of end user computing satisfaction and user performance. *Information and Management*, 30 (2), 65 – 73.
- Finkelstein S, and Hambrick D.C. (1996). Strategic leadership: top executives and their effects on organizations. *Australian Journal of management*, 22(2), 221- 224.
- George, J.F. and King, J.L. (1991). Examining the computing and centralization debate. *Communications of the ACM*, 34(7), 62-72.
- Gochhait, S. (2011). Strategic impact of synergy between information technology and business process on the performance of the companies in india. *International Journal of Innovation Management and Technology*, 2(4), 274-277.

- Guang-lei Z., Jian-Qiao, L., He-Rong, Z. (2010). Organizational Structure, Technological Capabilities and Independent Innovation Mode An Empirical Study on China's Technology-intensive Enterprises. *RandD Management*, 1, 1-9
- Hair, J., Black, W., Babin, B. and Anderson, R. (2010). *Multivariate data analysis: A global perspective*. 7th edition, Pearson Education, Inc., Saddle River, New Jersey.
- Huang, Y.H., Li, E.Y., Chen, J.S. (2009). Information synergy as the catalyst between information technology capability and innovativeness: empirical evidence from the financial service sector. *Information Research*. 14(1), 380-394
- Ifinedo, P.M. (2007). Interactions between organizational size, culture, and structure and some it factors in the context of ERP success assessment: an exploratory investigation. *Journal of Computer Information Systems*, 47, 28-44.
- Ireland R.D., and Hitt, M. A. (1999). Achieving and maintaining strategic competitiveness in the 21st century: the role of strategic leadership. *Academy of Management Executive*, 13(1), 43-57.
- Jung, D.I, Chow, C., Wu, A. (2003). The role of transformational leadership in enhancing organizational innovation: Hypotheses and some preliminary findings. *The Leadership Quarterly*, 14, 525-544.
- Kahai, S.S., and Cooper, R.B. (2003). Exploring the core concepts of media richness theory: The impact of cue multiplicity and feedback immediacy on decision quality. *Journal of Management Information Systems*, 20(1), 263-299.
- Kaynak, H. (2003). The relationship between total quality management practices and their effects on firm performance, *Journal of Operations Management*, 21, 405-435.
- Kim, D.Y., Kumar, V., Kumar, U. (2012). Relationship between quality management practices and innovation. *Journal of Operations Management*, 30, 295-315.
- Kline, R.B. (2005). *Principles and practice of structural equation modeling*. (2nd edition.). New York, the Guilford Press.
- Kling, R. (1980). Social analyses of computing: theoretical perspective in recent empirical research. *ACM Computing Survey*, 12(1), 61-110.
- Kor, Y.Y. (2003). Experience-based top management team competence and sustained growth. *Organization Science*, 14,707-719.
- Lau, A. (2011). Supplier and customer involvement on new product performance: Contextual factors and an empirical test from manufacturer perspective. *Industrial Management and Data Systems*, 111 (6), 910 - 942.
- Laudon, K. (1974). *Computers and bureaucratic reform*, Wiley, New York.
- Leavitt, H. and Whisler, T. (1958). Management in the 1980's. *Harvard Business Review*, 36(6), 41-48.
- Lee, A., Cheng, C., and Chdha, G., (1995). Synergism between information technology and organizational structure: A managerial perspective. *Journal Information Technology*, 10,37-43.
- Li, E.Y., Chen, J.S., and Huang, Y.H. (2006). A framework for investigating the impact of IT capability and organizational capability on firm performance in the late industrializing context. *International Journal of Technology Management*, 36 (1, 2, 3), 209-229.
- Liao, C.H., Chuang, S.H., To, P. (2011). How knowledge management mediates the relationship between environment and organizational structure. *Journal of Business Research*, 64(7), 728-736.
- Makri M., Scandura T. A. (2010). Exploring the effects of creative CEO leadership on innovation in high-technology firms. *The Leadership Quarterly*, 21, 75-88.
- Makri, M., Lane, P. J., Gomez-Mejia, L. (2006). CEO Incentives, innovation, and performance in technology-intensive firms. *Strategic Management Journal*, 27(11), 1057-1080.
- Manna, A.Q. (2012). *Evaluation of the role of top management in achieving synergy between organizational structure and information technology in communications and banking sectors*. Doctoral theses, Amman Arab University, Jordan.
- Markus, M., Robey, D. (1988). Information technology and organizational change: causal structure in theory and research. *Management Science*, 34(5), 383-598.
- McCullough, James; Wei, Ren Ying; Zhang, Man. (2004). Effects of organizational structure and information technology capability on organizational effectiveness in emerging markets. *Journal of*

- Academy of Business and Economics*, retrieved: 1/1/2004, <http://www.encyclopedia.com/doc/1G1-126933638.html>.
- Oke A., Munshi N., Walumbwa F.O. (2009). The influence of leadership on innovation processes and activities. *Organizational Dynamics*, 38(1), 64–72, 2009.
- Peffer, K and Saarinen, T. (2002). Measuring the business value of IT investments: inferences from a study of senior bank executives. *Journal of Organizational Computing and Electronic Commerce*, 12 (1), 17-38.
- Perry-Smith, J. E. (2006). Social yet creative: The role of social relationships in facilitating individual creativity. *Academy of Management Journal*, 49(1), 85–101.
- Pfeffer, J. (1982). *Organizations and organization theory*. Marshfield, MA: Pitman.
- Pfeffer, J., and Leblebici, H. (1977). Information technology and organization structure. *Pacific Sociology Review*, 20(2), 241-261.
- Puranam, P., Singh, H., Zollo, M. (2006). Organizing for innovation: Managing the coordination-autonomy dilemma in technology acquisition. *Academy of Management Journal*, 49(2), 263–280.
- Ramirez, R., Melville N., Lawler, E. (2010). Information technology infrastructure, organizational process redesign, and business value: An empirical analysis, *Decision Support Systems*, 49, 417–429.
- Reich, B., and Benbasat I. (2000). Factors that influence social dimension of alignment between business and information technology objectives, *MIS Quarterly*, 24(1), 81-113.
- Reichstein, T., and Salter, A. (2006). Investigating the sources of process innovation among UK manufacturing firms. *Industrial and Corporate Change*, 15 (4), 653–682.
- Robey, D.(1981). Computer information system and organization structure. *Communication of the ACM*, 26(10), 679-687.
- Rowe, C.J. (1984). The impact of computers on the work organization: centralization or decentralization. *Industrial Management and data system*, 84(11/12), 13-15.
- Ryan, J.C, and Syed, A.A. Tipu, S.A. (2013). Leadership effects on innovation propensity: A two-factor full range leadership model. *Journal of Business Research*, 66(10), 2116–2129.
- Saddique, M., Hayat, K., Abbas, M.A. (2013). Impact of organizational structure on product innovation and customer satisfaction. *Management and Administrative Sciences Review*, 1(2), 54-70
- Schumacker, R. E., and Lomax, R.G. (2004). *A beginner's guide to structural equation modeling*. Upper Saddle River, New Jersey, Lawrence Erlbaum Associates.
- Sekaran, U., and Bougie R. (2010). *Research methods for business: A skill building approach*. 5th Edition, Wiley and Sons. ISBN-10: 0470744790.
- Sharma, S. and Rai, A. (2003). An assessment of the relationship between ISD leadership characteristics and IS innovation adoption in organizations. *Information and Management*, 40(5), 391-401.
- Siddiqui, J., Rahman, Z., Zafar, A., Talib, F. (2009). Information technology and organizational associates: A Synergy for Agility. *Journal of Information Technology*, 5(1), 68-81.
- Simon, H.A., (1977). *The new science of management decision*. 3rd, Prentice-Hall, Englewood Cliffs, NJ.
- Smith, W.K, and Tushman, M.L., (2005). Managing strategic contradictions: A top management model for managing innovation streams. *Organization Science* 16(5), 522-536.
- Stam, W, and Elfring, T. (2008). Entrepreneurial orientation and new venture performance: The moderating role of intra- and extraindustry social capital. *Academy of Management Journal*, 51(1), 97-111.
- Storey, J. (2000). The management of innovation problem. *International Journal of Innovation Management*, 4(3), 347– 369.
- Streiner, D. L. (2003). Being inconsistent about consistency: When coefficient alpha does and doesn't matter. *Journal of Personality Assessment*, 80(3), 217-222.
- Taylor, P. J., Taylor, H., Russ-Eft, D.F. (2009). Transfer of management training from alternative perspectives. *Journal of Applied Psychology*, 94(1), 104–121.
- Teece, D. J., (2007). Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, 28, 1319–50.
- Turban, E., and Volonino, L. (2010). *Information technology for management transforming organizations in the digital economy*, (7th ed.). Hoboken, NJ: Jon Wiley and Son, Inc.

- Vaccaro, I.G., Jansen, J.P., Van Den Bosch, F.A. J., and Volberda, H.W.(2012). Management innovation and leadership: the moderating role of organizational size. *Journal of Management Studies*, 49(1), 28-51.
- Van de ven, A.H. (1993). Managing the process of organizational innovation. In G. P. Huber, and W. H. Glick (Eds.), *Organizational change and redesign: Ideas and insights for improving performance* (pp. 269–294). New York' Oxford University Press.
- Wang, Z., Wang, N. (2012). Knowledge sharing, innovation and firm performance. *Expert Systems with Applications*, 39, 8899 – 8908.
- West, M.A., Borrill, C., Dawsonm J., Brodbeck, F., Shapiro, D.A., Haward, B. (2003). Leadership clarity and team innovation in health care. *Leadership Quarterly*, 14, 393 – 410.
- Wiengarten, F., Humphreys, P., Cao, G., McHugh, M. (2013). Exploring the important role of organizational factors in IT Business value: taking a contingency perspective on the resource-based view. *International Journal of Management Reviews*, 15, 30–46.
- Wu, S., Levitas, E., Priem, R.L. (2005). CEO tenure and company invention under differing levels of technological dynamism. *Academy of Management Journal* 48(5), 859-873.
- Zhang, J., and Baden-Fuller, C. (2010). The influence of technological knowledge base and organizational structure on technology collaboration. *Journal of Management Studies*, 47(4), 679–704.
- Zhang, M., McChllough, J. and Wei, Y. (2004). Effects of organizational structure and information technology capability in organizational effectiveness. *International Academy of Business and Economics*, 3,(1), 683-723.

