THE IMPACT OF COLLABORATIVE INNOVATION ON STRATEGIC ADAPTATION: THE MODERATING ROLE OF ORGANIZATIONAL CHARACTERISTICS OF BANKS IN JORDAN

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Abstract

This research aims to investigate the impact of collaborative innovation on strategic adaptation and the moderating role of organizational characteristics of banks in Jordan. This research consists of independent variables including collaborative innovation (co-creation-knowledge transfer- innovation policy, and collaborative network), dependent variable is strategic adaptation in banks. A quantitative method was used to collect primary data through a research questionnaire, which was administered to banking employees in Jordan. The research population comprised of approximately 861 branches of banks in Jordan, with approximately 22,034 banking employees from different cities in Jordan. A convenience sampling technique was used to choose the participants in this research. A total of 335 questionnaires were distributed, all of them are valid for statistical analysis. The results confirmed a significant and positive effect of collaborative innovation on the strategic adaptation of banks. This research contributes to the academic and practical knowledge as one of the first attempts to investigate the impact of collaborative innovation on strategic adaptation of banks.

Keywords: Collaborative Innovation, Strategic Adaptation, Organizational Characteristics, Banks, and Jordan

1. INTRODUCTION

Innovation plays a significant role in the highly competitive banking industry. Despite industry volatility in the banking sector, banks have a responsibility of maximising profitability and shareholder wealth. The only way for banks to achieve this desired result is through innovation, it entails doing something different than competitors and beating competitors' offerings. In today's highly technological world, banks are not left out on the technological adoption and are currently investing in information and communication technologies (ICT) to enhance their service delivery (SERVD) and improve efficiency in their operations. Technological innovations have been a major force driving changes within distribution in the banking sector. This could be traced to innovative products, including the introduction of ATMs, telephone banking, internet banking, and mobile banking (YuSheng& Ibrahim, 2019).

Research on innovation management has widely recognised the importance of collaboration for the development of new products and services, and, over the past 20 years, studies in this area have constantly proliferated. The discussion on collaboration for innovation can be traced back to several theoretical approaches closely related to the developing theory of the firm, economic innovation theory and innovation systems theory (Marasco et al., 2018).

Despite the importance of new technology utilisation in the improvement of business processes, these innovative solutions come with their own attendant problems. "While the vital importance of innovation in today's competitive climate has been widely proclaimed, innovation is not without its challenges". Some of these challenges include periodic system failures, network problems, malfunctioning ATMs, etc., which results in customer churn, dissatisfaction and customer disloyalty. It is, therefore, imperative for banks to identify relevant innovation needed to deliver effective service to customers and also seek ways and strategies by which these innovations can be managed effectively to achieve the desired goals and objectives (YuSheng& Ibrahim, 2019).

The Jordanian banking sector occupies a prominent place among other sectors of national economy that affect financial and social aspects, which touches different segments of Jordanian society through many businesses and activities that affect and are affected by elements of national economy in addition to the influential role played by commercial banks when providing successive and modern banking services to make it the most important sector for the efficiency and ability to deal positively and effectively with internal and external developments. This requires from commercial banks efficient capability to analyse and manage risks in scientific and practical modern methods, as well as efficient management of investment portfolios, departments of the creative management for sources of funds and their usages. Thus, this research aims to investigate the contribution of collaborative innovation in achieving strategic adaptation through answering that main question: What is the impact of collaborative innovation on banks' strategic adaptation in Jordan?

2. LITERATURE REVIEW

2.1 Collaborative Innovation

Innovation is considered as an essential part of an organisation's performance. Moreover, it is noticed that innovation's importance arises from its role in allowing organisations to respond rapidly because of the intention to find new products and markets with the protection of the unstable environment (Mahdi, 2020).Therefore, collaboration is important for innovation for several reasons.

As for discussing collaborative innovation, by collaborative innovation there will be a privileged access while searching for external knowledge. Researchers have recognised that there are two central issues regarding this process: choosing the partner and having the access to external knowledge. However, collaborative innovation occurs because of sharing integral knowledge by actors. Moreover, they defined collaborative capability as the capability of a multi-level of construction and stimulation, by individuals and within organisations. This capability is considered essential through dynamic situations, but it is ambiguous whenever there are coordinating choices by actors. On the other hand, other researchers such as Bravo, Montes, and Moreno (2018) indicated that there are two different variables that have an effect on a successful collaboration: IT infrastructure within an organisation, which plays a moderating role, and integrated learning styles within an organisation and its supply network. In addition, innovation plays as intermediary for online innovation competition where it resolves the tension between an organisation and community of innovations based on a user's innovation level (Esposito et al., 2017).

Collaborative innovation concept is founded based on common trust, risk, openness, and sharing advantages. Moreover, organisations usually set up both long-term and strong relationships among suppliers, corporations and customers. Thus, any organisation through its supply chain will share information with different organisations, thereby optimising resource allocation, reducing the overall cost of supply-chain, and benefiting from competitive advantages as well. It was mentioned by Liao et al. (2017) that there were different reasons that led organisations to foster collaborative innovation of supply chain, for example, price war, market variation, and the reduction in the product lifecycle. Furthermore, collaborative innovation of supply chain concentrates more on customers' demand having common innovation activities. That will take place by allowing individuals and organisations to experience benefits from information technology through the supply chain for the means of enhancing the level of supply chain efficiency and having potential competitive advantages (Hong, 2019).

The researcher added that people should take into consideration all the surrounding challenges and difficulties that people are facing at the current time. Examples of these challenges are the changeable weather, natural resources depletion, debt crises that occur nationally and internationally, ageing populations, growth in jobless, and youth unemployment where there is a need for finding innovative solutions. Interestingly, public bureaucracies may encourage innovation by activating the process of their standards internally by gaining new ideas and also

by creating quasi-markets that stimulate competition to improve innovation. Interestingly, the researcher added that there are advantages of collaborative innovation in comparison with hierarchical and competitive innovation strategies (Torfing, 2019).Based on the discussion of collaborative innovation, the following hypothesis is posited

H1: There is a significant positive relationship between collaborative innovation and strategic adaptation in the Jordanian banks.

2.1.1 Knowledge Transfer

Organisations depend on knowledge whereby their success is based on innovation and creativity of leverage of knowledge effectively. Interestingly, innovation is important and essential for an organisation within a competing environment, although innovations are considered more complex and riskier due to the dynamic business in the surrounding atmosphere. In the current business environment, there is a consideration of knowledge management that indicates that successful organisations in the future are those that are capable to generate new capabilities. Such new capabilities can be created through organisational knowledge as well as innovative practices responding to the changeable environment. Finally, Gonzalez and Melo (2018) supported the belief of knowledge, whichis considered an organisational resource by which it is capable to experience a competitive advantage during the use of knowledge to innovate commercial value.

Interestingly, Chugh (2017) recognised that there are two kinds of knowledge: explicit knowledge and tacit knowledge: first, explicit knowledge can be codified in an easy way, either by manuals or policies but tacit knowledge is considered an individualistic type where it is expressed by individuals' experiences through know-how technique with difficulty in communication. Secondly, tacit knowledge is considered relevant with the collaboration of buyers and suppliers, by which innovation is essential due to its inimitability, which makes it difficult for competitors to access. Thirdly, tacit knowledge transfer considers different aspects, such as expertise, skills and the buying organisation's experience that is shared with suppliers for improving performance. Hopefully, that leads to the enhancement of buyers' organisational process and innovative outcomes. Fourthly, explicit knowledge has the nature of "public good" wherein it can be imitated and accessed easily. But tacit knowledge is non-verbalised, abstract, intuitive, and also unarticulated, which is considered valuable for the purpose of innovation, these previous features relating to tacit knowledge enhance its value as a resource to depend on, although many researchers are not interested in studying tacit knowledge (Ahmad et al., 2020).

In addition, Guan and Liu (2016) added that the way of gaining capability of innovation is through knowledge transfer, which depends on strong relationships among businesses with other actors across networks of innovation. Researchers such as Lupton and Beamish (2016) mentioned that the capacity of knowledge transfer reflects a unique organisational source of competitive advantage. Moreover, Rutten, Blaas-Franken, and Martin (2016) suggested that the theory of social network reflects the repeating interactions that lead to increase in the degree of trust among people. By which this increment is considered an essential factor for sharing

information among enterprises that participate in innovation. Based on the above, the following hypothesis is posited:

H1a: There is a significant positive relationship between knowledge transfer and strategic adaptation in the Jordanian banks

2.1.2 Co-creation

Co-creation of a brand might exist to encourage innovation among customers and other stakeholders. Interestingly, that will lead to generate different benefits, including market speed, competitive advantage, and efficiencies of cost. By using co-creation through brands as a strategic collaborative innovation approach, that will lead managers and other workers in creating innovation projects with the participation of customers. So that will encourage internal stakeholders and external stakeholders to start with dialogues and begin working on ideas with each other (Ind, Iglesias, &Markovic, 2017; Shahroury, King Abdullah & Sumaya, 2021).

Merz, Zarantonello and Grappi (2018) considered co-creation as the process where stakeholders and organisations participate together in creating value from products and brands. Moreover, co-creation does not indicate that an organisation is trying to please its customers. Instead, an organisation tries to have experience through dialogue and personalised experience. Interestingly, active dialogue is considered as a co-creation method that is essentially interactive and mutually learning. (Loureiro, Romero, &Bilro, 2020; Hammouri et al., 2022).Customer participation regarding service innovation appears in three levels: low, moderate, and high. By which at the lowest level of participation, only the presence of customers is expected, at the moderate level participants give their feedback for the development of new service, and at the highest-level customers participate as a founder for the service. In addition, brands should increase their responsiveness through constant learning, listening and adaption of consumers' feedback about outcomes in real-time optimisation (Buhalis&Sinarta, 2019; Abdellatif & Shahroury, 2022).

According to Ind, et al., (2017) and Abdellatif (2020) brands that take into consideration the method of co-creation and use it as a method of collaborative innovation, this can be transferred into a competitive advantage source. Such brands give customers the chance to be involved with other stakeholders through all co-creation's stages where they are considered as partners of strategic long-term innovation. However, these brands have the structure as network orchestrators where co-creation is converted into strategic resource, whereby brands with the intention to adopt co-creation and use it as a strategic collaborative innovation approach are seeking to have an organisational structure that is flat and flexible.

Because the market has a dynamic nature and on account of the changeable needs of customers, the request for the interaction between businesses with their customers for the aim of co-creation occurred. Co-creation dynamics is a method of creation of value among businesses and their suppliers through collaboration elements. In addition, it is considered as a continual economic and social method that starts with an interactive meaning for customers' needs and problems. Furthermore, researchers identify flexibility as business responsiveness to adapt technology changes and market opportunity, which leads to new offerings, the development of

product line, and promoting its offerings. On the other hand, the compatibility presents the degree of matching among partners based on culture orientation, abilities and activities of a certain business and partners' participation in a successful integration (Chen, Kerr, &Ang, 2017; Al-Gasawneh et al., 2022).As a result of the discussion above, the following hypothesis is posited

H1b: There is a significant positive relationship between co-creation and strategic adaptation in the Jordanian banks.

2.1.3 Collaborative Network

The concept of collaborative network is considered as a type of organisation that performs collaborative projects by individuals who are linked by new information technology. Such model of organisation came from Open Source Software, software was freely available whereby all changes and developments were shared among users. In recent times, this model is used in several fields such as joining people who are geographically distant but have a common motivation of creating new projects. Interestingly, different researchers state that the adoption of an organisation to such collaborative strategy reflects important measures, such as the experience lack in resources for an organisation. For example, from the size of small to medium organisations that operates in the manufacturing sector. In addition, such strategy reflects different benefits that improve the relationship of supply chain collaboration and its network depending on logic.

A study conducted by (Nuryakin, 2016; Ra'd Almestarihi et al., 2021; Hammouri et al., 2021) investigated multi-organisation business partnership role, where it concentrated on the impact of strategic collaborative on the performance of a company. Obeidat (2021) conducted another study related to the foundation of strategic business model which stated that having a certain condition, such as a dynamic, globally competitive, and a surrounding atmosphere based on technology and customer-driven, is not enough and sufficient for a strategic orientation. So that collaboration based on competitive approach for having innovation-oriented strategies is much better than maintaining the sustainability of an organisation. On the other hand, some researchers provided a clarification regarding the responsibility of utilising both technology and the process being set by an organisation for creating human resources. By which they are considered the responsible party for the use of knowledge by an organisation, process, and technology that are required for enhancing the experience for each field.

Creating collaborations among different parties, including suppliers, agents, buyers, governments, and universities, by which they consider their role as intermediaries, are essential issues to be considered for accelerating innovation for the aim of utilising the optimising of network resources. However, collaborative network consists of different parties such as organisations and individuals that are independent, distant geographically, and differ by their cultural and social background. Interestingly, researchers such asCamarinha-Matosand Afsarmanesh (2006) studied that a collaborative network displays a promising model in the knowledge–driven society. It was added also that there are some potential advantages for parties who contribute in a collaborative network by the ability to access new knowledge and

market, share risk and resources, and combine integral skills that will allow parties to concentrate on their competencies, identify and enhance the competition of each organisation. On the other hand, other researchers such as (Ginting, 2019) stated that the collaborative network concept focuses on the massive possibility of a collaborative network in developing different collaborative and innovative capacity for generating tacit knowledge by inter-organisations. In light of the above discussion, the following hypothesis is posited:

> **H1c**: There is a significant positive relationship between collaborative network and strategic adaptation in the Jordanian banks.

2.1.4 Innovation Policy

Moving to the concept of innovation policy, this depends on major characteristics that present the creation of innovation by its uncertainty, cumulative, and collective aspects. Uncertainty is where clients are concerned more about innovation by which they can calculate the odds of either success of failure in advance. That leads to unknown results and, in order to succeed, clients have to accept failure in some cases. Secondly, the meaning of cumulative related to those clients means they should be patient as well as acting strategically in order to accumulate qualifications and abilities to learn by considering the long term. Thirdly, collective refers to all clients where they are asked to work with each other, so that they are able to bear a particular level of risk where they deserve sharing rewards. Moreover, the policies that depend on a mission-oriented view are considered systemic but they go far beyond science-push tools and horizontal tools. In addition, it was mentioned that mission-oriented policies consider the arrangement of both financial and non-financial tools for improving the fulfilment of a certain mission within different sectors by imposing fundamental directions of the economy. In conclusion, generally, globalisation requires new demands of innovation policy, because organisations are facing new and rapid changes in the international market with new related tools. As such, innovation policies should concentrate more on enhancing the adaptability of the innovation system, which is useful and helpful for organisations to acquire competences and resources to cope with challenges worldwide (Borras, 2009).Thus, according to previous discussion, the following hypothesis is posited

> **H1d:** There is a significant positive relationship between innovation policy and strategic adaptation in banks in Jordan.

2.2 Organisational Characteristics as a Moderator

A variety of characteristics distinguish different banks, such as capital, which can be measured by the ratio of total equity to total assets, which can be used to determine the number of assets over which shareholders have a residual claim (Abduh& Alias, 2014). According to the findings of a study conducted by San and Heng (2013), who examined the effect of bank-specific factors on profitability, capital has a positive impact on the profitability of Malaysia's commercial banks. Capital is a significant predictor of the profitability of Islamic banks in Malaysia (Suppia, &Arshad 2019).An additional characteristic is the size of the bank, which is commonly used to capture potential economies in the banking sector. This variable is defined as the total amount of assets held by the bank.

In addition to asset quality and bank age, there are a variety of other characteristics to consider, such as organisational complexity, distance from the bank's headquarters, ownership structure and deposits, operational efficiency, board size, liquidity, impaired financing, and loan loss provision. This study seeks to close the gap by investigating how bank types influence innovation and, consequently, adaptation in Jordan. According to the Central Bank of Jordan and the Association of Jordanian Banks, there are four types of banks in Jordan: Jordanian Islamic banks, non-Jordanian Islamic banks, Jordanian commercial banks, and non-Jordanian commercial banks. Based on the above literature, the following hypothesis was developed:

H2: There is a positive relationship between the organisational characteristics of banks and the impact of collaborative innovation on their strategic adaptation in Jordanian banks.

2.3 Strategic Adaptation

Collaboration, interdependence, competitiveness, shifting customer expectations, increasing workforce diversity, the explosion of knowledge and information, and strategic partnerships are all characteristics of the new economic order. Organisations must always be prepared to innovate and adapt themselves to meet the ever-changing needs of customers and employees by modifying their products, processes and services in order to ensure long-term viability. Organisations are exploring and implementing different learning strategies to initiate innovation, improve operating efficiency, and create value for customers and shareholders, and deal with changes. The learning organisation (LO) is widely regarded as the most effective strategy for encouraging employees to engage in continuous learning and to apply their knowledge to improve corporate operations while also cultivating a dynamic culture that is capable of adapting to change. In addition, they act as a protective shield against uncertainty and adapt to external changes to remain competitive, as well as cultivate an innovative culture that shifts the performance curve in the direction of the upward sloping curve. According to empirical evidence, LO increases market share, productivity, superfast economic growth, and service expansion, as well as employee engagement, innovation, and improved organisational performance, among other things (Sharma & Andortra. 2020).Because of today's complex and dynamic business environment, all industries and organisations are experiencing changes, which are being driven by competitors, customers, suppliers, and technology. Adaptation to change involves systematic planning, organising and implementing change so that organisations move from current state to their desired state. When an organisation allows its employees to be free to adapt to changes through continuous learning, the organisation's performance improves. Further, organisations should adopt changes in order to remain flexible and to improve their financial and non-financial performance levels. A learning organisation is one that facilitates the learning of its members in a way that results in positively valued outcomes such as organisational commitment, creativity, innovation, and adaptability to change, all of which contribute to increased organisational performance in the long run (Sternad, 2011). When faced with changes in its environment, they argue that an organisation must react and adapt in order to survive. Management that takes a proactive approach, on the other hand, is concerned with actively seeking out opportunities in their environment and

taking proactive action to exploit those opportunities. Managers perceive changes in their environment and respond to them in the same way, regardless of whether the perception was the result of active search or passive reception of information. When using active search, the outcome could theoretically be the same if the findings of this search revealed the same trends in environmental factors that were observed when using passive search. It would be different, however, if active search were to draw attention to environmental events or trends that would have gone unnoticed if only passive search had been used (Sternad, 2011).

3. RESEARCH METHODOLOGY

The research utilizes a quantitative method with an exploratory and descriptive design to collect the primary data through a research questionnaire. Also, to answer the questions of the study and test its hypotheses, the Statistical Package of Social Sciences (SPSS) was used to conduct descriptive and inferential analysis and test hypotheses. In order to confirm the research's conceptual model and to examine the research hypotheses, a survey questionnaire was executed and sent out to the Jordanian banking employees. A convenient sampling technique was used to choose the participants in this research. This research's target population consisted of employees' who are working at the Jordanians' banks. The number of operating banks reached 24 banks by the end of 2020, distributed by 16 Jordanian banks (three of them are Islamic banks), and eight non-Jordanian banks (including one Islamic bank)., both of them have branches that spread all over the country reach to 861 branches, most of which were located in Amman. In addition, the numbers of employees who are working in the Jordanian's banks are 22,039. The questionnaire's content was mainly selected and adopted from relevant previous studies using 5-points Likert scale ranging from strongly disagree = 1 to strongly agree = 5.

3.1 Research Model
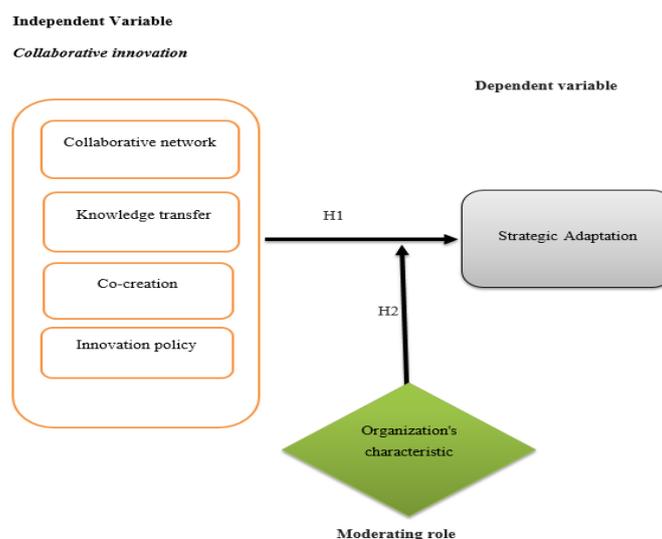
Figure 1: Research Model

The above model was based on Abuzaid (2018), and Mahdi et al. (2020).

3.2 Reliability

The stability of the tool used to measure the variables included in the questionnaire has been confirmed by calculating the value of the Cronbach Alpha Coefficient, where the result is statistically acceptable if its value is greater than (0.70) (Sekaran and Bougie, 2016). The value of (Cronbach Alpha) ranged between (78.4%-90.1%) which it can be described as stability.

The stability of the tool used to measure the variables included in the questionnaire has been confirmed by calculating the value of the Cronbach Alpha Coefficient, where the result is statistically acceptable if its value is greater than (0.70), and the closer the value is to (1) which is 100%, this indicates a higher degree of stability for the study tool (Sekaran and Bougie, 2016).

Figure 1: The value of the Cronbach Alpha

|	All paragraphs of the study tool	Organization's characteristic	Strategic Adaptation	Collaborative innovation	Innovation Policy	Co-creation	Knowledge Transfer	Collaborative network
number of paragraphs	24	4	4	16	4	4	4	4
Cronbach Alpha	92.9	88	80.3	90.1	78.4	85.6	81.8	85.9
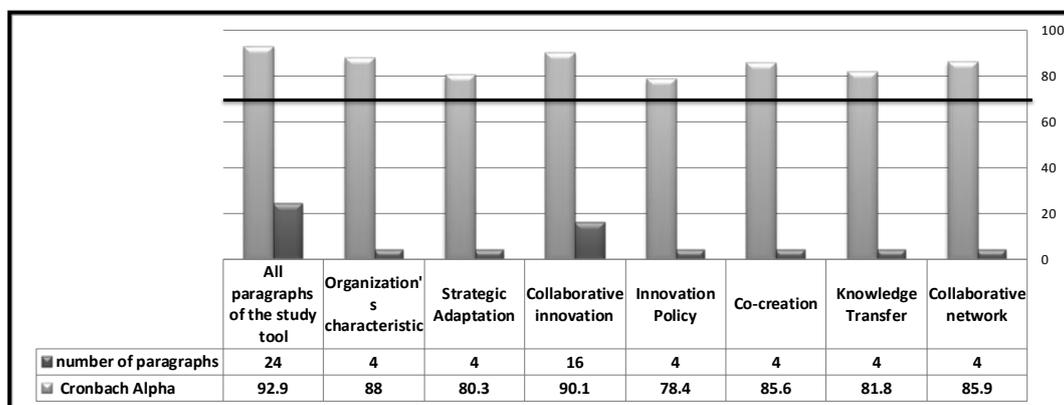
Figure (1) shows that the value of (Cronbach Alpha) ranged between (78.4%-90.1%) and we find that the result of (Cronbach Alpha) for all paragraphs is (92.9%), so the study tool can be described as stability, and that the data obtained through it is suitable for measuring variables. They are excellent values as they are higher than the acceptable percentage (70%) and are subject to a high degree of reliability.

3.4 Test Normal Distribution

The value of the Skewness coefficient was extracted, and this test is used to measure the symmetry of the distribution, and the value that lies outside the range (± 1) indicates that the distribution is skewed to a large extent, and the value of Kurtosis has been extracted, and the distribution is normal if the value of the Skewness does not exceed ± 2.58 (at the level of 0.01) and ± 1.96 (at the level of 0.05) (Hair, et.al., 2010). The results were as shown in Table (1).

Table 1: Skewness and Kurtosis

Variable	Skewness	Kurtosis
Collaborative network	0.426-	0.234-
Knowledge Transfer	0.160-	0.606-
Co-creation	0.504-	0.015-
Innovation Policy	0.346-	0.496
Collaborative innovation	0.453-	0.261
Strategic Adaptation	0.243	0.302-
Organization's characteristic	0.197-	0.758

Based on the test data shown in Table (1), it is clear that the data distribution was normal, as the (Skewness) values did not fall outside the (±1) range and did not exceed the value of (Kurtosis) (±1.96) at the (0.05) level. Figure (2) shows normal distribution.

Figure 2: The normal distribution of the study variables

Independent Variable: Collaborative innovation	Dependent Variable: Strategic Adaptation

Moderating Variable: Organization's characteristic
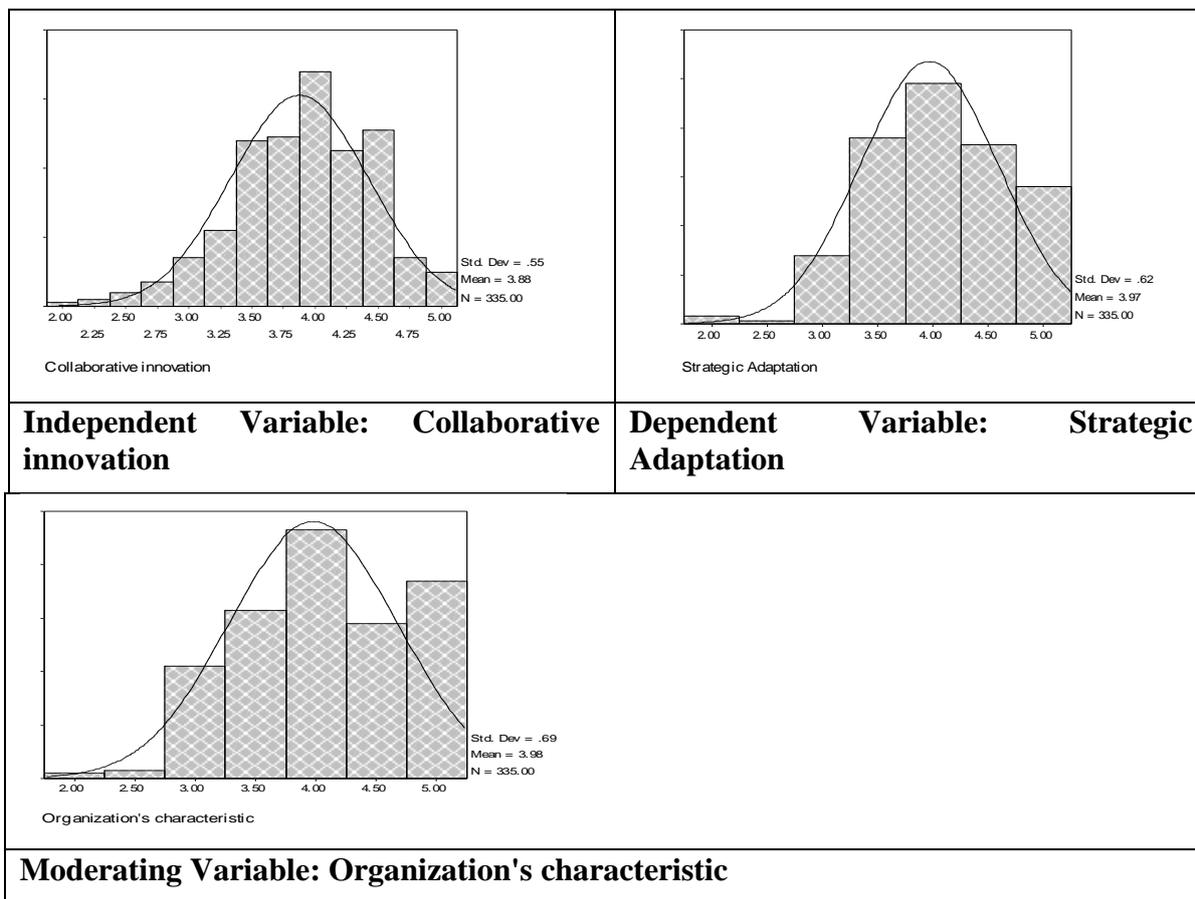
Multicollinearity

The Variance Inflation Factor (VIF) and Tolerance were extracted, and after performing the statistical processing, Table (2) indicates that the allowable variance factor for the independent variables was less than (1) and greater than (0.2) as it was The values of the variance inflation factor are less than (5), which is an indication that there is no high correlation between the independent variables, and this indicates that the values are accepted and that they are suitable for conducting multiple linear regression analysis (Hair et al., 2010).

Table 2: Multicollinearity

Independent Variables	VIF	Tolerance
Collaborative network	1.875	0.533
Knowledge Transfer	2.002	0.500
Co-creation	2.250	0.444
Innovation Policy	1.441	0.694

To confirm the previous result, Pearson correlation coefficients were used between the dimensions of the independent variable to ensure that there were no high multiple linear correlations between the independent variables and the results shown in Table (3).

Table 3: Correlation Coefficients (Pearson)

Variables	Collaborative network	Knowledge Transfer	Co-creation	Innovation Policy
Collaborative network	1			
Knowledge Transfer	0.623	1		
Co-creation	0.597	0.638	1	
Innovation Policy	0.406	0.333	0.540	1

Table (3) shows that the highest correlation between the independent variables is (0.638) and it was between the two variables (Co-creation) and (Knowledge Transfer), while the rest of the values were less than that, and this indicates the absence of the phenomenon of high multiple linear correlation between the independent variables, being less than (80%), Therefore, the sample is devoid of the problem of high multiple linear correlation (Gujarati et al, 2017).

4. RESEARCH RESULTS

4.1 Sample Characteristics

This section shows the characteristics of the sample, including nationality, age, and years of work experience, educational level, and job position). See Table 4 below for further details.

Table 4: Describes the characteristics of the study sample

Variable	Number	Category	Repetition	percentage
Gender	1	Male	255	%76.1
	2	Female	80	%23.9
		Total	**335**	**%100**
Age	1	25-20years	10	%3
	2	31-26years	47	%14
	3	37-32years	143	%42.7
	4	43-38years	65	%19.4
	5	44and above	70	%20.9
		Total	**335**	**%100**
Qualification	1	Diploma and below	17	%5.1
	2	Bachelor's	275	%82.1
	3	Master's	38	%11.3
	4	PhD	5	%1.5
		Total	**335**	**%100**
Years of Experience	1	1year or less	7	%2.1
	2	1-Less than 5 years old	39	%11.6
	3	5-Less than 9 years old	122	%36.4
	4	9-Less than 13 years old	84	%25.1
	5	13years and over	83	%24.8
		Total	**335**	**%100**
Bank Type	1	Jordanian commercial bank	214	%63.9
	2	Jordanian Islamic bank	82	%24.5
	3	Non-Jordanian commercial bank	30	%9
	4	Non- Jordanian Islamic bank	9	%2.7
		Total	**335**	**%100**
Job Title	1	Manager	15	%4.5
	2	Manager assistant	11	%3.3
	3	Head of the Department	36	%10.7
	4	Employee	245	%73.1
	5	Others	28	%8.4
		Total	**335**	**%100**

It is noted from Table (4) that the highest percentage of the sample was males, which constituted (76.1%) and their number was (255) individuals, and that the percentage of (23.9%) were females, and their number was (80) individuals. It was also found that (42.7%) of the study sample individuals ranged in age from 32-37 years and numbered (143) individuals, while (3%) aged between 20-25 years and numbered (10) individuals. It was also found that (82.1%) of the study sample have scientific qualifications with a bachelor's degree, and their number is (275), while (1.5%) of them hold a doctorate, and their number is (5) individuals. We note that (36.4%) have experience ranging between 5- less than 9 years, and their number is (122) individuals, while (2.1%) have less than one year of experience, and their number is (7) individuals, and we note that the highest percentage of respondents were from Jordanian

commercial banks Which amounted to (63.9%), and their number is (214) individuals, while the lowest percentage was for non-Jordanian Islamic banks, which constituted (2.7%), and their number is (9) individuals, and it was found that (73.1%) of the sample members are employees, and their number is (245) individuals. , while (3.3%) of them are assistant managers, and their number is (11) individuals.

4.2 Description of the Research Variables

Table 5 shows the results and statistical analysis, including the results of the descriptive statistics, which are the mean and the standard deviations.

Table 5: Means, standard deviations, and degree of agreement

Collaborative innovation	Mean	S.D	Importance	Ranking
Collaborative network	3.96	0.732	High	2
Knowledge transfer	3.92	0.701	High	3
Co-creation	3.96	0.675	High	1
Innovation policy	3.67	0.607	High	4
general indicator	**3.88**	**0.546**	**High**	

It is clear from Table (5) that the arithmetic averages of the independent variable (collaborative innovation) with high degrees ranged between (3.67-3.96), where after (co-creation) got the highest and with a high degree of approval, and after (innovation policy) the least and with a high degree of Approval, and the general index of cooperative innovation reached (3.88), thus it is clear that the level of cooperative innovation in the Jordanian banking sector came within the high level, and the following is a detail of the dimensions of the independent variable cooperative innovation.

4.3 Testing the Research Hypotheses

The result of testing the first main hypothesis:

H1**:** There is a significant positive relationship between collaborative innovation and strategic adaptation in the Jordanian banks. This hypothesis was tested using the (Multiple Linear Regression) test and its results are as shown in Table (6).

Table 6: Results of testing the impact of collaborative innovation on strategic Adaptation

dependent variable	Model Summery		ANOVA			Coefficient					
	R	R2	F	F Sig	Df	collaborative innovation	B	Std. Error	Beta	T	Sig
strategic adaptation	0.568	0.322	39.242	*0.00	4/330	collaborative network	0.162	0.053	0.191	3.075	*0.002
						knowledge transfer	0.156	0.057	0.176	2.738	*0.007
						co-creation	0.166	0.063	0.181	2.656	*0.008
						Innovation Policy	0.163	0.056	0.159	2.917	*0.004
moralat the level = $\alpha \leq (0.05)$											
FValue= (2.37)					Tabular T value= (1.96)						

Table (6) indicates that there is a statistically significant effect of cooperative innovation in strategic adaptation in banks in Jordan, which is shown by the (F. Sig) value equal to (0.00), which is less than (0.05) and also through the calculated (F) value of (39.242) which is greater than its tabular and equal value (2.37). The value of the correlation coefficient (R) and equal to (56.8%) indicates that there is a medium relationship between collaborative innovation with its dimensions and strategic adaptation, and the value of (R2) and equal to (0.322), which indicates that collaborative innovation with its dimensions has explained (32.2%) of the variance. What is happening in strategic adaptation in banks in Jordan? It appears from the results of the coefficients table for this hypothesis that the value of the beta coefficient of the collaborative network reached ($\beta = 0.191$) and the calculated (T) value (3.075) which is greater than its tabular value (1.96) at the level (Sig = 0.002), which is significant, but The value of the beta coefficient for transferring knowledge came ($\beta=0.176$) and the calculated (T) value (2.738), which is greater than its tabular value at the level (Sig=0.007), which is significant, The value of the beta coefficient of co-creation was ($\beta=0.181$), and the calculated value of (T) was (2.656), which is greater than its tabular value at the level (Sig=0.008), which is significant, and the value of the beta coefficient of the innovation policy was ($\beta=0.159$) and that The calculated (T) value (2.917), which is greater than its tabulated value at the level (Sig = 0.004), which is significant and shown in Table (6). Based on the foregoing, we can say that there is a positive relationship between collaborative innovation and strategic adaptation in banks in Jordan.

The result of the second main hypothesis test:

H2: There is a positive relationship between banks organizational characteristic and the impact of collaborative innovation on their strategic adaptation in banks in Jordan. This hypothesis was tested using the (Hierarchical Regression) test and the results of the hypothesis test were as shown in Table (7).

Table 7: Results of the Second Hypothesis Test

dependent variable	Statement	Sample 1			Sample 2			Sample 3		
		T	Beta	(sig)	T	Beta	(sig)	T	Beta	(sig)
Strategic adaptation	collaborative innovation	7.238	0.568	*0.00	7.195	0.315	*0.00	4.265	0.240	*0.00
	organizational characteristics				11.63	0.51	*0.00	6.246	0.408	*0.00
	Dual Actor							2.104	0.173	*0.036
	Value (R)	0.568			0.720			0.724		
	Value□ (R)				**0.152**			**0.156**		
	Value (R²)	0.322			0.518			0.525		
	Value□ (R²)				**0.196**			**0.203**		
	Value F	158.373			178.74			121.866		
	Indication level F	*0.00			*0.00			*0.00		
Morale at level = α0.05≤										

Table (7) indicates that in the first model, the impact of collaborative innovation on strategic adaptation was studied, as it was proven that there was a significant effect of collaborative innovation on strategic adaptation through the value of F of (158.373), which is a significant value at the level of significance ($\alpha \leq 0.05$), and this supports this The result is a value of (Beta) and equal to (0.568), and a value of T and equal to (7.238), which is significant at the level of significance ($\alpha \leq 0.05$). Based on the value of (R^2).

In the second model, the organizational characteristics variable was introduced and added to study its impact on strategic adaptation. It was found that there is a significant effect of organizational characteristics in strategic adaptation through the value of F of (178.740), which is a significant value at the level of significance ($\alpha \leq 0.05$), and this result is supported by the value of (Beta) and equal to (0.510), and the value of T and equal to (11.630), which is significant at the level of significance ($\alpha \leq 0.05$). With the second form.

In the third model, the formula for the bilateral interaction between collaborative innovation and organizational characteristics was introduced and added, and it was found that there is a significant effect of the formula for the second interaction between collaborative innovation and organizational characteristics on strategic adaptation in banks in Jordan.) and the value of T (2.104), which is significant at the significance level ($\alpha \leq 0.05$), and the interpretation coefficient (R^2) increased by (20.3%) when comparing the third model with the first model. Accordingly, it can be said that the organizational characteristics variable modified the effect of collaborative innovation on strategic adaptation in the Jordanian banks.

5. RESEARCH RESULTS

In light of the results of the statistical analysis of the answers of the researched sample, the researcher reached a set of results, which are as follows:

5.1 The Results Related to the Description of the Study Variables

The results of the study showed an increase in the level of relative importance of the dimensions of collaborative innovation in Jordanian banks from the point of view of the study sample members, which amounted to (77.6%) with an arithmetic average of (3.88), where the dimension of joint creativity achieved the first rank with a high degree of importance, reaching (79.2%)) with an arithmetic average of (3.96), while the innovation policy dimension achieved the last rank with a high degree of importance, reaching (73.4%) with an arithmetic average of (3.67), and the following is a detail of the dimensions of cooperative innovation:

The results of the study showed that the collaborative network dimension, which is one of the dimensions of collaborative innovation, has achieved a high level of relative importance, reaching (79.2%) with an average of (3.96), and it should be noted that these results are consistent with the result of the study Nuryakin, collaborative network and innovation as a driving force of batik SMEs performance and Wang, l., &Duan, t. (2020). network strength, knowledge flow and innovation performance, and study Najafi-Tavani, S., Najafi-Tavani, Z., Naudé, P., Oghazi, P., &Zeynaloo, E. (2018). How collaborative innovation networks affect new product performance: Product innovation capability, process innovation capability, and absorptive capacity

The results of the study showed that after transferring knowledge, which is one of the dimensions of collaborative innovation, it achieved an increase in the level of relative importance, reaching (78.4%) with an arithmetic mean (3.92), and it should be noted that these results are consistent with the result of the study Wang, L., Li, S., & You, Z. (2020). The effects of knowledge transfer on innovation capability: A moderated mediation model of absorptive capability and network reliance. And study Liao, S. H., Chen, C. C., Hu, D. C., Chung, Y. C., & Yang, M. J. (2017). Developing a sustainable competitive advantage: absorptive capacity, knowledge transfer and organizational learning.

The results of the study showed that the dimension of co-creation, which is one of the dimensions of collaborative innovation, has achieved an increase in the level of relative importance, reaching (79.2%) with a mean of (3.96), and it should be noted that these results are consistent with the result of the study.Hamidi, F., &Gharneh, N. S. (2017). Impact of co-creation on innovation capability and firm performance: a structural equation modeling,and study Ind, N., Iglesias, O., &Markovic, S. (2017). The co-creation continuum: From tactical market research tool to strategic collaborative innovation method, and last study Chen, J. S., Kerr, D., Chou, C. Y., &Ang, C. (2017). Business co-creation for service innovation in the hospitality and tourism industry, and Merz, M. A., Zarantonello, L., &Grappi, S. (2018). How valuable are your customers in the brand value co-creation process? The development of a Customer Co-Creation Value (CCCV) scale.

The results of the study showed that the innovation policy dimension, which is one of the dimensions of collaborative innovation, has achieved an increase in the level of relative importance, reaching (73.6%) with an arithmetic mean of (3.68), and it should be noted that these results are consistent with the result of the study Voynarenko, M., Hurochkina V, K. O., &Menchynska, O. (2019, October). Modeling the impact of innovation policy on the level of development and economic security of the country.

5.2 Results Related to Testing the Study Hypotheses

The results of the study showed that there is a positive relationship between collaborative innovation and strategic adaptation in banks in Jordan. In the same vein, the results of the study showed that there is a positive relationship between the (collaborative network, knowledge transfer, co-creation, and innovation policy and strategic adaptation as dependent variable) in banks in Jordan. Also, it has been proven that the modified variable for organizational characteristics has modified the effect of collaborative innovation on strategic adaptation in banks in Jordan, which indicates that there is a statistically significant effect at the level of significance $(0.05 \geq \alpha)$ for the modified role of organizational characteristics on the effect of collaborative innovation on strategic adaptation in banks in Jordan.

6. CONCLUSIONS

6.1 Theoretical Implication

This result of this research confirmed a significant and positive effect of collaborative innovation on strategic adaptation of banks. This research contributes to the academic and practical knowledge as one of the first attempt to investigate the impact of collaborative innovation on strategic adaptation in addition to recognizing the organizational characteristic that improve the adaptation, the research integrate, refines and extend the empirical work conducting in the field of innovation of banks in Jordan, it offers many implication for the Jordanian banks ,such as considering how much the collaborative innovation affect the bank's strategic adaptation .

6.2 Practical Implication

In light of the results related to the description of the study variables, the researcher reached a set of conclusions, which are as follows:

The researcher explains the reason for the high relative importance of the dimension of the collaborative network in banks in Jordan from the point of view of the study sample members, as the surveyed banks seek to acquire external knowledge in order to develop their services, to characterize the research and development activities in the surveyed banks in cooperation with external organizations.

The researcher explains the reason for the high relative importance of the dimension of knowledge transfer in banks in Jordan from the point of view of the study sample members to organize the interviews between working individuals and those dealing with them, seeking thus

to transfer new knowledge, and to exchange information on the development of new services effectively between the different departments in the surveyed banks

The researcher explains the reason for the high relative importance of the dimension of co-creation in banks in Jordan from the point of view of the study sample members because the relationships in the surveyed banks include a large amount of co-creation, and to encourage the surveyed banks and their support for the individuals working for them to put forward effective suggestions and new ideas and adopt them for the benefit of work.

The researcher explains the reason for the high relative importance of the dimension of innovation policy in banks in Jordan from the point of view of the study sample members to the efforts of stakeholders in the surveyed banks to adopt and support innovative activities in those banks, and for the surveyed banks to try to benefit from the various government financial aid.

The researcher explains the reason for the high relative importance of the strategic adaptation variable in banks in Jordan from the point of view of the study sample members because the surveyed banks possess high capabilities to adapt to the changing and renewable needs and desires of their customers, and their ability to adapt continuously with different market requirements.

The researcher explains the reason for the high relative importance of the organizational characteristics' variable in banks in Jordan from the point of view of the study sample members due to the multiplicity and diversity of services provided by the surveyed banks, and because these banks have the ability to attract more new customers.

7. RECOMMENDATIONS

In light of the findings, this study recommends the following:

The continuation of the surveyed banks to encourage their employees to cooperate with other organizations in terms of innovation activities.

The necessity of maintaining the cooperation of research and development activities with all of their departments and divisions.

The surveyed banks continue to resort to forming work teams from all operating departments with the aim of intensifying efforts to develop new services.

It is necessary for the examined banks to maintain the participation of modern technology with all parties, especially customers.

The necessity of the surveyed banks always seeking to involve the individuals working for them in the decision-making process.

Enhancing the affiliation of individuals working in the banks investigated through their continued participation in making decisions related to their work.

Working to search for government support for innovative activities and the need to make optimal use of it.

Giving more importance to information on innovative activities provided by government institutions and using them effectively in order to achieve optimal use of them.

That the surveyed banks continue to adapt optimally to the various changes in their external surrounding environment.

The surveyed banks continue to adapt quickly to the various sudden events that occur in the internal work environment.

That the surveyed banks continue to benefit from the type of bank in the direction of maximizing the value of the services provided to their clients.

That the surveyed banks continue to benefit from the type of banks in order to enhance the creativity of the individuals working for them.

8. FUTURE RESEARCH RECOMMENDATION

This study recommends future researchers to study the important topics based on these results of this study, namely:

The impact of collaborative innovation in promoting strategic adaptation through organizational characteristics as an intermediary role in banks operating in Jordan.

The impact of collaborative innovation in promoting strategic adaptation through the modified role of human capital in Jordanian commercial banks.

The impact of human resources audit on achieving strategic adaptation in commercial banks in Jordan.

The impact of collaborative innovation on competitive strategies in the presence of the modified role of organizational adaptation in Jordanian commercial banks.

The necessity of studying the effectiveness of collaborative innovation as an entry point to enhance strategic adaptation in the presence of the modified role of organizational characteristics in other study sectors and in other countries.

As with any study, various challenges and limitations were encountered. The primary limitations were confronted with the mechanics of the research, which included disseminating and collecting the surveys. Some bankers refused to complete the survey, while others accepted the survey but did not return it, and others did not answer the questionnaire completely. However, the sample size was sufficient for analysis.

Importantly. Responses were received only from bankers who were willing to respond. Thus, the argument could be made that those bankers who are naturally less accommodating or open to self-analysis or introspection did not respond. Not responding may have an impact on the results, as those who are more accommodating may be more willing to listen to others, more open to suggestion, more self-aware, for instance. Further research will be required.

The study was applied to banks operating in Jordan, which limits its generalization to other sectors, in addition to the lack of previous studies that dealt with the variables mentioned in this study. The questionnaire was relied on as a tool for collecting information, and therefore the degree of credibility of its results depends on the objectivity of the sample answers.

In summary, however, the limitations and challenges encountered did not materially affect the results of this study, the first of its kind in Jordan. However, they do point to many opportunities for future research and have implications that policy and financial makers could adopt.

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