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The Impact of Dynamic Capability on Innovation (An Applied Study on Jordanian Pharmaceutical Organizations)

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Abstract
The aim of this research study is to identify the impact of dynamic capability on product innovation, supply chain innovation and organizational innovation. Data were collected using questionnaires from 188 middle and top managers in the Jordanian pharmaceutical organizations. The collected data were analyzed using descriptive statistics and structural equation model (SEM) to test the study hypotheses using AMOS 18.0. The results of the study showed that there is a significant impact for dynamic capability (technical capability, Research &development (R&D) capability and human resource capability) on innovation (product innovation, supply chain innovation and organizational innovation). These results are very likely due to the increased importance of dynamic capabilities in today's organizations. The most important recommendation is adapting new technologies and extensive employee involvement in the entire process of innovation.
Keywords: Dynamic Capability, Innovation, Technical Capability, R&D Capability, Human Resource Capability, Product Innovation, Supply Chain Innovation, Organizational Innovation.

1. Introduction

In today's global competition, innovation has become one of the main sources of sustainable competitive advantage by assessing high performance levels (Lin et al., 2016; Damanpour & Schneider, 2006; Lin & Su, 2014; Vaccaro et al., 2012). The importance of innovation has emerged as a way to help companies deliver products or services that meet the needs and desires of customers (Tung, 2012).

The development of new products and services is essential to the success and sustainability of the organization. Innovation enables companies to offer a variety of distinct products, increases market share (Li & Liu, 2014) and maximizes profitability (Arifin & Frmanzah, 2015). Innovation is a necessary tool to ensure that organizations survive and their long-term market capitalization grows under uncertainty (Ritala et al., 2015).

Innovation helps organizations improve their existing products or deliver new products, enhancing product quality and enhancing the company's competitive ability (Kim & Huang, 2011). Innovation is a strategy to ensure that the organization's market value and profits increase (Artz et al., 2010; Wilden et al., 2013). Innovation helps organizations adapt to environmental changes quickly, and enables them to discover new products and markets opportunities, thereby adapting to environmental changes (Kelly 2009; Eisenhardt & Martin 2000; Lin et al., 2008). Innovation is widely recognized as one of the critical factors that help organizations succeed and grow (Ju, 2012).This has motivated many academics and researchers to study innovation such as (Wu et al., 2016; Michailova & Zhan, 2015). To reach the highest level of innovation, organizations must have dynamic capabilities such as technical capabilities, research and development (R&D) capabilities, and human resource capabilities (Wang & Chen, 2015; Lee & Kelley, 2008; Giniuniene & Jurksieneb, 2015; Dacko et al., 2008; Yalcinkaya Et al., 2008; Michailova & Zhan, 2015).

Many studies have found that organizations lacking dynamic capabilities have not received good outputs from innovation because they have not been able to deal with changes in the environment (Chiu et al., 2016; Kelly 2009; Kock et al., 2011). The accumulation of valuable resources is insufficient to support sustainable competitive advantages and to improve innovation (Liao et al., 2009; Teece, 2007; Lin et al., 2016). Dynamic capabilities are those that enable the integration, restructuring and acquisition of these resources (Eisenhardt & Martin, 2000; Zollo & Winter, 2002) which enables companies to reconfigure internal and external patterns to meet challenges in the business environment quickly (Lin et al., 2016). Innovation by itself is not enough to generate success without dynamic capabilities (Teece, 2007). Technical capabilities can help improving innovation, which has been developed and accumulated from previous experiences. Organizations with good technical capabilities may be aware of technology in a particular field and will fully assist them in exploiting existing knowledge and technical resources (Zang & Li, 2017; Zhou & Wu 2010; Afuah 2002).
Dynamic R&D capabilities affect product innovation and the company's absorptive capability, which leads to better market performance (Watanabe & Kwintiana, 2003; Dacko et al., 2008; Hall et al., 2013). Human resource capabilities also enhance the innovative levels of organizations, as human resources create value for the organization that makes it able to continually win new customers (Gao & Zhao, 2013; Mitchell, 2000). Human resource capabilities are also closely linked to knowledge management, which in turn affects innovation (Chen and Huang, 209).

With regard to selection and recruitment practices, there is an agreement in literature on the importance of outsourcing to make the innovation strategy a success (Jimenez-Jimenez & Sanz-Valle, 2005). With regards to training, some theoretical studies suggest the use of large-scale training in order to develop employee skills and knowledge for successful innovation (Beatty & Schneier, 1997).

This study was designed to examine the effect of technical capability, R&D capability, and human resource capability on innovation. The study was divided into four sections. The first section included the background and hypotheses, the second section included the research methodology, the third section included the hypotheses testing, and the fourth section consisted of the discussion of findings and recommendations.

2. Background and Hypotheses

2.1 Dynamic Capability and Innovation

Many authors defined dynamic capability (DC) according to their perspectives, where Eisenhardt & Martin (2000) stated that DC shows how organizations utilize resources to respond to market changes, they also visualized DC as processes using, acquiring and integrating various resources to create change in the organization. Zollo &Winter (2002) in his article stated that DC is a stable style of activities used by the organization to create and updated its operating procedures to improve its effectiveness.

Others defined DC as the organizations' ability to create, expand and change its resource base as needed (Helfat et al., 2007). A more comprehensive definitions was set by Wang & Ahmad (2007) stating that DC is an organization's "behavioral orientation to continuously integrate, reconfigure, renew, and recreate its resources and capabilities, focusing on upgrading and reconstructing its core capabilities in line with dynamic, changing environment to obtain and sustain competitive advantage".

Damanpour (1991) defined innovation as the process of changing an organization, whether this change comes as a response to the surrounding environment, or as an action taken by the organization to affect the surrounding environment. Moreover Innovation was defined as a process that enables adaptation and building capability in a sustainable environment (Johansson, 2004). It can be also defined as a result of an intense competition in product and service development, or creating new business models and obtaining new markets (Jimenez-Jimenez & Sanz-Valle, 2011; Li et al., 2008). Giniuniene & Jurksiene (2015) defined innovation as a process that targets novelties in different functions such as: making products, creating services, and producing new brands.

Many authors agreed that DC is a prerequisite and an enabler for successful innovation in organizations (Hill & Rothaermel, 2003; Parashar & Singh, 2005; Rothaermel & Hess, 2007). Lawson & Samson (2001) developed a model consisting of seven elements (vision and strategy, harnessing the competence base, organizational intelligence, creativity and ideas management, organizational structure and systems, culture and climate, and management of technology) for global DCs to be applied on innovation.

Ulusoy (2003) suggested some DCs that could boost innovation, such as product development, problem solving and continuous improvement. Hogan et al. (2011) indicated that most of the attempts that aimed to visualize DC for innovation focused on large manufacturing organizations. Innovation is a process that aims to renew and invent in different functions to make products, create services and establish new economic or public value (Giniuniene & Jurksiene, 2015)

2.2 Dynamic Capability versus Product Innovation

Lin & Huang (2012) found that product innovation can be viewed as being a method of rebuilding organizational processes towards achieving its goals; furthermore they found that DCs has a direct positive impact on product innovation, as product innovation plays a significant role in the global competitive market. Lee & Kelley (2008) stressed that DCs for innovation needs improved managerial practices including the entrepreneurial resources deployment, and relational and decision support.

Combining both technological capabilities and scientific capabilities of an organization is a crucial determinant of the organizations' ability to continuously build new products along with continuous environmental change (Deeds et al., 2000). Nowadays it is required by all organizations to develop and acquire new technologies to be able to seize new opportunities, since the current organizational practices and operations may hinder the organization's ability to adapt to new changes, which means that DCs that impact product innovation are crucial to continued organizational survival (Yalcinkaya et al., 2007). One important dimension of DC implementation is expanding technological capabilities in order to improve market performance instantly through product innovation (Wang & Chen, 2015).The intense competition and the continual technological change nowadays do motivate product innovation which in turn helps organizations better reach their customers by adding more value to the product and therefore gaining competitive advantage (Hacklin et al., 2009). Therefore,

H1: There is a direct significant ($\alpha<0.05$) effect for Technical capability on Product innovation.

An organization's dynamic R&D capabilities are major determinants of its readiness to achieve and advance new technologies over multiple product lifecycles, in addition new product development process should concentrate on product characteristics and the production process (Dacko et al., 2008). New product flexibility and innovation can be achieved through organizational innovative capabilities. In their research Singh & Oberoi (2013) concluded that due to the fact that organizations need to strengthen their R&D capabilities by advancing their technological and infrastructural qualifications internally, the lack of R&D capabilities can then develop a significantly negative relationship with new product innovation. Therefore,

H2: There is a direct* significant *(α<0.05) effect for R&D capability on Product innovation.

McDonough (2000) stressed on three important, interrelated, human resource practices as being the keys for innovation-oriented organizations to build cross functional teams; these practices are: training, pay for performance and team development. Shipton et al. (2005) found in their study that human resource management practices do lead to higher levels of product innovation. Zhou et al. (2011) concluded that product innovation will positively increase by increasing the qualifications of the employees in organizations. Therefore,

H3: There is a direct significant (α<0.05) effect for Human resource capability on Product innovation.

2.3 Dynamic Capability versus Supply Chain Innovation

The supply chain tends to change more rapidly than markets because of the constant change in consumer behavior, and the significant impact of NGOs (Hall, 2000). In addition, the strategy seeks to provide a competitive edge by working on long-term development on the techniques and the tools needed to manage the process (Defee & Fugate, 2010). As the global business environment became more complex and dynamic, companies are facing the risks of problems associated to long supply-chains (Faisal et al., 2006). For example, after the tsunami in 2011, Japanese companies faced the risk of power outages, where these companies were providing about 40% of the world's technology components (Reuters, 2011), this forced various companies from around the world to adapt to the shortage of supplys from Japan and forced automakers to delay the introduction of new models (Christopher & Peck, 2004).

Management and practitioners consider organizational innovations to be necessary to reduce risks. Through innovation, the organization can adapt to environmental changes and reduce the impact of threats and risks (O'Reilly and Tushman, 2007; Teece et al., 1997). Building Dynamic Capability improves competencies and helps companies adapt to complex environments, and makes the supply chain more flexible to deal creatively with environmental conditions (Jansen et al., 2009; O'Reilly and Tushman, 2007; Kriz et al., 2014; Duclos et al. 2003). Supply chain innovation plays a crucial role in supply chain risk management (Macdonald & Corsi, 2013).

Dynamic capabilities are appropriate for organizational innovation such as developing new processes, new systems and new business models through continuous improvement, learning, problem solving and product development (Lawson & Samson, 2001). Although the research around the relationship between Dynamic Capabilities and Supply Chain Innovation is increasing, studies in this field are still weak.

Several cognitive contributions indicated that the technological capacity system is one of the critical success factors for creating and building an agile and integrated supply chain that directly affects the level of trust and integration between efficient supply chain activities.

For example Information technologies such as (Internet, intranet, software and decision support systems) are considered a very effective strategic tool for sharing information among partners and efficient supply chains in order to maximize supply chain performance. Applying technological capabilities properly gives companies of all sizes and backgrounds opportunities to facilitate creativity and increase access to new markets at home and abroad (Qarri & Leskaj, 2011; Rampersad et al., 2012). Technological advances in supply chain management and increased global demand for products have led to a closer integration of supply chains globally (Attar, 2016).

Daft & Noe (2001: p240) asserts that technology helps building and enhancing the company's strategic capabilities by providing the best information to strengthen its relationship with other parties, improving interconnectivity and integration, and generating information stocks that help develop jobs, activities and processes. Technology has also facilitated many organizational processes such as customer relationship management, internal and external communication channel management, production management and product distribution (Kim, 2012). Therefore,

H4: There is a direct significant (α<0.05) effect for Technical capability on Supply chain innovation.

In order for successful organizations to ensure their survival, and their continued strength and influence, they must not only stand at their economic efficiency, they must consider innovation and renovation as the hallmarks of their products and their performance. Innovation allows organizations to adapt quickly to changes and help them discover new products and markets, (Costa & Lorente, 2008), as R&D capabilities affect competitive advantage (Wang et al., 2009) and influence the coordination of the supply chain (Yu-shuang, ZH, 2012).

R&D capabilities also affect supply chain revenues (Yu & Sun, 2010). There is much evidence in previous studies suggesting that R&D management influences innovation (Xu, 2009). R&D capabilities contribute to high innovational performance (Prajogo & Sohal, 2006) because R&D activities are an essential component of successful innovational activities. Therefore,

H5: There is a direct significant (α<0.05) effect for R&D capability on Supply chain innovation.

It is believed that human capabilities that include employee commitment, motivation, adaptability, trust, common rules, empowerment and leadership contribute to the success of the supply chain (Othman & Ghani, 2008; Scarbrough, 2000; Shub & Stonebraker, 2009; McAfee et al. 2002). It has been recognized for a long time that the success of the supply chain is due to the importance of human resource management and its role in human capacity development, through training, promoting expertise and supporting of managerial capacity. When human integration is complete, the performance of the supply chain is easily improved. The capabilities, expertise and skills of the human being contribute to the production of new ideas that are positively reflected on the Organization in general and on the supply chain in particular (Reade, 2009; Menon, 2012; Huo et al., 2015). Therefore,

H6: There is a direct significant (α<0.05) effect for Human resource capability on Supply chain innovation.

2.4 Dynamic Capability versus Organizational innovation

Organizational innovation refers to a set of actions, processes and behaviors that improve the organization's overall climate and activate innovation by motivating problem-solving and decision-making in an innovative manner, using unusual ways of thinking (Valipour et al., 2017). Organizational innovation is viewed as an innovation linked to the organizational structure, administrative process and the organization's core activities (Zu et al., 2008).(King & Kugler, 2000) defines technological innovation as the organization's behavior towards relying on new ideas or methods in introducing new products, using new processes or introducing new developments.

Gunday et al. (2011) believes that the creation and development of new products is one of the entrances to the development of new knowledge and transforming it into commercial applications. Technological innovation is divided into radical and progressive innovation of products or processes. Radical innovation is seen as the adoption of new technology to create new demands that are unknown by customers and markets, and this involves many risks. While progressive innovation refers to the use of existing skills and knowledge to deliver products that have been modified or improved to meet the needs and desires of customers and this involves lower risk levels (Kim et al., 2012)

Product innovation indicates the changes made in the products provided to customers by providing new goods and services, improving the characteristics of the product or improving the purpose of its use. This includes significant improvements either in the technical specifications of the product or the materials involved in manufacturing the product (Gunday et al., 2011). Product innovation can be classified as to radical innovation and progressive innovation. Radical product innovation is about providing products that are substantially different from existing products that are marketed by the organization, while the progressive product innovation refers to the modification or improvement of the product to keep up with changes in customer requirements (Reichstein & Salter, 2006).

Technical capabilities can help exploit organizational innovations that have been developed and accumulated from previous experiences (Zang & li, 2017). Organizations with good technical capabilities may have knowledge of technologies in a particular field that will help them to better exploit existing technical knowledge and resources (Zhou & Wu, 2010). This logic is consistent with the theory of organizational inertia (Hannan &Freeman 1984), suggesting that organizations rely on existing knowledge and form unique actions and activities.

These actions and activities require organizations to continuously apply existing knowledge and resources to specific areas to improve innovation (Levinthal & March, 1993). Therefore, distinctive technical capabilities will lead organizations to seek more local and relevant knowledge and leverage existing resources to promote self-regulatory learning (Zhou & Wu, 2010; Benner & Tushman, 2003). Technical capability is an important facilitator of organizational innovations as well as exploratory innovation (Yalcinkaya et al., 2007). Therefore,

H7: There is a direct significant (α<0.05) effect for Technical capability on Organizational innovation.

R&D capabilities are a kind of valuable, rare, exceptional and non-interchangeable resources that can form the basis for superior innovational performance (Peteraf, 1993). Rothaermel & Hill (2005) showed that internal R&D capabilities have a positive impact on the company's financial performance. R&D capabilities are more important for innovation because many industries are becoming more science-based. Thus, companies are now more committed to taking advantage of advances in basic sciences (Cockburn et al., 2000). Therefore,

H8: There is a direct significant (α<0.05) effect for R&D capability on Organizational innovation.

Staff knowledge and capabilities are the main sources of innovation (Kang & Snell, 2009). It is appropriate to explain that human resources have a strong impact on the Organization's innovative capacities. Organizations need human resources to implement the organization's internal procedures required to provide services to clients (Wang & Chang, 2005). Several studies have shown that human resources with better education have extensive experience and ability to contribute to improving the organization's performance compared to other organizations that have less education (Dakhli & DeClercq, 2004; Khan et al., 2014; Dost et al., 2016; Elsetouhi

et al., 2015).
Cohen & Levinthal (1990) indicated that the level and characteristics of the knowledge currently owned by the employee may facilitate progress or reduce the degree of understanding, ownership and comprehension of new information. As a result, the high level of human resources will ultimately improve the ability of individuals to learn. The overlap between new and previous knowledge is expected to encourage the human element to link both types of knowledge, and will lead individuals to create new knowledge, thus influencing the innovative capacities of the organization (Hill & Rothaermel, 2003). The human resource is a vital component of innovation. An organization with a talented and experienced human being will be more innovative than its competitors.
H9: There is a direct significant (α<0.05) effect for Human resource capability on Organizational innovation.

3. The research Model

Figure (1) shows the components of the research model including the independent variable Dynamic Capability (technical capability, Research &development (R&D) capability and human resource capability) and the dependent variable innovation (product innovation, supply chain innovation and organizational innovation).

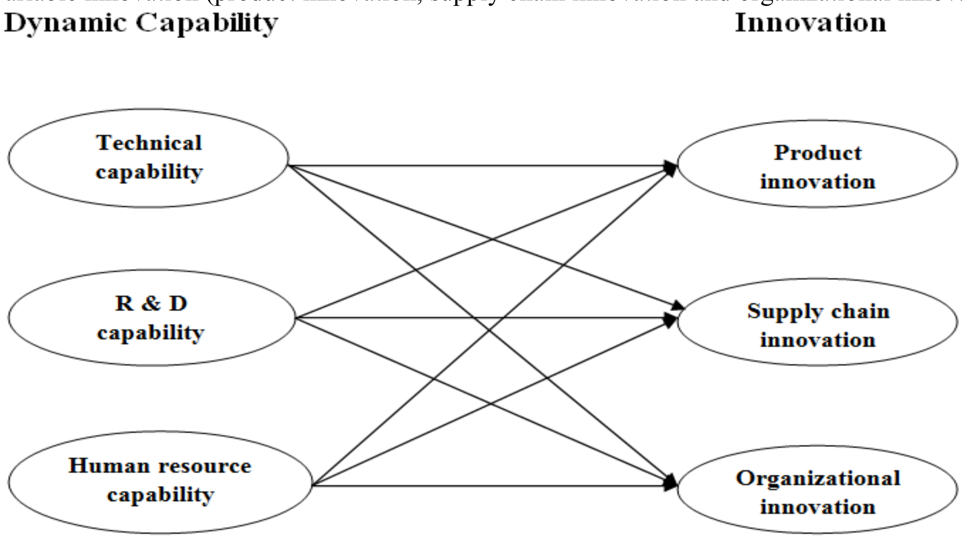

Figure (1) the research proposed model (adapted by the author, 2017)

4. Research Methodology

4.1 Sampling Design and Data Collection

The population of this study is consisting of all middle and top managers in the Jordanian pharmaceutical organizations. Total of (310) questionnaires were distributed. (202) questionnaires were returned, of which (188) were valid, which represents (60.6%) 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 (Chin & Newsted, 1999). Since the current study model contains 6 variables (items), the minimum sample size is (10*6 = 60). The sample size of this study (n = 188) is verified because this size met this criterion.

4.2 Research Design

This study aimed to identify the impact of dynamic capability on innovation. 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 pharmaceutical 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 dynamic capability and innovation model.

The questionnaire consists of six sections: Section A: technical capability based on (Zang & li, 2017; Yalcinkaya et al., 2007; Zhou & Wu 2010; Afuah 2002), Section B: R&D capability based on (Dacko et al., 2008; Singh & Oberoi, 2013), Section C: human resource capability Based on (Shipton et al., 2005; Zhou et al., 2011), section D: Product innovation based on (Yalcinkaya et al., 2007; Wang & Chen, 2015; Hacklin et al., 2009), section E: Supply chain innovation based on (Kim, 2012; Attar, 2016; Macdonald & Corsi, 2013), section F: Organizational innovation based on (Hill & Rothaermel, 2003; Wang & Chang, 2005; Peteraf, 1993; Levinthal & March, 1993).

4.3 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. (2013), reliability refers to the extent to which a set of indicators measure an aggregate construct consistently, alpha value of (.60) is sufficient (Sekaran & Bougie, 2013). 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 (0.767) (Technical capability (TC)) and (0.959) (Supply chain innovation (SCI)) Table (1). The alpha values found for each variable indicated that each variable was a reliable measure. In addition The KMO value of all questions is ranged between (0.658) to (0.882), which exceeds the recommended value of (0.6) (Li & Liu, 2014).

4.4 Convergent and Discriminant Validity

Validity refers to ensuring that we are measuring the concept we set out and not something else (Sekaran & Bougie, 2013). The model fit indices, factor loadings, composite reliability and average variance extracted (AVE) of the constructs are reported in Table (1), and show that the measurement model fitted the data adequately. Convergent validity was examined using the factor loadings, composite reliability, and AVE of each construct. As shown in Table (1), the factor loadings of all items were greater than (0.50) on their underlying constructs.
Discriminant validity was assessed by comparing the squared correlation between two constructs and their AVEs. The standardized factor loadings of all of the items were significant and loaded on their respective constructs. The composite reliability of the constructs ranged from (0.853) to (0.940), meeting the recommended threshold of (0.70) as suggested by (Hair, et al., 2013). All of the AVEs were above the recommended threshold of (0.50) as suggested by (Kline, 2005), except that of the marker variable, providing support for convergent validity, this study showed that the AVEs of all the constructs that ranged from (0.559) to (0.803), Thus, the measures significantly discriminate between the constructs. As shown in Table (1) all constructs (Technical capability, R&D capability, Human resource capability, Product Innovation, Supply chain innovation, Organizational innovation) have conversion validity.

Table (1) Results of reliability and validity

Constructs	Items	Factor loading	KMO	Cronbach's alpha	CR	AVE
Technical capability (TC)	TC1	0.772	**0.658**	**0.767**	**0.893**	**0.627**
	TC2	0.773				
	TC3	0.793				
	TC4	0.883				
	TC5	0.732				
R&D capability (RDC)	RDC1	0.75	**0.869**	**0.934**	**0.894**	**0.631**
	RDC2	0.844				
	RDC3	0.836				
	RDC4	0.832				
	RDC5	0.699				
Human resource capability (HRC)	HRC1	0.78	**0.825**	**0.875**	**0.917**	**0.651**
	HRC2	0.786				
	HRC3	0.784				
	HRC4	0.817				
	HRC5	0.874				
	HRC6	0.797				
Product Innovation (PI)	PI1	0.609	**0.819**	**0.897**	**0.853**	**0.559**
	PI2	0.81				
	PI3	0.855				
	PI4	0.791				
Supply chain innovation(SCI)	SCI1	0.873	**0.847**	**0.959**	**0.940**	**0.798**
	SCI2	0.94				
	SCI3	0.896				
	SCI4	0.863				
Organizational innovation(OI)	OI1	0.658	**0.882**	**0.948**	**0.924**	**0.713**
	OI2	0.861				
	OI3	0.963				
	OI4	0.865				
	OI5	0.846				

Composite reliability (CR) = (square of summation of factor loadings)/ [(square of summation factor loadings) + (summation of error variances)].
Average variance extracted (AVE) = (summation of the square of factor loadings)/ [(summation of the square of factor loadings) + (summation of error variances).

4.5 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., 2013; Schumacker & Lomax, 2004). GFI, AGFI, CFI values should be greater than 0.8 (Etezadi-Amoli & Farhoomand, 1996; Shook, et al., 2004). The smaller the RMR value, the better the model. A value of less than 0.05 indicates a close fit (Hair, et al., 2013). NFI and TFI values should be greater than 0.9 (Shah & Goldstein, 2006; Hair, et al., 2013). RMSEA values less than 0.10 indicate good fit (Hu & Bentler, 1995). The goodness of fit indices of the measurement model is presented in (table 3); according to these results and as shown in Table (2) we can infer that the measurement model was reasonably fitted to the data set.

Table (2) 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	1.285	≤ 3	Hair, et al., 2013 Schumacker and Lomax, 2004
GFI	0.987	> 0.8	Etezadi-Amoli and Farhoomand,1996
AGFI	0.956	> 0.8	Etezadi-Amoli and Farhoomand,1996
CFI	0.991	> 0.8	Shook, et al., 2004
RMR	0.018	< 0.05	Hair, et al., 2013
NFI	0.961	> 0.9	Shah and Goldstein, 2006
TLI	0.976	> 0.9	Hair, et al., 2013
RMSEA	0.039	< 0.10	Hu and Bentler, 1995

5. Hypothesis testing

Hypothesis 1: There is a direct significant ($\alpha<0.05$) effect for technical capability on product innovation. As for the results related to the testing of the hypotheses Table (3), Technical capability positively influences product innovation ($\beta = 0.149$; $t = 2.771$), ($t > 1.96$, $p = 0.006 < 0.05$). Thus the results did support Hypothesis 1.

Hypothesis 2: There is a direct significant ($\alpha<0.05$) effect for research and development capability on product innovation. According the results in Table (3), research and development capability related positively to the product innovation ($\beta = 0.164$; $t = 2.869$), ($t > 1.96$, $p = 0.004 < 0.05$). Thus the results did support Hypothesis 2.

Hypothesis 3: There is a direct significant ($\alpha<0.05$) effect for on human resource capability on product innovation. According the results in Table (3), human resource capability showed a significant effect on product innovation, ($\beta = 0.310$; $t = 4.268$), ($t > 1.96$, $p = 0.00 < 0.001$). Thus the results did support Hypothesis 3.

Hypothesis 4: There is a direct significant ($\alpha<0.05$) effect for technical capability on supply chain innovation. The results in Table (3), indicates that the technical capability positively influences supply chain innovation, ($\beta = 0.174$; $t = 4.215$), ($t > 1.96$, $p = 0.00 < 0.001$). Thus the results did support Hypothesis 4.

Hypothesis 5: There is a direct significant ($\alpha<0.05$) effect for research and development capability on supply chain innovation. The effects of R&D capability on supply chain innovation were positive and significant, ($\beta = 0.170$; $t = 3.870$), ($t > 1.96$, $p = 0.00 < 0.001$). Thus the results did support Hypothesis 5.

Hypothesis 6: There is a direct significant ($\alpha<0.05$) effect for human resource capability on supply chain innovation. It was found that human resource capability is positively related to supply chain innovation. As shown in Table (3), the hypothesized path human resource capability to supply chain innovation was significant ($\beta = 0.174$; $t = 4.215$), ($t > 1.96$, $p = 0.00 < 0.001$).Thus the results did support Hypothesis 6.

Hypothesis 7: There is a direct significant ($\alpha<0.05$) effect for technical capability on organizational innovation. The results in Table (3) indicated that technical capability has positive effects on organizational innovation. ($\beta = 0.174$; $t = 4.215$), ($t > 1.96$, $p = 0.00 < 0.001$), Thus the results did support Hypothesis 7.

Hypothesis 8: There is a direct significant ($\alpha<0.05$) effect for research and development capability on organizational innovation. The results in Table (3) indicated that R&D capability positively effects organizational innovation, ($\beta = 0.238$; $t = 6.584$), ($t > 1.96$, p $.00 < 0.001$). Thus the results did support Hypothesis 8.

Hypothesis 9: There is a direct significant ($\alpha<0.05$) effect for on human resource capability on organizational innovation. According the results in Table (3), human resource capability showed a significant effect on organizational innovation, ($\beta = 0.151$; $t = 3.300$), ($t > 1.96$, $p = 0.00 < 0.001$). Thus the results did support Hypothesis 9.

Table (3) Regression weight for hypotheses testing result

H	Estimate	SE.	C.R.	P	Hypothesis Support
H1	0.149	0.054	2.771	0.006**	Supported
H2	0.164	0.057	2.869	0.004**	Supported
H3	0.310	0.073	4.268	***	Supported
H4	0.174	0.041	4.215	***	Supported
H5	0.170	0.044	3.870	***	Supported
H6	0.187	0.056	3.344	***	Supported
H7	0.331	0.034	9.737	***	Supported
H8	0.238	0.036	6.584	***	Supported
H9	.151	0.046	3.300	***	Supported

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

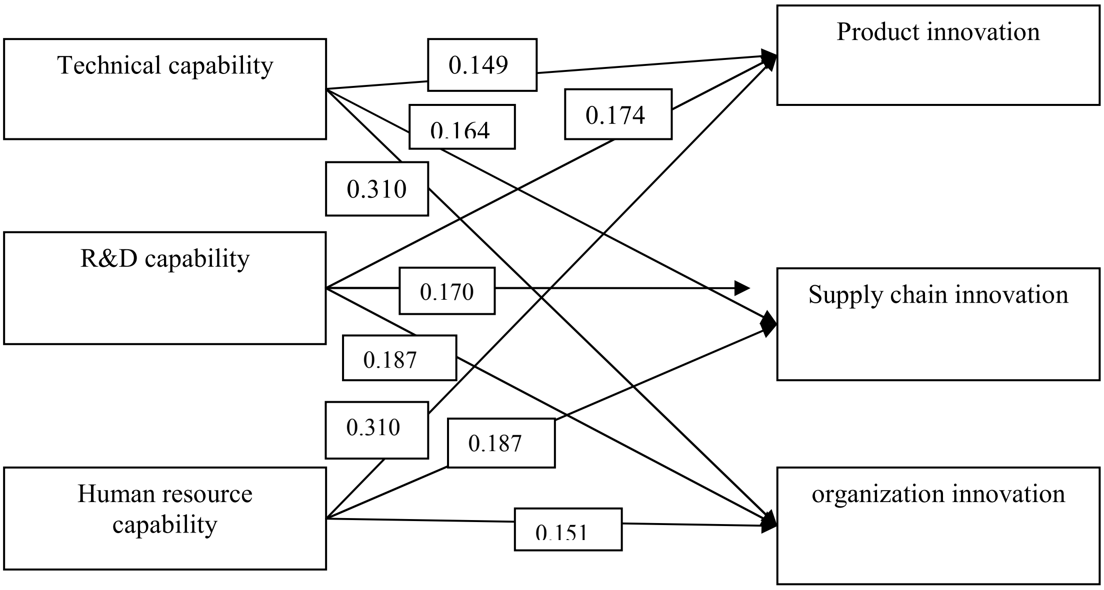

Figure (2) the research model

6. Discussion

The main objective of this research study was to investigate the impact of Dynamic Capability (technical capability, Research &development (R&D) capability and human resource capability) on innovation (product innovation, supply chain innovation and organizational innovation).

The research study focuses on the nature of innovation and its three dimensions, and the effects of dynamic capability's three types on each dimension, through linking several researches and making various conclusions.

Table (3) illustrated that there is a significant positive effect for dynamic capability (technical capability, Research &development (R&D) capability and human resource capability) on product innovation. The results of the study were in line with the literature that explained such a positive relationship (Yalcinkaya et al., 2007; Wang & Chen, 2015; Hacklin et al., 2009; Singh & Obevoi, 2013; McDonough, 2000; Zhou et al., 2011)

With regards to the effect of dynamic capability (technical capability, Research &development (R&D) capability and human resource capability) on supply chain innovation, the results revealed that there is a significant positive effect for dynamic capability on supply chain innovation. These result were consistent with previous literature (Jansen et al., 2009; Kriz et al., 2014; Attar, 2016; Daft, 2001; Kim, 2012; Wang et al., 2009; Yu-shuang, ZH, 2012; Yu & Sun, 2010; Yu, 2009; Prajogo & Sohal, 2006; Reade, 2009; Menon, 2012; Huo et al., 2015)

In respect to the effect of dynamic capability (technical capability, Research &development (R&D) capability and human resource capability) on organizational innovation, the results indicated that there is a significant positive effect for dynamic capability on organizational innovation. These results were in accordance with previous literature (Gunday et al., 2011; Zang & Li, 2017; Zhou & Wu, 2010; Benner & Tushman, 2003; Yalcinkaya et al., 2007; Rothaermel & Hill, 2005; Cockburn et al., 2000; Kang & Snel, 2009; Dakhli & DeClercq, 2004; Elsetouhi et al., 2015; Hill & Rothaermel, 2003)

The results of the study asserts on the importance of innovation in organizations, coupled with the different dimensions of dynamic capabilities, where the adoption of advanced R&D strategies will necessarily lead to a series of innovations in various organizational aspects. Human resources are another critical capability that needs attention because of it direct impact on organizational innovations.

7. Conclusions, Recommendations and Further research

The results of this research study revealed the effect of dynamic capability (technical capability, Research &development (R&D) capability and human resource capability) on innovation (product innovation, supply chain innovation and organizational innovation). As it was expected, all the three proposed types of the dynamic capability directly affected all the dependent variables, which were also supported by literature.

The study highlights the importance of different capabilities and different types of innovation, these capabilities should be a parts of the organization's processes. The results of the study present several valuable insights for future research of dynamic capability and innovation, particularly in the Jordanian context, considering its important implications for management practices. The study builds on previous literature in this field by specifying the process of innovation in the Pharmaceutical industry and developing and new model and new measurement scale.

Based on the discussion of the research study, several recommendations and managerial implications were outlined. In order to accelerate innovation in organizations new technologies must be adapted for achieving best practices in managing processes. This will require an extensive employee involvement in the entire process.

Furthermore using organization's capabilities to build and strengthen its relationships with other parties in the supply chain to add value to its products and services and achieve the aimed competitive edge.

Finally further research is highly recommended in this field especially in the developing countries, to help various industries in these countries be a part of the entire sustainable development process.

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