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The assessment of innovation management effect in achieving customer satisfaction and innovative behavior of workers: Field study in The Commercial Banks in Bahrain

Dr. Fawaz M M S Alhammad

Head of the Public Affairs Department in the General Secretariat of the Kuwaiti Council of Ministers

Abstract--The aim of the study was to identify the impact of innovation management on customer satisfaction and the innovative behavior of workers in Bahrain. The study used the analytical descriptive approach. The study tool was the questionnaire distributed to the study sample of 5 banks in the Kingdom of Bahrain (25%). After collecting the study data, SPSS and PLS were used. A number of findings were reached, most notably: There is an average practice of Innovation management in commercial banks in the Kingdom of Bahrain. Also, there is a statistically significant effect and a correlation between the innovation management and the innovative climate in commercial banks in the Kingdom of Bahrain. There was also a statistically significant effect and correlation between the innovative climate, customer satisfaction and innovative behavior in commercial banks in the Kingdom of Bahrain. There was also a statistically significant impact and correlation between the innovative climate, customer satisfaction and innovative behavior in commercial banks in the Kingdom of Bahrain. The network theory was found to have a high impact on independent (innovation management) and dependent variables (creative worker behaviour, customer satisfaction), the study recommended: to Strengthening the role of network theory in commercial banks in the Kingdom of Bahrain through its indicators of functions, relationships and available resources, as they have a positive role and effect in the management of innovation, innovative climate, customer satisfaction and innovative behaviour.

Keywords---innovation management, customer satisfaction, innovative climate, network theory, commercial banks in the Kingdom of Bahrain.

1. Introduction

The rapid development of the world in the management of operations in general and information technology in particular has changed the working methods of different types of organizations and institutions of different types. Given the great challenges facing these organizations and different businesses, such as competition, liberalization of external markets, the Internet and the communications revolution, as well as the changing and volatile environment, characterized by increased complexity, declining resources, intense competition in markets and, at times, considerable momentum and conflicts in information, many institutions have become involved to increase their operation efficiency, improving the outcomes and helping to overcome challenges and to create competitive advantages that help to grow, thrive and survive (Setyowati et al., 2021).

In the past few decades; Management has evolved and several types of management have emerged, such as innovative management, where innovation refers to genius or to the atypical state of "normal" thinking, behavior, production or problem-solving; In a manner acceptable to others (Za et al., 2020). The attribution of innovation to the centrality of competitiveness was largely driven by technological advances, the emergence of a knowledge economy and large-scale non-price competition in industrial and service companies (Sung & Kim, 2021).

It should be noted that there is no clear and generally agreed definition of innovation, although there is much input from researchers on the subject, and each researcher has presented the definition from a particular point of view, as defined as: A process that combines science, technology, economics and management, as it achieves modernity and extends from the emergence of the idea to its marketing in the form of production, exchange and consumption (Kogabayev & Maziliauskas, 2017).

The term "innovation" is always associated with the introduction, implementation or development of an idea, product or service for the benefit of society. Innovation is the development of a product or the practice of new and useful ideas to benefit individuals, teams, organizations or a wider community and is seen as the process of increasing production and reducing costs in a way that has not yet been tested in this specific context (Cassia & Muglia, 2018).

As for the innovation process, it must be managed towards the main activities of innovation through the formulation of the objective, the design and organization of the process, the evaluation of the objectives and the process organized, and there should be an outcome such as product innovation such as development, production and marketing of new products, which may require the development of new products in process technology or market sectors, and we must take into account the fact that innovation ranges from a small step to a step, such as

creative repositionalization of what exists of techniques, ideas or methods for discrete innovation or new innovation (Konietzko et al., 2020).

There is no doubt that the main concern of organizations in developing new products, new processes or finding new ways to operate in different markets, however, one of the biggest challenges they face is to test and manage the innovation process, taking into account the reasons for innovation, product, industry, or regulatory strategy containing strategic types of regulation: advocates, analysts, researchers or prospectors. Each type has its own strategy and set-up of the technology, structure and process that will shape the way organizations deal with entrepreneurship because project management is an aspect of innovation management, and it is common to find organizations that manage their own innovation like the way they manage a new product project (Rojas-Velis et al., 2021).

Today, innovation management in business organizations is one of the most visible tools to achieve the organization's goals, including customer satisfaction, because the innovative organization is making innovative changes in its output, to make clients satisfied by striving for innovation and all that can meet their needs, leading to greater customer satisfaction. (Naved, Akhat & Cheema, 2012), In order to achieve their objectives and develop their business and services, banks seek to acquire, sponsor and develop their innovation. Banking innovation is one of the most important areas of concern for successful bank management, making the bank an effective and efficient presence in the banking market, as it regenerates its products and financial services In a way that meets clients' immediate and future needs and desires, the Bank needs to have clear and meaningful strategies in this regard (Sheikhi, 2016).

Since management is a social phenomenon involving many factors and variables, first, management variables that can influence innovation management and their impact on customer satisfaction, identified in the current study based on previous studies, are addressed and represented: With the innovative climate, the network theory, and the behavior of innovative workers, to be described in the current study.

2. Problem Statement

The problem of the current study is demonstrated by the absence of scientific studies competent to measure the impact of innovation management on customer satisfaction in the banking sector, as some studies have sought to test the impact of innovation on variables other than customer satisfaction, such as competitive advantage variables; As a study (Faheem, 2013), which demonstrated an average level of commercial banks' interest in innovation, with a positive correlation between innovation and customer satisfaction, a study (Al-Sahlani, 2023) showed a positive impact of the innovative marketing climate in customer satisfaction with the quality of the banking service, and a study (Raqueeq, 2016) showed a positive impact of marketing innovation on the quality of banking services.

All of those studies had demonstrated the importance of innovation in achieving a range of objectives, such as competitive advantage and customer satisfaction in a

number of business sectors, which had aroused the interest of the researcher to seek the extent to which the banking sector was dedicated and applied to innovation management, and thus the extent to which it had an impact on customer satisfaction among its services, because of the importance of innovation in achieving the objectives of those organizations, where some studies had recommended, such as a study. (Marei, et al. 2022) and a study (Ayinaddis, 2023), conducting applied studies to test the relationship between innovation management and customer satisfaction in different sectors.

Innovation management will not be reflected in the work of the Organization if it does not coincide with the innovative behavior of workers through intermediate variables and their officers and their impact on customer satisfaction. So, Problem statement is to answer the following question:

What has been the impact of innovation management in achieving customer satisfaction and the behavior of innovative workers in commercial banks in the Kingdom of Bahrain?

3. Study questions

- 3.1 Is there any impact of innovation management in the innovative climate in commercial banks in the Kingdom of Bahrain?
- 3.2 Does the innovative climate affect customer satisfaction in commercial banks in the Kingdom of Bahrain?
- 3.3 Does the innovative climate have an impact on the behaviour of innovative employees in commercial banks in the Kingdom of Bahrain?
- 3.4 Is there any impact of network theory on the management of innovation in commercial banks in the Kingdom of Bahrain?
- 3.5 Is there any trace of network theory on the innovative climate in commercial banks in the Kingdom of Bahrain?
- 3.6 Is there any trace of network theory on customer satisfaction in commercial banks in the Kingdom of Bahrain?
- 3.7 Is there any trace of network theory on the innovative behaviour of employees in commercial banks in the Kingdom of Bahrain?

4. Importance of the study

The study presents a scientific subject that is structured to clarify what innovation is and distinguishes it from similar terms, such as innovation, development, and creativity. The study shows what innovation management, and its components are, as there is academic debate about the concept of innovation to the degree that some confuse innovation with creativity, and as a result there is almost no agreement to define the elements of innovation management, as indicated by (Jandal, 2010) and (Khaswanah, 2011).

On the other hand, the study illustrates what customer satisfaction is, and how it is important for organizations, particularly for banking organizations such as banks, and the dimensions and methods of measuring customer satisfaction. The study provides a theoretical description of the relationship of innovation with customer satisfaction. A number of previous studies have also shown it by addressing a number of variables that enter the innovation management process

through a positive relationship between the innovative climate and knowledge of its impact on the creation of innovative behaviour for workers, which will be reflected in the theoretical satisfaction of clients, while not losing sight of variables that have a significant impact on the details of the study of study variables through a study of network theory and the nature of their relationship in the management of innovation and innovative climate and their impact on the behaviour of innovative workers and client satisfaction in the organizations of the study community, this contributes to drawing the attention of researchers on the administrative topic by examining the administrative phenomenon with all variables and not losing sight of variables on the grounds that they fall outside the limits of the study in order to arrive at more detailed and accurate findings of weaknesses and strengths.

5. Objectives of the study

- 5.1 To identify the impact of the Department of Innovation on the innovative climate in commercial banks in the Kingdom of Bahrain.
- 5.2 Recognize the impact of the innovative climate on customer satisfaction in commercial banks in the Kingdom of Bahrain.
- 5.3 Recognize the impact of the innovative climate on the behaviour of innovative employees in commercial banks in the Kingdom of Bahrain.
- 5.4 Identifying the impact of network theory on innovation management in commercial banks in the Kingdom of Bahrain.
- 5.5 Identifying the impact of network theory on the innovative climate in commercial banks in the Kingdom of Bahrain.
- 5.6 Identifying the impact of network theory on customer satisfaction in commercial banks in the Kingdom of Bahrain.
- 5.7 Identifying the impact of network theory on the behavior of innovative employees in commercial banks in the Kingdom of Bahrain.

6. Methodology

The researcher used the surveying descriptive approach and the field study method to gather information from the main sources of literature on the subject, the descriptive aspect of which serves to illustrate what the variables of the study are. (Innovation Management, Innovative Climate, Customer Satisfaction, Innovative Behavior, and Network Theory), statement of their elements, and clarification of their main themes, while the analytical aspect of this approach serves to analyze the responses of study sample members to the study tool.

6.1 Study Sample

Table 1 Study Sample

Commercial banks in Bahrain
Future bank
Bank of Bahrain and Kuwait
Ahli United Bank
Gulf United Bank
Baraka Bank

The sample of the study was the random sample from commercial banks in the Kingdom of Bahrain, as shown in the table.(1), with a percent of 25%, 220 questionnaires were distributed to staff in client service and human resource management in a comprehensive manner, and recovery was made(185) Post-exclusion resolution (4) entries not valid for statistical analysis, 181 questionnaires were analyzed with a percent of 0.84, a number of clients were taken to measure their satisfaction in each of the study population in parallel with the number of study tools distributed to staff, and 181 were analyzed by clients.

6.2 Validity of the study instrument

Face validity was used for the study instrument after presenting it to a group of referees and taking their opinions to modify, add or make any change.

6.3 Reliability of the study instrument

Cronbach's Alpha was used to check the internal consistency if the study tool to check its suitability to achieve the objectives of the current study.

Table 2 Cronbach's Alpha coefficient

Domain	Internal consistency
Innovation management	0.93
Innovative climate	0.91
Innovative behavior of workers	0.91
Network theory	0.91
Customer satisfaction	0.93

Table 3 Results of Measurement Model for the innovation in commercial bank in Bahrain

		Loading	CR Composite Reliability Calculator	AVE Average Variance Extracted
Innovation management	Innovators	0.905	0.961	0.860
	Technical innovation	0.928		
	Innovative operations	0.935		
	Innovative products	0.942		
Innovative climate	Organization leadership	0.955	0.964	0.900
	Organization culture	0.952		
	Work teams	0.939		
Innovative behavior of	Fluency	0.907	0.939	0.837
	Authenticity	0.914		

		Loading	CR Composite Reliability Calculator	AVE Average Variance Extracted
workers	Bearing Risk	0.924		
Network Theory	Functions	0.915	0.943	0.846
	Relations	0.925		
	Available resources	0.920		
Customer satisfaction	Organization image	0.876	0.940	0.796
	Client's expectations	0.889		
	Recognized quality	0.907		
	Interaction with the client	0.896		

Table 3 shows five measurements, Factor Loading, where the above-mentioned ratios show the degree, which each hypothesis obtained at an indicative level. (0.7 >) It was found in the innovation management, that innovative individuals received a ratio of (.905), technical innovation received a ratio of (.928) and innovative processes received a ratio of (.935), innovative products received (942), acceptable ratios in analysis, and the second domain's data showed "the innovative climate" in which the organization's leadership received a ratio of (955), and the Organization's culture received (.952), and the task forces received a ratio of (939) At the axis of the workers' innovative behavior, fluency received a ratio of (.907), authenticity got (.914) and risk tolerance got (.924)., at the of network theory domain, functions got (.915), relationships got(.925), available resources received a ratio (.920), and at the domain of client satisfaction, the image of the Organization received a ratio(.876), client expectations got (889), realized quality got (.907), interacting with the client (.896) which is a statistically accepted percent.

Table (4) shows the test of hypotheses of study variables, and the load of hypotheses to the variable must be, by testing hypotheses of study through the variable in the table above, which measures the sub-indicators of study variables, and is measured by having a higher result than the rest of the study variables, and so the rest of the hypotheses are proven to be, together with the variable, the strongest. In this step, the validity and reliability of the working study hypotheses have been established.

Table 4 Discrimination Validity-Cross Loading for innovation in the commercial banks in Bahrain

	Innovation management	Innovative climate	Innovative behavior of workers	Network theory	Customer satisfaction
Innovative individuals	.924	.853	.837	.835	.574
Technical innovation	.927	.875	.852	.881	.212
Innovative processes	.937	.865	.839	.833	.212
Innovative products	.944	.885	.887	.863	.599
Organization's leadership	.905	.960	.892	.874	.604
Organization's culture	.893	.956	.896	.891	.597
Work teams	.882	.959	.867	.843	.532
Fluency	.855	.861	.926	.850	.596
Authenticity	.854	.867	.944	.869	.585
Risk tolerance	.858	.864	.937	.895	.583
Functions	.868	.850	.874	.936	.596
Relations	.855	.858	.872	.947	.555
Available resources	.861	.857	.885	.944	.601
Organization's image	.597	.552	.584	.569	.912
Client's expectations	.568	.560	.564	.558	.907
Recognized quality	.573	.536	.568	.562	.920
Interaction with the client	.589	.556	.579	.571	.912

Table 5 shows that the average variation extracted (AVE) of the values received by the diagonal line indicates that the values of the correlation with itself are higher than those of the rest of the study variables; That is, hypotheses do not overlap with each other, recur or overlap with another variable, and here the results of the analysis show that each variable with itself is at its position as high as possible compared to the other variables, depending on the Fornal & Larcker law (1981), showing here that the innovation management variable with innovation management is (1), which is higher than the variable below, and the change of the innovative climate with the behavior of the innovative workers has also obtained (0.923) is higher than the value of intentions with the variables below, and the behavior variable of innovative workers with the network theory variable has obtained a value (0.931), which is higher than the variables below it, and a network theory variable with customer satisfaction obtained a value (0.619) is the highest value compared to the variables below it, with the Innovation

management on 0.914, with the innovative climate (0.907) and with the innovative behavior of workers (0.931) which is the highest value compared to the variables located near or below. Thus, the validity and integrity of the study variables and their practical readiness have been verified, as well as the structural measurement model in commercial banks in the Kingdom of Bahrain as indicated.

Table 5 Average Variance Extracted (AVE) innovation in the commercial banks in Bahrain

	Innovation management	Innovative climate	Innovative workers' behavior	Network theory	Customer satisfaction
Innovation management	1				
Innovative climate	.932	1			
Innovative workers' behavior	.915	.923	1		
Network theory	.914	.907	.931	1	
Customer satisfaction	.638	.603	.629	.619	1

** Correlation is significant at the 0.01 level (2-tailed).

Table 6 shows that all paths' coefficients were positive, a statistical function at an indication level of 0.05, indicating a positive relationship between the hypotheses of the study.

Table (6) Correlation coefficients for all paths linking study variables to each other (Path Coefficients of the Research Hypothesis) Innovation in commercial banks in the Kingdom of Bahrain

Hypo	Relationship	Std Beta	Std. error	T-Value	P-Value	Decision
	Innovation management → innovative climate	.932	.025	37.188	.000	Supportive
	Innovative climate → Innovative behavior of workers	.923	.027	34.816	.000	Supportive
	Innovative climate → customer satisfaction	.629	.055	11.711	.000	Supportive
	Network Theory → innovation management	.914	.029	32.610	.000	Supportive
	Network Theory → innovative climate	.907	.029	31.286	.000	Supportive
	Network Theory → Innovative behavior of workers	.931	.025	36.898	.000	Supportive
	Network Theory → customer satisfaction	.619	.053	11.427	.000	Supportive

7. Results

7.1 It turns out that the supporting variables that have been assumed and supported by previous studies on innovation management have been tested and have shown that their results are consistent in the current study in

terms of the relationship of variables to each other in order to achieve customer satisfaction.

- 7.2 Management of innovation is an effective element in achieving a competitive advantage for commercial banks, and commercial banks are always interested in the intense competition that today's world is experiencing and the impact that globalization has had on competition with international commercial banks in the Arab States.
- 7.3 The application of management variables does not necessarily mean neutralizing other management variables, which means linking innovation management to network theory and the innovative customer satisfaction climate introduced by the current study.
- 7.4 It is incumbent upon the Arab States to be flexible and to use their nationality to understand Arab culture in order to overcome competition for international commercial banks and in accordance with customs and the nature of customer satisfaction, which is the core of banks' work.
- 7.5 The State of Bahrain has made up for its national income through the concession of leading its banking business in the Gulf region.

8. Discussion

There is an average practice of management innovation in commercial banks in the Kingdom of Bahrain, and as a result the current study is consistent with (Al-Dmou et al., 2020), which found an average level of commercial banks' interest in innovation, and agreed with (Abdel Razek & Alsanad, 2015) study, which found that the company in question enjoyed commitment and support for innovation from senior management, and we recall a study. (Shekhi, 2016), which concluded that Arab banking systems still face many challenges that pose obstacles to its performance and its adoption of innovation, taking into account the different application populations in previous studies.

It was also found that there is a statistically significant impact and correlation between innovation management and innovation climate in commercial banks in the Kingdom of Bahrain, which means that there is a correlation and impact on the presence of innovative individuals, technical innovation, innovation processes and innovative service in the leadership and culture of the organization and task forces, and that the degree of high practice of innovation management will be reflected in the innovative climate that is a catalyst for innovation in the organization through its impact on indicators of innovative climate.

There is a statistically significant impact and correlation between the innovative climate and customer satisfaction in commercial banks in the Kingdom of Bahrain, which means that there is leadership and a culture of the banks in question and the task forces help to reflect positively the positive image of the banks in question in the client's mind, as well as the client's expectations, interaction and perceived quality. (Mohamed, 2013) found a moral impact on the elements of the marketing innovation climate in customer satisfaction with the quality of the banking service.

The existence of a statistically significant effect and a correlation between the innovative climate and the innovative behaviour of commercial banks in the

Kingdom of Bahrain, which means that there is leadership and culture of the banks in question and the task forces help to positively reflect fluency, authenticity and risk tolerance. It turns out that both network theory has a high impact on independent (innovation management) and dependent variables (creative worker behavior, customer satisfaction).

There is a statistically significant impact and correlation of innovation management on customer satisfaction and the behaviour of innovative workers in commercial banks in the Kingdom of Bahrain, which was agreed with a study. (Quebec, 2020), which found that increasing one unit of product innovation led to an increase in competitive advantage, as confirmed in a study (Abdullah, Al-Sahibi, 2020), which found a positive role between the quality of the provision of banking services in its dimensions and the mental image, and the customer's satisfaction, and was implicitly consistent with the study (Bezdrob, Muamer, 2019), which found that innovative organizations in the Department perform better in the long term, also agreed with a study (rajeeq, 2016) and agreed with a study (Naved, Akhtar & Cheema, 2012), which found a positive relationship between innovation and customer satisfaction, agreed with a study (Mashri, 2015), which found a statistically significant link between innovation and customer satisfaction with the quality of the Bank's banking service, the current study in its part agreed with a study (Foroudi, Jin, Gupta, Melewar & Foroudi, 2016) which found that the ability to innovate affects the reputation of the organization, and also agreed with the current study (Yaslioglu, Caliskan & Sap, 2013) Finally, the current study agreed with the study (Kutieshat & Farmanesh, 2022), which found that there was a correlation between the existence of innovative behaviour and the innovations in the Organization, and the current study differs with that of the study. (Ashok, Day & Narula, 2018) found that there is no impact of innovation processes on customer satisfaction, where customer satisfaction is associated with other variables, such as handling, service delivery, and the level of customer dissatisfaction with the transaction.

This reflects the current reality and pension in the interest of the State of Bahrain in the banking sector in trying to take advantage of the privileged position in the Arabian Gulf as a safe banking oasis and in trying to replace the oil fields in the region to diversify sources of income.

9. Recommendations:

- 9.1 Promote the work of the innovative climate through a higher degree of practice by increasing the practice of its indicators of organizational leadership, organizational culture and task forces because of their impact on client satisfaction and employee behaviour.
- 9.2 Strengthening the role of network theory in commercial banks in the Kingdom of Bahrain through its indicators of functions, relationships and available resources, as they have a positive role and impact in managing innovation, innovative climate, customer satisfaction and innovative behaviour.
- 9.3 Interest in the innovative environment in commercial banks in the Kingdom of Bahrain because of its impact on customer satisfaction, the existence of a relationship with the leadership and culture of the organization, and the task

force on customer satisfaction in commercial banks in the Kingdom of Bahrain.

- 9.4 The role of opening up proposals for development ideas from the client's point of view in banking should not be overlooked, as it is important to meet customer requirements and thus to achieve their satisfaction with banking.

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