

Uncertain Supply Chain Management

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Green supply chain management and competitive advantage: The mediating role of organizational ambidexterity

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ABSTRACT

Article history:

Received December 1, 2021

Received in revised format

December 18, 2021

Accepted February 25, 2022

Available online

February 25, 2022

Keywords:

Green supply chain management

Organizational ambidexterity

Competitive advantage

Jordanian industrial companies

This study develops a research framework to study the impact of green supply chains with three dimensions, namely green purchasing, green manufacturing, and green marketing to achieve competitive advantage with the existence of organizational ambidexterity as a mediating variable in Jordanian industrial companies. The study targeted the most important Jordanian industrial companies, which included 46 industrial companies out of 66 companies listed on the Amman Stock Exchange. The researchers personally administered 181 questionnaires, responses were analyzed using descriptive statistics, and the appropriate statistical methods were chosen to test the hypotheses of the study and reach its results. The findings indicate that all elements of green supply chain management, namely green purchasing, green manufacturing, and green marketing had a significant impact on competitive advantage. Also, green manufacturing and green marketing had a significant effect on organizational ambidexterity, but there was no significant impact for green purchasing on organizational ambidexterity, finally, the results of the study showed that organizational ambidexterity plays a significant mediating role in the relationship between green manufacturing, green marketing, and competitive advantage.

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1. Introduction

Due to the negative environmental practices of many business organizations, and given the negative effects these practices have on the environment and customers alike, such as the problem of pollution, the decline in the size of green spaces, the depletion of natural resources and the increase in the proportion of harmful industrial waste, many countries have enacted legislation and established regulations to reduce one of these negative practices, which prompted many organizations to include the environmental dimension within their production, marketing and administrative policies (Al- Quran et al., 2020; Alhalalmeh et al., 2020). This prompted many organizations to include the environmental dimension in their production, marketing and administrative policies (Eldahamsheh et al., 2021; Tariqa et al., 2022; AlHamad et al., 2022; Al-Hawary & Obiadat, 2021). Therefore, green supply chains are a new trend to influence the performance of Jordanian business organizations in general and industrial organizations in particular; by pushing those to provide products that are not harmful to the environment and customers, which enables these organizations to increase its ability to compete locally and globally.

Owning a competitive advantage represents a strategic goal that industrial companies seek in light of the environmental challenges and intense competitiveness that they face. Competitive advantage is a characteristic that gives the organization an important advantage for customers, leads to increased profits, and sustains its success in the long run. It relates to a set of procedures that distinguish the organization from competitors through its proactive strategies (AlTaweel & Al-Hawary, 2021; Al-Hawary & Al-Syasneh, 2020; Wang, 2014; Al-Hawary et al., 2013). And the organized competitive advantage helps in

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obtaining a larger market share, which means increasing the volume of its sales and profits, as it is the engine and catalyst for organizations to develop and strengthen their resources and capabilities in the field of research and development in order to maintain this advantage, in addition to having the competitive advantage will lead to achieving superior profitability (Al-Hawary & Al-Rasheedy, 2021; Mohammad et al., 2020; Al-Nady et al., 2016; Al-Hawary & Hadad, 2016; Al-Nady et al., 2013; Al-Hawary & Ismael, 2010). The competitive advantage is achieved by paying attention to the quality of production, rationalizing costs and achieving good participatory relationships with customers and suppliers, which leads to an increase in the organization's ability to convince its customers of the products it offers them, which enhances its market share compared to competitors and leads to an increase in sales volume and profit rates and investment returns (Al-Hawary & Al-Hamwan, 2017).

On the other hand, organizational ambidexterity helps to improve performance levels in business organizations of all kinds, by increasing their degree of efficiency and effectiveness, and by maintaining their survival and growth. Increase the ability to adapt to different environment changes, by managing at the same time complex and conflicting components such as exploration and exploitation, efficiency and effectiveness, radical and continuous innovation, alignment and adaptation” (Tariq et al., 2022; Gibson & Birkinshaw, 2004). The concept of organizational ambidexterity refers to the organization’s ability to exploit available competencies, in addition to its ability to explore new opportunities (Dumbach & Danzinger, 2011). Organizational ambidexterity is the organization’s ability to penetrate the current markets, by exploiting the available opportunities in the market, and avoiding threats in a way that achieves a balance between the organization’s resources and market requirements (Yigit, 2013).

The dimensions of organizational ambidexterity, as agreed by (Bodwell & Chermack, 2010), are represented in the ability to explore to improve the performance of current products or re-design production processes in order to meet customer needs, exploit opportunities and adapt to market requirements. From this point of view, we find that business organizations are trying to find creative ways to improve their competitive capabilities, and one of these ways is to make improvements in their environmental performance to meet the needs of their customers, using environmentally friendly inputs and transforming these inputs through the organization's various activities and operations to provide products with high quality and speed at competitive prices. It is noted that the Jordanian economy is one of the economies characterized by global openness, which increases competition between its companies and international companies, which makes it imperative for its companies to adopt green supply chain policies and organizational ingenuity to create an appropriate competitive advantage for them.

2. Literature review

2.1 Green Supply Chain Management

There is no single concurred and clear meaning of green supply chain management, as the idea of GSCM is wide, and there is no unmistakable and far-reaching definition accessible to portray it. Since the idea has been characterized diversely by researchers, it is hard to portray GSCM with one definition (Ahi & Searcy, 2013). Notwithstanding the assortment and contrast of definitions, there is accord on green supply chain management concept that is a new development in supply chain practices which alludes to all performed activities in a way that is less destructive to the climate and environment and supports the environmental equilibrium sources (Sarkis et al., 2011). There is additionally many common terms such as “environmental supply chain management” (Sharfman et al. 2009), “green purchasing and purchasing” (Min and Galle, 1997), “logistics services”, Green and Environmental Logistics” (Murphy and Poist, 2000), and “Sustainable Supply Network Management” (Young & Kielkiewicz-Young, 2001), green supply chain management concept has developed for years whereas green environment in the supply chain concept is viewed as a new headway in the practices of supply chain and GSCM has been intended to merge environmental issues into logistics functions and materials management at each phase of supply chain management (Zhu et al., 2008, Firouzabadi et al., 2010) where "green" was included in supply chain management concept as new component of supply chain management and this alludes to characterizing the effect of SCM on the environment and defines the relationship between them, for sure this stimulated by competitiveness and the environmentally conscious thinking (Hervani et al. 2005). Green supply chain management can be defined as the innovation’s way in industrial purchasing and supply chain management considering the environmental context (Zhu & Sarkis, 2004), which incorporate environmental standards with suppliers long rang relationships and purchasing decision within organization (Ho et al., 2009), with necessity of integration of inter-organizational practices of sustainable supply chain management with the environmental issues with inclusion of reverse logistics (Sarkis et al., 2011; Theo Notteboom, et al., 2020; Handfield et al., 1997). Furthermore, the concept of GSCM contains a group of practices and activities that defined by the “Re’s” ranging from the implementation and control practices of general environmental management plans to the control and innovation in implementation, where 'R' letter indicates (reverse logistics, reduce, recovery, reuse of labor, recycle, reuse, renewal, etc.) (Fortes, 2009; Dube & Gawande, 2011).

In an exhaustive way, GSCM can be defined and characterized by its components and parts via this equation: “GSCM = Green Purchasing + Green Manufacturing + Materials Management + Green Distribution+ Marketing + Reverse Logistics”. It is clear from this equation that GSCM included a set of ecologically cognizant practices which are apparent all through the chain from the activities of green design (engineering and marketing), the activities of green procurement (supplier

accreditation, purchasing environmentally friendly products/ materials), environmental total quality management (pollution avoidance, internal performance appraisal), environmentally harmless transportation and packaging, to the “Re’s” of decrease recycling, reuse, and remanufacturing which indicates the end of products life practices (Hervani et al., 2005). This shows that all GSCM practices are environmentally friendly and backing environmental equilibrium (Sangode&Metre .2019)

The main aim of GSCM is to merge environmental awareness standards through all phases of supply chain management (Zhu et al. 2008) (Zhu et al., 2012). Thus, it works to endeavor to decrease negative ecological effects at each phase of product production (Wu, 2013; Dangelico& Pujari, 2010; Notteboom et al., 2020). Furthermore, keeping up with quality in natural resources and product life (Ashley, 1993; Srivastava, 2007; Dube & Gawande, 2011). decreases waste or disposal (solid waste, emissions, hazardous/chemical materials and energy) (Hervani et al., 2005), hence, this is a strategic vital issue overall organization level (Dube & Gawande, 2011). The vital practices in the field of green supply chain management can be distinguished as follows (Notteboom et al., 2020). Green Process Engineering and Eco-design. Green Purchasing and Procurement. Green industrial ecology and remanufacturing/ production with the least energy and resource utilization, the use of techniques and application for product recuperation and waste administration, and a mix of green energy. Circular economy and reverse logistics, and models to share or use products instead of owning them outright. "Environmental management systems (EMS) or a collection of internal policies, assessments, plans, and implementation actions affecting the entire organization and its relationships with the natural environment. Green supply chain is a possibly successful mechanism to improve organizational reputation, corporate social responsibility, Commitment and limiting environmental rules and regulations. Thus, after tracking down the previous studies we conclude that GSCM is a part of supply chain management and a natural extension of it. Despite that link, there is a difference between the two concepts.Song and Gao (2018) indicated that the reason for the difference between green supply chains and traditional supply chains is due to green supply chains coordination objects included consumers not only retailers and manufacturers as the traditional one, hence, a few manufacturers will also require the execution of internal GSCM as an expansion of their supply chain external partners (Zhu et al., 2012). On the flipside, this kind of coercive approach, shows that numerous suppliers are probably going to agree, however, just to react in a responsive way to the least requirements (Tachizawa& Wong, 2015)

The literature on the point shows that GSCM addresses incredible importance to organizations of different sorts by giving numerous advantages such as fostering organizational competitiveness and attaining a state of external and internal integration and cooperation (Hafezalkotob, 2017; Fu et al., 2017). Moreover, the Innovation in GSCM adds to accomplishing the outcomes coveted by sensitive customers to the green product, and this subsequently prompts giving an optimal production environment and accomplishing higher benefits and profit rates than competitors (Firouzabadi et. al, 2010). In the same context, the benefits of GSCM implementation include direct cost decreasing, to help the improvement of suppliers' cooperative relationships, support managerial decision-making as a comprehensive life-cycle approach, further develop organization performance, reinforce organizational reputation, etc. (Bowen et al., 2002 cited in Sarkis 2006, Hervani et al., 2005, Walker et al., 2008). Thus, to get the expected benefits of a green supply chain, organizations have to incorporate environmental criteria into the procurement sourcing process which incorporates the advantages to society (Firouzabadi et. al,2010). Furthermore, organization's shared responsibility regarding varied sides of environmental performance is considered as the key element of GSCM in organizations, where it is contributed to reduce environmental burden and reinforce environmental responsibility (Hervani et al., 2005) So, nations have been quick to pass numerous laws and enactments of GSCM, which has made it as a significant driver and guide of environmental sustainability approaches at the public level (Choudhary & Sangwan, 2019).On the other hand, regardless to laws and regulations, from a logistical view to realization GSCM benefits need an enormous supply chains' re-engineering in the form of environmentally friendly transportation mode and packaging, paradigm shift, green distribution centers and networks, and load and path optimization to synchronization transmission mode and eco-friendly groups (Notteboom et al., 2020).

2.2 Organizational ambidexterity

Organizational ambidexterity refers to an integrated architecture that enables an organization to apply exploration and exploitation strategies together, where ambidextrous organizations are look-alike in persuading to exploit their competencies and current activities in the current areas such as selection and implementation whilst, it is persuading to capture new opportunities in new and different areas that include experimentation and diversification by exploration (Hussein & Al-Ani, 2018). Ambidexterity can be explained as the ability of organizations capacity to do current business activities with progressively significant degrees of efficiency by applying exploitation, while concurrently looking for opportunities and applying radical innovations through exploration (Raisch et al., 2009). In the same meaning, ambidexterity can be described as the organization capability to seek at once competing strategic orientations (Hu & Chen, 2016; Zhang, Edgar, Geare, & O’Kane, 2016; Clauss et al.,2020). In doing so, ambidexterity requires experimentation, flexibility, and independence to help organizations explore and exploit competition in emerging technologies and markets where efficiency, continuous improvement, control and competition in new technologies and markets are offered (Alabadi et al., 2018). Thus, the more the organization can manage the exploitation activities of its resources and its current activities in the existing fields to add value in the short term, and explore new opportunities in the new fields, which will enable it to survive and success in the long term, in a way that balances the resources, the market and the competition rules, the more it can achieve organizational ambidexterity (Ibrahim, 2017), in a way that enables organizations to oversee different radical and incremental innovativeness

all the while, as it needs to adapt to a complex and always evolving competition (Wegwu, 2020). So, organizations should think about a dual structure of exploitation and exploration to be successful and distinguished in the long run (Peng et al., 2019; Alkhwaldah et al., 2021). The importance of organizational ambidexterity comes from simultaneous actions in exploiting and exploring creativity (Mashahdi, 2015) in a way that enables them to achieve competitive advantages (Kusumastuti, 2018) through exploitation of current market products efficiently and capturing opportunities in the new market (Alshaer, 2020), as exploration strategy helps organizations to develop new processes and products quickly and reach new future markets (Musigire, 2016) and exploitation strategy let them to achieve efficiency and success in the short term (Ibrahim, 2017). In the same context, organizational ambidexterity also enables to take advantage of the existing product capabilities to attract new markets and customers, in proportion to the market development and growth strategy, also to exploit the potential of the existing product for of current customers, while simultaneously exploring the new markets and customer potentials, in addition to, exploring new markets and products threats and taking the important measures to keep away from these risks or diminish their harms (Al-Tarfi, Qandil, Al-Hakim & Al-Shamari, 2019). The previous literature endeavored to clarify perceptions, assumptions, and a theoretical framework for organizational ambidexterity with a statement of the factors affecting it, especially, regarding achieving outstanding organizational performance through a balance between exploration and exploitation.

Most studies have agreed on contextual structural ambidexterity as measures of organizational ambidexterity, and this is illustrated in (De Clercq et al., 2013; De Visser et al., 2010; Úbeda et al., 2018). Whereas other studies added partitioned, harmonic, reciprocal and cyclical as other dimensions to measure organizational ambidexterity (Simsek et al., 2009). These studies have taken into account a set of behavioral, strategic and organizational variables that can affect organizational prowess within organizations like: strategic foresight (Amniattalab & Ansari, 2016), pioneering direction (Lisboa et al., 2011), organizational learning (Ojha et al., 2018), organizational culture (Stubner et al., 2012, Lee, Woo and Joshi, 2017; Matzler et al., 2013), marketing and technological capabilities (Liu et al., 2018) and IT infrastructure (Benitez et al., 2018)

2.3 Competitive Advantage

In general, the term competitive advantage found acceptance and interest in management science, but the greatest interest and importance for this term was in the field of strategic management, where this concept is considered one of the most important topics in strategic, especially as a basic concept in business strategy, and both terms have been used as synonymous terms (Sigalas, 2015). Any research related to competitive advantage must begin with the words (2000) Flint, which indicates that the most famous, recurring and ambiguous strategic management term is the term competitive advantage (Cegliński, 2016). Despite the long period of time for the emergence of the term and the number of studies that dealt with this concept, there is no clear and agreed upon definition of competitive advantage (Ma, 2000; Arend, 2003; Foss & Knudsen, 2003; Rumelt, 2003; O'Shannassy, 2008; Sigalas & Pekka-Economou, 2013 (Sigalas, 2015) it is still marred by ambiguity and misunderstanding and causes confusion for both academics, professionals and interested alike (Markeds, 2000) and even Porter himself did not provide in his book a clear and precise definition of competitive advantage (Kleine, 2002; Cegliński, 2016). Reaching a specific and accurate definition of competitive advantage has become unattainable, as providing an accurate and clear definition of competitive advantage faced many obstacles, some called it the definitional problem of competitive advantage' (Sigalas & Pekka-Economou, 2013).

The first attempts to define competitive advantage go back to Ansof in 1965, where he defined competitive advantage as "the isolated characteristics or particular properties of individual product markets which give a firm a strong competitive position", but the real and actual beginning of presenting competitive advantage concept was by Porter (1985) in his book entitled *Competitive Advantage*, he states that competitive advantage stems from the firm's ability to create superior value for its buyers. Porter (1985) adds that superior value stems from offering lower prices than competitors for equivalent benefits or providing unique benefits that more than offset a higher price (Sigalas, 2015). Since then, many scholars have been engaged in the discussion and research of competitive advantage. This discussion and research produced a large volume of scientific outputs and provided abundant definitions and data regarding competitive advantage (Sigalas, 2015). These definitions included general indicators of performance to determine the differences between competitors, i.e. indicators of ability to distinguish from competitors, such as the advantages of positioning, performance, cost allocation, results of operations (Isoraite, 2018), sales volume, attracting more customers (Diugwu, 2011), good performance through the use of resources, the possibility of developing new skills (Pulgarín-Molina & Natalia, 2017), more returns compared to expenditures (Mohammad & Masoud, 2015, 298) achieving profits higher than the average rate of the relevant industry (Hosseinian, 2018) the company's ability to create value for its customers by providing, the lowest price compared to competitors or unique benefits that exceed the higher price (Sigalas, 2015), Superior performance, Strategy, Core competences, Innovation, Configuration, Co-ordination or integration, Responsiveness (Ash, 2013). Therefore, such factors and others have become the foundations upon which the concept of competitive advantage is built.

With the multiplicity and different definitions of competitive advantage within the strategic management literature, some scholars found that it is necessary to classify these definitions in order to distinguish and clarify the concept of competitive advantage. Hence, Sigalas & Pekka-Economou (2013) identified two classifications or streams for the competitive advantage concept. The first stream refers to the definition of competitive advantage by linking it to performance so that the competitive

advantage relates to achieving distinct performance indicators such as high profitability, revenues that exceed the sector average, the difference between the cost and benefits achieved, superior financial performance, economic profits, and positive profits achieved compared to opportunity costs. Rapid spread and response to market demand. The second stream defines the competitive advantage by linking it to its sources or determinants so that the competitive advantage is linked to certain characteristics such as cost, differentiation, the company's ability to invest its resources, market characteristics, and product characteristics. Despite the difficulty of introduce a robust and specific conceptual definition of competitive advantage in the literature, Sigalas et al. (2013) once again in an attempt to provide a robust conceptual definition of competitive advantage that separates the two concepts of competitive advantage in terms of its source and competitive advantage in terms of superior performance and includes all the indicators and characteristics inherent in the concept of competitive advantage by defining competitive advantage as "achieving a higher rate." from the industry average, which is manifested in the exploitation of market opportunities and the neutralization of competitive threats, (Sigalas et al. (2013). After introducing the concept of competitive advantage in the 1980s, Porter suggested dimensions or types of competitive advantage (some called them strategies), total cost leadership, differentiation, and focus. The first was defined as offering the same services as one's competitors but at a lower cost, the second was defined as offering superior services to customers, but at the same price offered by competitors, and the third was concentrating on a market niche (Diugwu, 2011; Lorenzo et al., 2018; Potjanajaruwit, 2018; Nuryakin, 2018; Dash, 2013). Many scholars and researchers within the old school of thought have agreed on these dimensions as necessities that organizations must follow in order to achieve competitive advantage, which is also what all kinds of organizations have actually committed to in order to compete in the markets. However, the old school of thought suggests that a strategy that involves using both total cost leadership and differentiation together will lead organizations to fail. (Dash, 2013) (Lorenzo et al. 2018), With the increase in the changes and complexities witnessed by business environments and the intensification of competition, organizations sought to search for other tools for competition, which led to the emergence of new dimensions and types of competitive advantage. For any organization, quick responding to changes in the business environment and modifying the operating strategy helps in maintaining its competitive advantage. A firm possessing critical manufacturing capabilities like human talent for technical and execution skills, state-of-the-art manufacturing facilities, specific technical know-how etc. can leverage on the same and convert them into competitive advantages. The effort that goes into building a successful brand also has a positive impact on the competitive advantage of the firm, especially in industrial products where quality and reliability are important aspects (Dash, 2013)

3. Theoretical Framework

In order to achieve the desired goals, the study developed a proposed framework as shown in the figure(1). The proposed framework includes a set of variables, assuming a set of direct and indirect relationships between them, which can be reviewed as the direct impact of Green Supply Chain consist of (Green Product (GP), Green Manufacturing (GM) and, Green Marketing (GMM). on Competitive Advantage (CA). The direct impact of Green Supply Chain consist of (Green Product (GP), Green Manufacturing (GM) and, Green Marketing (GMM) On Strategic Ambidexterity. The mediating role of Strategic Ambidexterity on the relationship between Green Supply Chain (GP and GM, GMM) and Competitive advantage. This study presents research model and will discuss the relationship between all the variables and dimensions within the proposed model and how Green Supply chain (GP and GM, GMM) effect Competitive Advantage it will discuss the mediating role of Ambidexterity on the relationship between Green Supply Chain (GP and GM, GMM) and Competitive advantage. The research hypotheses and the proposed model are presented in Table 1 and Fig. 1, respectively.

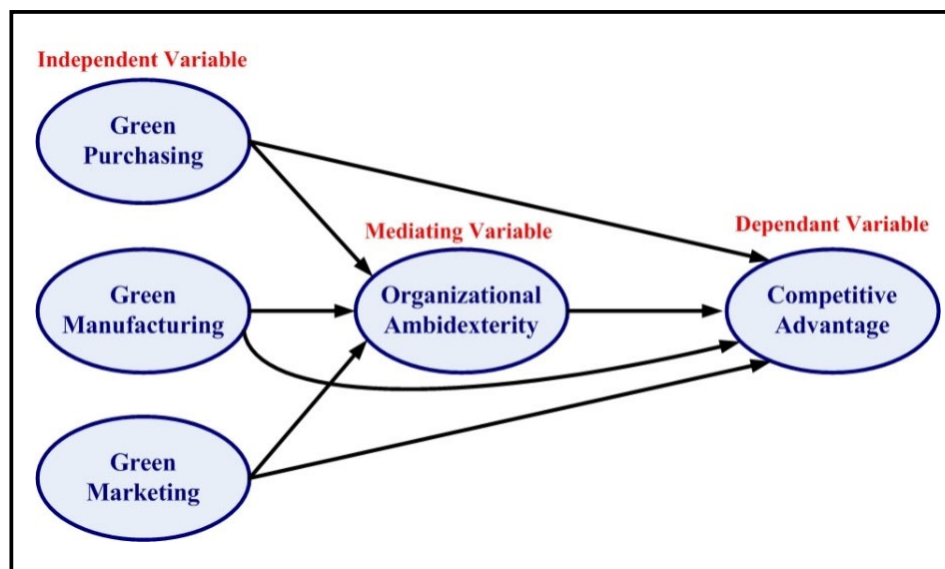


Fig. 1. Study Model

Table 1
The Research Hypotheses.

Ha number	Hypothesis
H1	GP positively influences CA.
H2	GM positively influences CA.
H3	GMM positively influences CA.
H4	GP positively influences SA.
H5	GM positively influences SA.
H6	GMM positively influences SA.
H7	SA positively mediates the positive relationship between GP and CA.
H8	SA positively mediates the positive relationship between GM and CA.
H9	SA positively mediates the positive relationship between GMM and CA.

4. Methodology

4.1 Data and Measures

Using data from a cross-sectional survey, the presented model was empirically tested. The survey was carried out at Jordanian industrial firms. Data were gathered using a questionnaire developed based on a review of the literature and modified by a panel of judges committee. The questionnaire was developed to measure the implementation of the three variables: green supply chain (GP and GM, GMM), strategic and ambidexterity, and competitive advantage. Out of 66 industrial companies actually operating and officially listed at the Amman Stock Exchange (the annual report of the Amman Stock Exchange 2015 and the Securities Depository Center 2015), the questionnaire was distributed to 225 managers in 46 industrial companies, so that the study covered 70% officially listed companies. After the retrieval of the questionnaires, there were 145 valid questionnaires for analysis out of the total number of the retrieved questionnaires, which amounted to 181. The responses were coded and SPSS 20 was used to analyze the data and reach the results. The questionnaire was divided into three parts: the independent variables (Green Supply Chain (GP and GM, GMM), the mediator (Strategic Ambidexterity), and the dependent variable (Competitive advantage). A five-point Likert scale was used, which includes values ranging from 1 (strongly disagree) to 5 (strongly agree) as is known. Green Supply Chain (GP and GM, GMM) implementation was assessed using a 45-item scale developed by Takizawa, Wong, 2015; Wu, 2013; and Zhu, Sarkis, and Lai (2012).

The implementation of strategic ambidexterity was measured by nineteen items adapted from Mashahdi, 2015 and Gibson & Birkinshaw, 2004). Finally, competitive advantage was measured by ten-items based on (Pulgarin- Sergio & Guerrero, 2017), Aswini, 2013). To verify the validity of the used measurements, a set of validity tests were used, like, Content validity, face validity, and construct validity. To confirm the validity of the content Extensive literature reviews and interviews with academic experts have been conducted. A panel of judges has helped to confirm its validity. After making changes to the questionnaire based on expert advice, it was pilot tested by distributing it through email to 37 people (research participants) who were requested to fill it out and respond to questions. Concerning the clarity or ambiguity of the questions, the clarity of the directions for answering the questions, the difficulty of answering the questions, the time required to complete the questionnaire, the clarity and attractiveness of the layout, the absence of important topics, and the order in which the questions are asked. Specialists and committee members raised a few concerns, as well as the questionnaire was amended as a result. To test the construct validity of the questionnaire, Principal component analysis with varimax rotation has been used (Hair et al., 2011). The results of this test showed that all elements achieved factor-loading values more than 50%, which confirms the validity of the questionnaire construction (Hair, et. al. 2017). As for the reliability of the tool, it was relied upon in its test on Cronbach's Alpha, which showed that all measures achieved values higher than 70%, which confirms the reliability of the tool.

5. Data Analysis

The conceptual model and hypotheses were tested using structural equation modeling (SEM). Model fit, construct reliability, and construct validity were all assessed as features of the measurement model. After establishing the measurement model's validity, the structural model was evaluated in three areas: model fit, predictive power, and relationship strength. Depending on the sort of anticipated effect, several methodologies were used to assess the strength of correlations. Direct effects were evaluated specifically by looking at route coefficients. The indirect effect was assessed using bootstrapping to look for mediating influences. Analysis of Moment Structures (version 24; IBM SPSS) was used in all of the previous studies.

5.1 Model Fit

Goodness-of-fit index (GFI, 0.923), root mean square error of approximation (RMSEA, 0.053), and standardized root mean square residual did not score as acceptable fitness indices of the baseline model, while all the fit indices indicate an excellent fit in the baseline model (SRMR, 0.057; Table 3). GP1, GM1, GMM4, OC3, OC4, and CA1 were identified as sources of the measurement model's poor fit since their loading factor is far less than 0.70. After removing these four components from the

model, all of the adjusted model's fit indices improved and remained within acceptable limits, suggesting satisfactory fit (Table 2).

Table 2

The results of the initial and modified measurement model's fit indices

Fit indices	Cutoff point	Initial measurement model	Modified measurement model
Relative chi-square (df)	1-3	1.880	1.254
GFIa	≥ 0.95	0.920	0.987
RMSEAb	< 0.05	0.083	0.042
PCLOSEc	≥ 0.05	0.000	0.695
SRMRd	≤ 0.05	0.085	0.047

aGFI: goodness-of-fit index.

bRMSEA: root mean square error of approximation.

cPCLOSE: p of close fit.

dSRMR: standardized root mean square residual.

5.2 Construct Reliability

Table 3 indicates that the modified model values for each of the house for Cronbach alpha, composite reliability, and average variance extracted (AVE) for each construct were within their cutoff of ≥ 0.70 , ≥ 0.70 , and ≥ 0.50 , respectively, which indicates that the questionnaire items for each variable are consistent and reliable in measuring what they were supposed to measure.

Table 3

Results of Model Validity Measures

	A	CR	AVE	MSV	MaxR(H)
GP	0.915	0.917	0.786	0.343	0.920
GM	0.906	0.908	0.768	0.358	0.919
GMM	0.933	0.934	0.825	0.245	0.941
OC	0.861	0.865	0.682	0.282	0.875
CA	0.924	0.925	0.756	0.358	0.931

aCut-off point of ≥ 0.70

bCut-off point of ≥ 0.50

5.3 Construct Validity

The factor loading and AVE values for all items significantly surpassed the 0.70 and 0.50 standards, respectively (TABLE 8). These findings suggest that the items had high convergent validity. According to three metrics, items had strong discriminant validity. Intercorrelation coefficients, in particular, are within acceptable limits (0.855; Table 4). The square root of the AVE value for a construct (values here on the diagonal) was bigger than all the intercorrelation coefficients between that construct and any other construct in the second measure (off-diagonal values; table4). In terms of the third criterion, each item's loading on its construct was greater than the cross-loadings in columns and rows.

Table 4

Results of Convergent Validity

Latent Constructs	Items	Factor loading	AVEb
GP	GP2	.854	0.786
	GP3	.894	
	GP4	.910	
GM	GM2	.806	0.768
	GM3	.908	
	GM4	.911	
GMM	GMM1	.930	0.825
	GMM2	.933	
	GMM3	.860	
OC	OC1	.848	0.682
	OC2	.870	
	OC5	.755	
CA	CA2	.840	0.756
	CA3	.919	
	CA4	.873	
	CA5	.843	

aCut-off point of ≥ 0.70

Table 5
Item Loadings and Cross-Loadings

	GP	GM	GMM	OC	CA
GP2	.854	.241	.268	.226	.500
GP3	.894	.252	.280	.237	.524
GP4	.910	.257	.285	.241	.533
GM2	.227	.806	.308	.421	.482
GM3	.256	.908	.347	.474	.543
GM4	.257	.911	.348	.476	.545
GMM1	.291	.356	.930	.373	.461
GMM2	.292	.357	.933	.375	.462
GMM3	.269	.329	.860	.345	.426
OC1	.225	.442	.340	.848	.450
OC2	.230	.454	.349	.870	.462
OC5	.200	.394	.303	.755	.401
CA2	.492	.503	.416	.446	.840
CA3	.538	.550	.455	.487	.919
CA4	.511	.522	.432	.463	.873
CA5	.494	.505	.418	.447	.843

aOff-diagonal values are the estimates of inter-correlation between the latent constructs (Cut-off point of <0.85).
bDiagonal values are squared roots of AVE.

5. Structural Model

The structural model indicators' fit indices were all within their cutoff limits, indicating a strong model fit (Table 4). The structural model was responsible for 51% of the variation in PE, 76% of the variation in BI, and 48% of the variation in UB (Figure 2).and 48% of the variation in UB (Fig. 2).

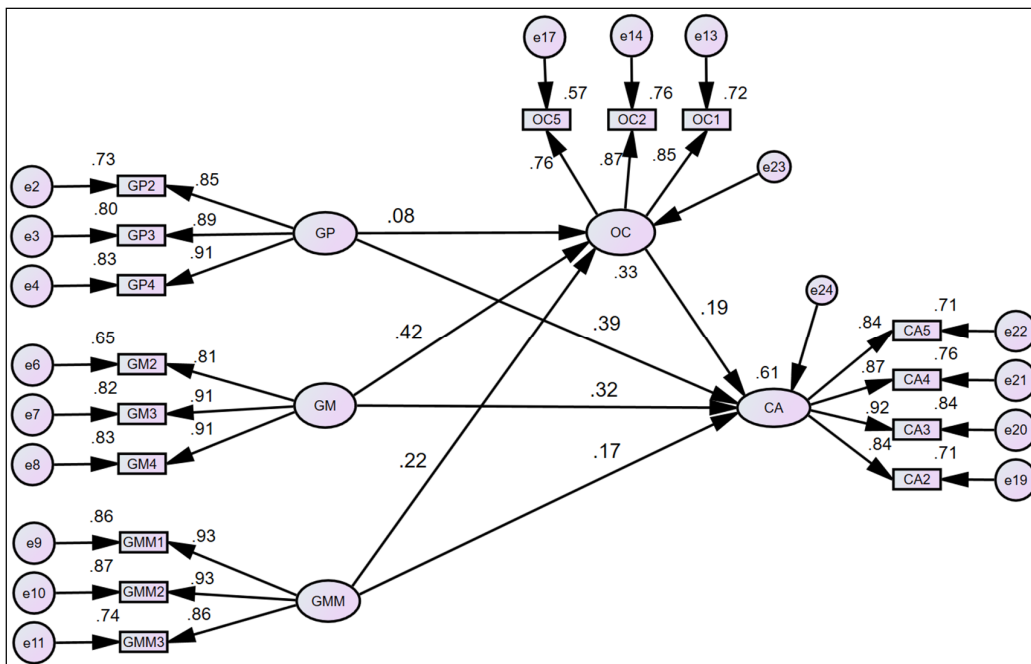


Fig. 2. Structural Model Estimates

6.1 Strength of Relationships

Of the direct effects, CA was associated with GP (beta=.390), GM→ (beta=.324), GMM (beta=.174, and OC(Beta=.189; Table 16). Also Of the direct effects, OC was associated with GM (beta=.417), and GMM (beta=.217), The path from GP to OC was not significant (beta=.079, P=.364). The relationship between GP and OC was not statistically significant (beta=.079, P=.364). As a result, the following assumptions were shown to be true: H1, H2, H3, H4, and H7 are the first

seven letters of the alphabet (Table 11). In terms of mediating effects, bootstrapping results show that OC significantly mediates the impact of GM and GMM on CA (beta =.084 and beta =.042, respectively); however, the route GPOCCA wasn't really significant (beta =.014, P=.236). 6th table). As a result, H9 and H10 were favored in this study.

Table 6

Results of direct effects

Ha	Path	SE (beta)	95% CI	P value	Supported?
H1	GP→CA	0.390		***	Supported
H2	GM→CA	0.324		***	Supported
H3	GMM→CA	0.174		0.015	Supported
H4	OC→CA	0.189		0.021	Supported
H5	GP→OC	0.079		0.364	Not Supported
H6	GM→OC	0.417		***	Supported
H7	GMM→OC	0.217		0.017	Supported

***: <0.001

Table 7

Results of mediating effects

Ha	Indirect effect	Estimate (beta)	95% CI	P value	Supported?
H8	GP→OC→CA	0.014		0.236	Not Supported
H9	GM→OC→CA	0.084		0.018	Supported
H10	GMM→OC→CA	0.042		0.022	Supported

6. Conclusion Managerial implications

This study aimed to test the relationship between green supply chain management in achieving competitive advantage with the existence of Organizational ambidexterity as a mediating variable. A proposed model has been presented to explain these relationships between the three study variables and explains the main hypotheses that have been assumed in this study. The results of the study showed the acceptance of all the hypotheses of the study except for the hypothesis of the effect of the GP on organizational ambidexterity and the hypothesis of the mediation of organizational ambidexterity of the relationship between GP and competitive advantage. The results of the study also showed that there are differences in the effect of the direct green supply chain management elements on both competitive advantage and organizational ambidexterity, and the weakest of those effects were between GMM and competitive advantage. While the relationship between GM and organizational ambidexterity recorded the strongest direct effect relationship among the relationships included in the hypothetical study model. As for the intermediate influence relationships, the relationship between GM and the competitive advantage was recorded with the presence of organizational ambidexterity as a mediating variable, It was the strongest relationship in the series of intermediate influence relationships, while the weakest relationship was between GMM and the competitive advantage with the presence of organizational ambidexterity as a mediating variable. Though organizational ambidexterity had no significant effect on the relationship between PM and competitive advantage.

The results of the study showed that green supply chain management represents great importance to organizations of all kinds by providing many benefits. Green supply chain management contributes to developing the competitiveness of the organization and achieving a state of internal and external cooperation and integration in it. Also, the results of the study showed that organizational ambidexterity, by the implementation of exploratory and exploitative strategies simultaneously, enables the organization to achieve competitive advantages, adapt exploratory strategies, such as the application of technology and new ideas in emerging markets, which helps organizations to present their products fast and adapt exploratory strategies that involve searching for future markets and focusing on new products, processes and markets which provides an initiative for organizations in identifying new markets, being pioneers in introducing new products and processes and entering those markets. These organizations generate advantages such as being more popular and associated with specific product (s) and distinct from other organizations that start a similar business at a later time.

This study attempted to provide empirical bases to determine the multidimensional relationships and influences between green supply chain management, competitive advantage and organizational ambidexterity in the Jordanian and Arab environment. Perhaps one of the most important contributions of this study is the proposed model that has been tested and the results that have been reached. The strong direct and mediating influence relationships between the variables of the study can be of great importance to the Jordanian industrial companies, especially, since these companies face many challenges in their quest to adapt to the many environmental changes and achieve efficiency and effectiveness in investing their various resources and then survival and continuity. The real contribution of this study is the extent of its ability to help industrial companies in realizing the importance of the relationship between green human resource management, competitive advantage and organizational ambidexterity, and thus developing plans and strategies that link between these three variables and take advantage of the positives and benefits of this relationship.

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