The impact of customer knowledge management on innovation capability and business performance: Evidence from Jordanian financial services

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Abstract

Customer Knowledge Management (CKM) has emerged as a critical strategy for organizations aiming to boost innovation and improve performance in competitive markets. This study examines the impact of CKM on innovation capability and business performance within Jordan's financial services sector. Specifically, it explores how knowledge from, for, and about customers influences innovation in terms of quality and speed, and the overall business performance. A quantitative approach was adopted, using a structured questionnaire to gather data from decision-makers across banks, insurance companies, and financial firms in Jordan. A total of 170 valid responses were collected and analyzed using Structural Equation Modeling (SEM) to test proposed hypothesized relationships between CKM, innovation capability, and business performance. The findings reveal that CKM plays a significant role in enhancing innovation capability, with innovation quality showing a stronger positive effect on business performance than innovation speed. The study concludes that CKM is a vital enabler of innovation and performance in knowledge-driven industries. Practically, the results suggest that financial organizations should strategically manage customer knowledge to strengthen innovation outcomes and achieve a competitive advantage. Emphasizing high-quality innovation driven by CKM practices can lead to sustained business success in dynamic markets.

Keywords: Business performance, Customer knowledge management, Financial services, Innovation capability, Structural equation modeling.

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Transparency: The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

1. Introduction

In today's dynamic and knowledge-driven economy, technological advancements and changing customer demands pressure organizations to utilize all of their resources to stay competitive. Additionally, innovation becomes crucial for firms to meet evolving customer needs and drive sustainable growth in such an economy [1]. Customer knowledge is viewed as a strategic resource that helps organizations become more innovative and perform better [2]. By combining knowledge about, for, and from customers, customer knowledge management has emerged as a systematic approach to acquire, share, and utilize both explicit and tacit customer knowledge to help organizations improve and innovate their internal processes and offered services [3].

The financial service sector is deemed to be knowledge intensive industry that forms a trigger to explore the customer knowledge contribution in this sector. In Jordan, the financial service sector plays an important role in the country overall economy [4]. The sector is known for its maturity and resilience. The different types of financial firms in Jordan are running in a very competitive market and faces different challenges to survive and compete at higher levels. Therefore, effective management of customer knowledge helps these firms to understand the customer needs and demands, and even anticipate the customer behavior and market trends.

Despite its significance, limited research has found that CKM impacts performance and innovation in developing nations such as Jordan. This study fills this gap by investigating how CKM affects the speed and quality of innovation and how that influences corporate performance.

2. Literature Review

The relationship between CKM, innovation capability, and business performance within organizational and financial contexts has been the subject of study for decades. It is important to highlight the main theoretical perspectives and empirical findings to help inform our study.

2.1. Customer Knowledge Management

In essence, CKM refer to a set of activities and processes that allow organizations to acquire, share, and use knowledge derived from customer interactions [3]. It builds on the principles of Knowledge Management (KM) and Customer Relationship Management (CRM) by integrating customer input into organizational processes [5]. CKM consists of three dimensions [6]:

- Knowledge from customers: Feedback and insights gained directly from customers related to their needs, expectations, and experience. This knowledge is useful as it helps organizations to understand market needs.
- Knowledge for customers: Information shared with customers to improve their experiences and make informed decisions related to the organization's product or service.
- Knowledge about customers: Data about customer demographics, preferences, behaviors, and trends. Normally can be derived from analytical tools.

2.2. CKM and Innovation Capability

Innovation capability shows to what extent an organization is able to transform ideas and knowledge into new or improved products, services, or processes [7]. This ability can be measured by innovation speed and quality. In the financial services sector, it is crucial to understand market needs and emerging trends; leveraging customer data aids financial organizations in developing innovative products or services. Therefore, effective CKM will foster agility and allow for quicker responses to changes in the market [8]. A proper integration of CKM into strategic plans and processes is expected to enhance innovation performance [9]. For instance, CKM directly enables organizations to generate new ideas from customer feedback and experience, better aligning customer needs with the organization's products or services offered. In addition, it provides timely solutions in response to customer insights [10].

2.3. CKM and Business Performance

It is a key issue for organizations to measure business performance as it reflects overall success. Performance can be measured by evaluating financial and operational outcomes. This includes profitability, market share, and customer satisfaction. CKM influences business performance by harnessing customer data in the decision-making process. CKM supports cross-selling opportunities through customer insights [11]. In addition, based on customer feedback, the quality of products and services can be improved. Through CKM, customer purchase patterns and preferences are studied carefully, which helps organizations address specific needs and preferences, leading to strengthened customer loyalty [11].

Moreover, the financial services sector relies heavily on customer relationships and data making this sector in a great position to benefit from CKM. Organizations in this sector increasingly use CKM to enhance service quality, develop innovative products, and improve customer experiences [11].

3. Theory and Hypothesis Development

In this section, the study theoretical foundation will be presented in order to develop the main hypothesis that guide the study empirical investigation.

3.1. Knowledge-Based View (KBV)

KBV is a theory that considers knowledge as the most critical resource for achieving a competitive advantage and superior performance for an organization [12]. The theory focuses on both tacit and explicit knowledge, indicating that knowledge, by nature, is unique and hard to imitate, making it a sustainable resource for organizations. This theory is an extension of the resource-based view (RBV) theory; it narrows the focus from a bundle of resources, as in RBV, into one resource, which is knowledge [13]. KBV stresses the importance of an organization's ability to create, store, share, and apply knowledge in a way that distinguishes it from other competitors. The theory asserts that effective knowledge management will help organizations outperform those that rely only on tangible assets [14].

3.2. CKM and KBV

In the CKM context, CKM, KBV implies that effective management of customer-related knowledge plays a major role in innovation and operational success. For instance, integrating customer insights into organizational processes could lead to the creation of new products and services, maximize customer satisfaction, and attain better performance [15].

Aligning CKM with the KBV extends the focus from internal knowledge to include external knowledge derived from customers. CKM dimensions, knowledge from, for, and about customers, can be contained with KBV key concepts as follows:

- Knowledge from Customers: Tacit and explicit knowledge sourced from customer feedback, experiences, and interactions. This aligns with the KBV's focus on external knowledge acquisition as a driver of innovation.
- Knowledge for Customers: Knowledge dissemination aimed at enhancing customer understanding and decision-making. This dimension reflects the KBV's emphasis on knowledge transfer and application.
- Knowledge about Customers: Analytical insights into customer demographics, preferences, and behaviors. This corresponds to the KBV's focus on codified knowledge to support strategic decision-making.

Through integrating the above dimensions in the context of customer-centric organizations, organizations will be able to utilize the external knowledge resources for their different activities related to innovation and business performance.

3.3. CKM, KBV and Business Performance

The KBV asserts that effective knowledge management enhances organizational outcomes, including financial and operational performance. CKM supports business performance by:

- Enabling firms to tailor products and services to customer needs, thereby increasing customer satisfaction and loyalty [16].
- Improving operational efficiency through better decision-making and resource allocation [17].
- Supporting market responsiveness and agility by leveraging real-time customer insights.

By linking CKM dimensions to innovation capability, this study extends the KBV framework, highlighting how knowledge transformation contributes to both short-term and long-term performance metrics in knowledge-intensive sectors like financial services. The following hypotheses are proposed.

- H1a. Knowledge from customers has a direct and positive impact on business performance.
- H1b. Knowledge for customers has a direct and positive impact on business performance.
- H1c. Knowledge about customers has a direct and positive impact on business performance.

3.4. CKM, KBV and Business Performance

The KBV emphasizes the transformative role of knowledge in creating new capabilities, such as innovation. Innovation capability is reflected by transforming the knowledge into novel products and processes [7]. CKM dimensions are significant antecedents of innovation speed and quality, two critical facets of innovation capability [18]. This aligns with the KBV's proposition that knowledge transformation is essential for achieving competitive advantage.

In essence, the knowledge obtained from customers provides unique insights that drive the ideation and development of innovative solutions. This knowledge is acquired in a reasonable time, and it gives an organization the advantage of being a first mover. This shared knowledge will increase the speed and quality of innovation for the organization [19].

Knowledge for customer helps in building the customer trust and engagement, leading to fostering co-innovation [9]. Knowledge for customer is an important strategy for CKM. Once an organization shares information with its customer, it will create co-value for It [20]. The instant connection between the firm, customer's needs, and customer's social network through various social media platforms enhances value creation and innovation in the global knowledge economy [10]. This value has direct effect on innovation speed and quality. This knowledge identifies which strategies organizations must take according to customers' preferences and trends [15].

In addition, knowledge about customers allows firms to anticipate market trends and deliver timely innovations. Basically, knowledge about customer helps firms understand, serve, and engage their customers better [3]. This can be achieved by analyzing customer demographics, psychographics, behavior, as well as customer journey and feedback. Consequently, firms can apply new changes on existing products, services and processes. However, once the customer becomes more familiar with the organization a product or service, they will have more confidence and ability to evaluate product or service quality, which in return will improve innovation for the product or service [21]. Based on the above, this research proposes the following hypotheses:

H_{3a} Knowledge from customers has a direct and positive effect on innovation quality.

H_{3b} Knowledge from customers has a direct and positive effect on innovation speed.

H$_{4a}$. Knowledge about customers has a direct and positive effect on innovation quality.
H$_{4b}$. Knowledge about customers has a direct and positive effect on innovation speed.
H5$_a$. Knowledge for customers has a direct and positive effect on innovation quality.
H$_{5b}$. Knowledge for customers has a direct and positive effect on innovation speed.

3.5. Innovation Capability and Business Performance

Various studies emphasized on the relationship between innovation capability and business performance [22, 23]. it was argued that organizations with superior innovativeness are more likely to respond to customers' demands and needs more effectively [24]. As such, innovation speed and quality are positively associated with operational performance and financial performance[25]. Further studies claimed that innovative organizations had higher market share, growth rates, profit and quality performance than non-innovators [26, 27]. In essence, innovation is related to the creation of new knowledge and ideas that leads to facilitating new business outcomes, creating market-driven products or services, and improving internal business structure and processes. Consequently, the following hypotheses are proposed:

H6$_a$. Innovation quality has a direct and positive impact on business performance.
H6$_b$. Innovation speed has a direct and positive impact on business performance.

3.6. Research Model

The research model developed in this study operationalizes the KBV by linking CKM dimensions to innovation capability and business performance. As shown in Figure 1, the model posits that CKM influences innovation capability (quality and speed), which in turn drives business performance. This model integrates the KBV's emphasis on knowledge transformation with a customer-centric perspective, providing a comprehensive framework for understanding CKM's strategic value.
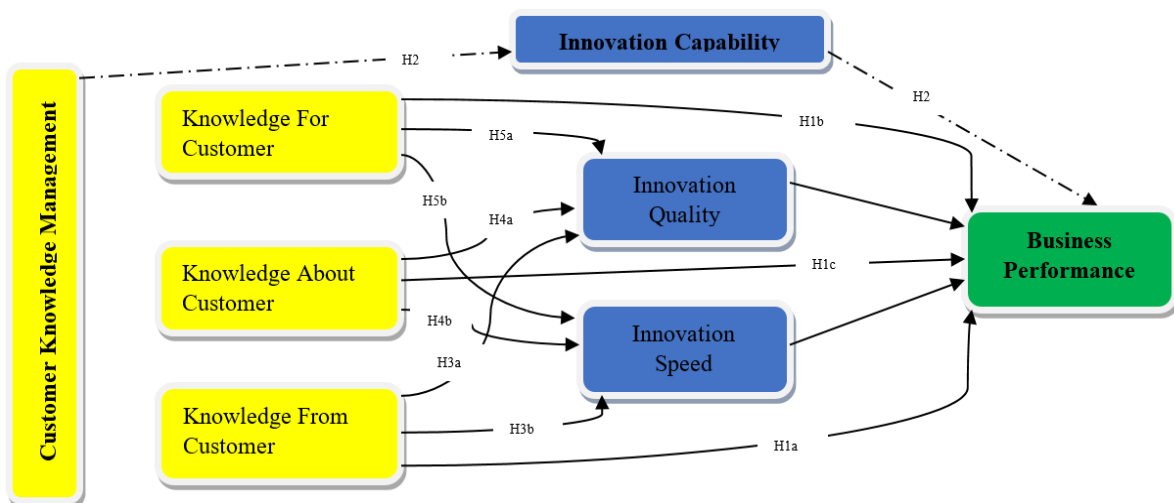

Figure 1.
Research Model.

4. Methodology

4.1. Research Design

This study employs a quantitative, cross-sectional survey design to investigate the relationships between Customer Knowledge Management (CKM), innovation capability, and business performance in Jordan's financial services sector. Structural Equation Modeling (SEM) was selected to analyze the hypothesized relationships, as it enables the simultaneous testing of complex models involving latent constructs and mediating effects. The design aligns with the Knowledge-Based View (KBV) framework, emphasizing how customer-derived knowledge drives innovation and performance.

4.2. Data Collection

Primary data were collected using a structured questionnaire distributed to decision-makers (e.g., managers, department heads, executives) in Jordan's financial institutions. This approach allowed for gathering detailed responses about CKM practices and their perceived impacts on innovation and performance.

The questionnaire was adapted from validated scales [28, 29]. Measured three CKM dimensions (knowledge from, for, and about customers), innovation capability (quality and speed), and business performance (financial and operational outcomes). A five-point Likert scale (1 = Strongly Disagree; 5 = Strongly Agree) is used due to its reliability to ensure consistency in responses [30]. Ethical protocols, including informed consent and participant anonymity, were strictly followed. Of 210 distributed questionnaires, 170 valid responses were obtained, yielding an 81% response rate. Non-response bias was minimized through follow-up reminders and purposive sampling.

4.3. Population and Sampling

The target population comprised organizations in Jordan's financial services sector, including banks, insurance firms, leasing companies, and other entities. Purposive sampling was used to select decision-makers directly involved in strategic processes, ensuring that respondents had the expertise to evaluate CKM practices. The final sample included mid-level managers, department heads, and executives, reflecting diverse organizational roles and perspectives.

4.4. Measurement and Instrumentation

The study constructs were operationalized based on established scales adapted from previous studies as follows:

- CKM Dimensions: Knowledge from customers (e.g., "We systematically collect customer feedback") and knowledge about customers (e.g., "We analyze transactional data") were adapted from García-Murillo and Annabi [31]. while Knowledge for customers (e.g., "We provide tailored financial advice") was drawn from Taghizadeh et al. [19].
- Innovation Capability: Quality (e.g., "Our innovations meet regulatory standards") and speed (e.g., "We launch innovations faster than competitors") were measured using [32, 33].
- Business Performance: Financial (e.g., profitability) and operational (e.g., customer retention) metrics were adapted from Sadikoglu and Zehir [34].

A pilot test (n=20) confirmed clarity and relevance. Cronbach's α values exceeded 0.7 for all constructs, demonstrating high internal consistency. Convergent validity (AVE > 0.5) and discriminant validity (HTMT ratios < 0.85) were rigorously assessed.

4.5. Data Analysis

Data were analyzed using Partial Least Squares SEM (PLS-SEM) in SmartPLS 3.0, which is suitable for small-to-medium samples and non-normal data [35]. SEM was also selected for its ability to model complex relationships between multiple independent and dependent variables. The analysis followed a two-step approach:

- Measurement Model: Assessed reliability, convergent validity, and discriminant validity.
- Structural Model: Evaluated path coefficients (β), significance levels (p-values), and effect sizes (f^2).

Mediation effects of innovation capability were tested via bootstrapping (5,000 resamples). Control variables (firm size, industry type) were included to account for heterogeneity.

4.6. Ethical Considerations

The study adhered to ethical guidelines, including voluntary participation, confidentiality, and transparency in data usage. Institutional approval was secured prior to data collection, and participants were informed of their right to withdraw at any stage.

5. Results and Findings

Based on analyzing the data collected using Structural Equation Modeling (SEM) through SmartPLS 3.0 software, the sections below describe the results obtained.

5.1. Respondent Demographic

The demographic profile indicates 55.3 percent of the respondents are between 31 and 41 years old. Further, about 66.5 percent of respondents are male and 33.5 percent are female. About 74.7 percent of them have more than 6 years of experience. 50.6 percent of respondents work in banks. Table 1 shows the respondents' demographic details.

Table 1.
Demographic Data.

Variable	Categories	Frequency	Percent
Gender	Male	113	66.5
	Female	57	33.5
	Total	170	100.0
Age	20-30	43	25.3
	31-41	94	55.3
	42-52	27	15.9
	Above 52	6	3.5
	Total	170	100.0
Experience	1-2	5	2.9
	3-4	16	9.4
	5-6	22	12.9
	Above 6	127	74.7
	Total	170	100.0
Organization type	Bank	86	50.6
	Insurance Company	20	11.8
	Brokerage & Asset Management Company	9	5.3
	Leasing Company	13	7.6

Credit and Loan Company	14	8.2
Exchange Company	28	16.5
Total	170	100

5.2. Measurement Model

In order to assess the measurement model, we examined convergent validity and discriminant validity.

5.2.1. Convergent Validity

Convergent validity is the "extent to which a measure correlates positively with alternative measures of the same construct" [36]. Convergent validity is determined through the factor loading, average variance extracted (AVE) and composite reliability (CR). Our result showed that factor loading for some of the items is less than 0.5 (KfromC2, KaboutC4, Operational5, Operational6), so they are deleted. Factor loading for the rest of the items is above 0.5, the AVEs of all the variables are higher than 0.5, and CR is above 0.7 [36]. Thus, the convergent validity for scale measurement is achieved as shown in Table 2.

Table 2.
The result of convergent validity.

Variable	Items	Factor loadings	CR	AVE
Knowledge From Customer	KfromC1	0.790	0.757	0.515
	KfromC3	0.574		
	KfromC4	0.768		
Knowledge About Customer	KaboutC1	0.709	0.801	0.574
	KaboutC2	0.802		
	KaboutC3	0.759		
Knowledge For Customer	KforC1	0.745	0.850	0.587
	KforC2	0.735		
	KforC3	0.829		
	KforC4	0.753		
Innovation Quality	InnQuality1	0.842	0.905	0.657
	InnQuality2	0.726		
	InnQuality3	0.792		
	InnQuality4	0.874		
	InnQuality5	0.811		
Innovation Speed	InnSpeed1	0.679	0.878	0.591
	InnSpeed2	0.762		
	InnSpeed3	0.766		
	InnSpeed4	0.841		
	InnSpeed5	0.787		
Business Performance	Operational1	0.470	0.805	0.519
	Operational2	0.817		
	Operational3	0.864		
	Operational4	0.665		

Note: AVE (Average Variance Extracted) =(summation of squared factor loadings) / (summation of squared factor loadings)
(Summation of error variances).
CR (composite reliability) = (square of the summation of the factor loadings) / [(square of the summation of the factor loadings) + (square of the summation of the error variances)].

5.2.2. Discriminate Validity

To assess discriminant validity, "the degree to which items differentiate among constructs or measure distinct concepts," the Fornell and Larcker criterion and cross-loading were examined. The Fornell and Larcker criterion compares the correlations between constructs and the square root of the average variance extracted for that construct. Table 3 shows the results of the Fornell and Larcker criterion. It indicates that all the values on the diagonals were greater than the corresponding row, while column values indicate that the measures were discriminant. Cross-loading represents the outer loading of an indicator on the associated construct, which is greater than all of its loadings on other constructs [36].

All indicators in our model loaded highly on their construct only, and therefore, there are no cross-loading issues. Table 4 shows the result of cross-loading.

Table 3.
The result of Fornell and Larcker criterion.

	Business Performance	Innovation Quality	Innovation Speed	Knowledge About Customer	Knowledge For Customer	Knowledge From Customer
Business Performance	0.721					
Innovation Quality	0.547	0.811				
Innovation Speed	0.472	0.691	0.769			
Knowledge About Customer	0.487	0.611	0.459	0.758		
Knowledge For Customer	0.464	0.488	0.553	0.473	0.766	
Knowledge From Customer	0.246	0.466	0.373	0.458	0.250	0.717

Table 4.
The result of cross-loading.

	Business Performance	Innovation Quality	Innovation Speed	Knowledge About Customer	Knowledge For Customer	Knowledge From Customer
KaboutC1	0.441	0.372	0.174	0.709	0.372	0.382
KaboutC2	0.347	0.528	0.338	0.802	0.291	0.291
KaboutC3	0.337	0.475	0.494	0.759	0.415	0.377
KforC1	0.414	0.285	0.295	0.279	0.745	0.131
KforC2	0.336	0.173	0.365	0.107	0.735	-0.060
KforC3	0.301	0.408	0.480	0.418	0.829	0.240
KforC4	0.376	0.533	0.504	0.535	0.753	0.349
KfromC1	0.317	0.464	0.188	0.365	0.137	0.790
KfromC3	0.026	0.213	0.408	0.346	0.287	0.574
KfromC4	0.130	0.276	0.243	0.263	0.132	0.768
Operational1	0.470	0.180	0.270	0.324	0.284	0.343
Operational2	0.817	0.583	0.438	0.386	0.366	0.186
Operational3	0.864	0.433	0.388	0.427	0.368	0.220
Operational4	0.665	0.259	0.216	0.255	0.324	-0.010
Quality1	0.536	0.842	0.638	0.502	0.386	0.403
Quality2	0.432	0.726	0.455	0.297	0.190	0.475
Quality3	0.348	0.792	0.503	0.438	0.462	0.337
Quality4	0.469	0.874	0.647	0.614	0.399	0.345
Quality5	0.419	0.811	0.534	0.579	0.510	0.355
Speed1	0.305	0.536	0.679	0.309	0.230	0.269
Speed2	0.274	0.464	0.762	0.101	0.377	0.287
Speed3	0.256	0.427	0.766	0.220	0.345	0.238
Speed4	0.411	0.586	0.841	0.433	0.558	0.305
Speed5	0.481	0.599	0.787	0.548	0.504	0.320

5.3. Structural Model

The structural model aims to examine the relationship among a set of dependent and independent constructs. To assess the structural model (path relationship), the t-values, collinearity, and the R^2 value and the predictive relevance (Q^2) via a bootstrapping procedure with a resample of 5,000 were considered. The path coefficient results are shown in Table 5 and Figure 2. We used a commonly critical value for two-tailed tests as 1.96 (significance level _ 5 per cent) and 2.57 (significance level _ 1 per cent).

Table 6 shows the collinearity statistic of our model, Collinearity arises in the context of structural model evaluation when two constructs are highly correlated. The acceptable value for VIF must be between .02 and 5.00 [36]. All of our constructs have an acceptable value of VIF, which leads us to conclude that there is no collinearity between constructs.

Table 5.
The results of a structural model.

Hs	Relationship	Original sampling	T-value	Decision	R2	Q2
H1a	KfromC →BP	-0.068	0.553	Rejected	0.376	0.168
H1b	KforC → BP	0.187	2.177	Supported		
H1c	KaboutC → BP	0.207	2.549	Supported		
H3a	KfromC → InnQu	0.226	2.543	Supported	0.464	0.281
H3b	KfromC → InnSp	0.189	2.427	Supported	0.384	0.193
H4a	KaboutC →InnQu	0.392	4.988	Supported		
H4b	KaboutC → InnSp	0.172	2.251	Supported		
H5a	KforC → InnQu	0.246	4.479	Supported		
H5b	KforC → InnSp	0.424	5.174	Supported		
H6a	InnQu → BP	0.296	2.855	Supported		
H6b	InnSp → BP	0.099	1.001	Rejected		

Note: KfromC = knowledge from customer; KforC = knowledge for customer; KaboutC = knowledge about customer; BP=Business Performance; InnQu = Innovation Quality; InnSp = Innovation Speed.

Table 6.
Result of collinearity statistic.

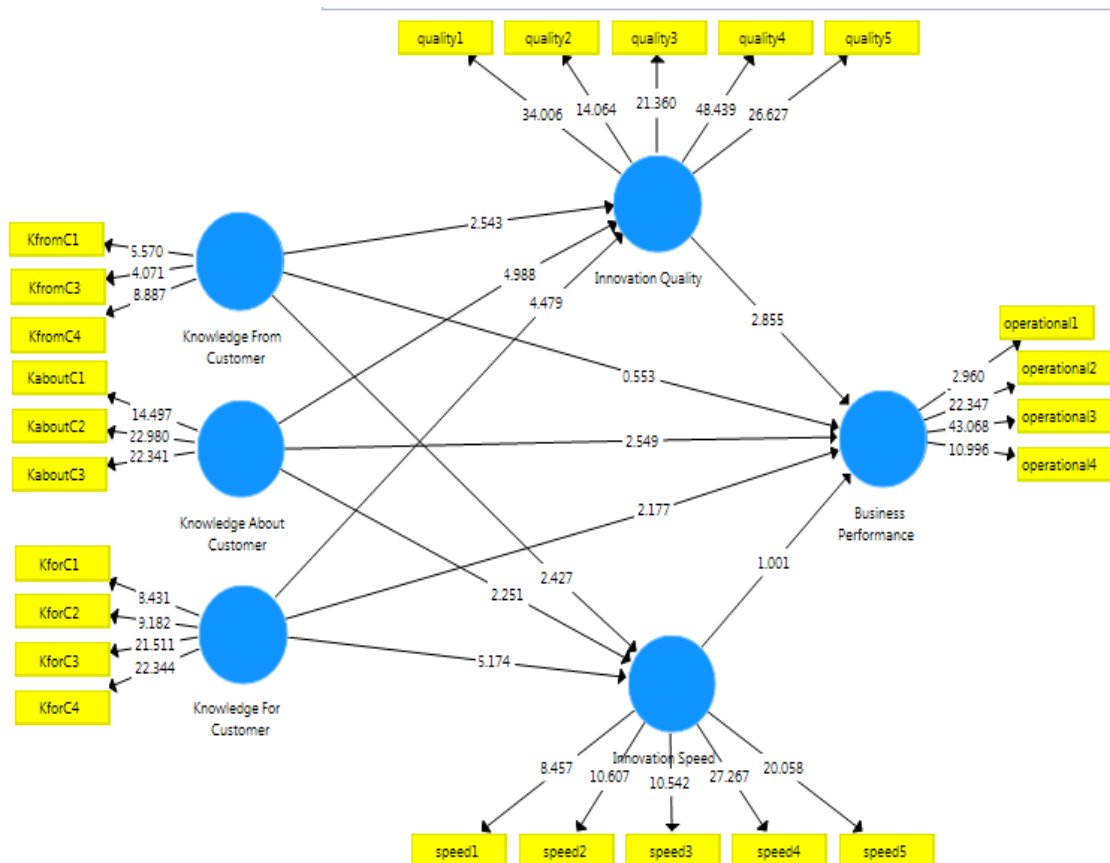|	Business Performance	Innovation Quality	Innovation Speed
Business Performance			
Innovation Quality	2.515		
Innovation Speed	2.186		
Knowledge About Customer	1.822	1.532	1.532
Knowledge For Customer	1.587	1.290	1.290
Knowledge From Customer	1.373	1.268	1.268

Figure 2.
The results of structural model.

The results showed that knowledge of the customer (t-value=2.177) and knowledge about the customer (t-value=2.549) have a significant and positive relationship with business performance. This finding is evidenced in many practices [37-40]. However, knowledge from the customer does not have a significant relationship with business performance. This is due to the fact that the process of sharing knowledge between the employee and the customer has a different purpose and takes on different characteristics within the organization. In addition, there are two factors that affect the success of capturing

knowledge from the customer: first, the organizational culture, in terms of re-thinking the role of the customer and its long-term effect on the employees' mindset within the organization; and second, the organizational competency, in terms of the skills and processes needed to take full advantage of participative techniques [41]. According to the results, it can be concluded that Jordanian culture does not support the practices of capturing knowledge from the customer through social interaction with the employee firm. Thus, H1b and H1c were accepted, and H1a was rejected.

Further, the results of examining the relationship between CKM and innovation capability showed that knowledge from customers has a positive relationship with innovation quality (t-value=2.543) and innovation speed (t-value=2.427); knowledge for customers has a positive relationship with innovation quality (t-value=4.479) and innovation speed (t-value=5.174), and similarly, knowledge about customers has a positive relationship with innovation quality (t-value=4.988) and innovation speed (t-value=2.251). Therefore, H3a, H3b, H4a, H4b, H5a, and H5b were accepted. This result is consistent with the findings of various studies [42]. Moreover, Taghizadeh et al. [19] confirmed that knowledge for, from, and about customers has a significant effect on innovation quality and speed.

Likewise, the quality of innovation has a significant and positive effect on business performance (t-value=2.855), so H6a was accepted. This result supports the findings of Valmohammadi [42]. However, H6b, which proposed that 'the speed of innovation has a positive relationship with business performance,' was rejected. This result confirms the findings of other studies, such as Tetteh et al. [43].

The R2 value for business performance is 0.376, innovation quality is 0.464, and innovation speed is 0.384, which is above 0.26, indicating a substantial model. In addition, we assessed the predictive relevance of the model through the blindfolding procedure. If the Q2 value is larger than 0, the model has predictive relevance for a certain endogenous construct [36]. Based on the results, the Q2 values for business performance (Q2 = 0.168), innovation quality (Q2 = 0.281) and innovation speed (Q2 = 0.193) are more than 0, suggesting that the model has sufficient predictive relevance.

Finally, we tested the mediating role of innovation quality and innovation speed. In structural equation modeling (SEM), the mediation in path models can be assessed by examining the relationship of the direct link between two latent variables and the indirect link via the potential mediator variables (path from the predictor to the mediator and path from the mediator to the endogenous variable) [44]. In this regard, to test the requirements of the indirect effect, a t-test via a non-parametric bootstrapping procedure was carried out. In this study, three indirect relationships out of six were proven to be significant. The analysis of the mediating effect revealed that innovation quality mediates the relationship between knowledge from customers on business performance, knowledge for customers on business performance, and knowledge about customer business performance. Innovation speed does not mediate the relationship between knowledge from customers on business performance, knowledge for customers on new business performance, and knowledge about customer business performance. The results are shown in Table 7.

Table 7.
The mediating results.

Relationship	t-value	Decision
KfromC → InnQu → BP	1.935	Supported
KforC → InnQu → BP	2.244	Supported
KaboutC → InnQu → BP	2.400	Supported
KfromC → InnSp → BP	0.059	Not supported
KforC → InnSp → BP	0.067	Not supported
KaboutC → InnSp → BP	0.020	Not supported

Note: KfromC = knowledge from customer; KforC = knowledge for customer; KaboutC = knowledge about customer; BP=Business Performance; InnQu = Innovation Quality; InnSp = Innovation Speed.

6. Discussion

6.1. The Differential Impact of CKM Dimensions on Innovation

The study's findings highlight that knowledge from customers exerts the strongest influence on innovation quality, reinforcing the role of customers as co-creators in the innovation process. Recent research conducted by Zhang [45] demonstrates that AI-driven feedback systems in digital banking (e.g., chatbots and sentiment analysis tools) enable real-time extraction of customer insights, reducing development risks and enhancing market alignment. For example, Jordanian banks leveraging platforms like Temenos or Backbase can automate customer input collection, mirroring practices observed in European new banks such as Revolut, which reported a 40% reduction in product iteration cycles through AI-powered co-creation [46]. Similarly, a study by AlAmayreh et al. [47] found that Middle Eastern fintech startups integrating customer feedback loops into agile workflows achieved 25% higher user satisfaction rates compared to traditional banks. Knowledge about customers emerged as critical for innovation speed, aligning with a work by Patel et al. [48] on predictive analytics in financial services.

Advanced tools like blockchain-enabled CRM systems (e.g., Salesforce Hyperforce) decode transactional and behavioral patterns, enabling firms to anticipate trends such as rising demand for Environmental, Social, and Governance (ESG) compliant investment products [49].

For instance, Jordan's Arab Bank utilized machine learning to identify a surge in mobile payment preferences, accelerating the launch of its Arabi Wallet by 30% (Central Bank of Jordan, 2023). Contrary to expectations, knowledge for customers had a limited direct impact, though its role in fostering trust through transparency remains vital. highlighted that

personalized financial literacy programs in Southeast Asia improved customer retention by 18% [50] while decentralized platforms like DeFi protocols enhanced transparency, indirectly supporting innovation ecosystems [51].

6.2. Innovation Quality vs. Speed: Contextual Priorities

The results emphasize the importance of innovation quality over innovation speed in driving business performance. This finding corroborates previous research indicating that quality-driven innovations are more likely to create sustainable competitive advantages [52, 53]. High-quality innovations improve customer satisfaction, resource utilization, and operational efficiency, all of which are critical in the knowledge-intensive financial services sector.

Innovation speed, although secondary to quality, is vital in dynamic and competitive markets where time-to-market is a key determinant of success [29]. Organizations that excel in innovation speed can capitalize on first-mover advantages, enhance responsiveness, and better address evolving customer expectations [54, 55].

The primacy of innovation quality over speed aligns with a meta-analysis of 120 fintech firms conducted by Kim and Kim [56], which identified quality as a stronger predictor of long-term performance in regulated markets. In Jordan, where 85% of banks prioritize Sharia compliance [57], innovations like digital Sukuk platforms must balance agility with rigorous ethical audits. For example, Bank al Etihad's AI-driven compliance checker reduced approval times for new products by 20% while maintaining regulatory adherence [57].

6.3. Technological Enablers and Organizational Culture

The financial services sector, being data-rich and customer-centric, is uniquely positioned to benefit from CKM practices. The study underscores the importance of advanced technologies, such as CRM systems, data analytics, and AI, in capturing and managing customer knowledge. For instance, analytical CRM systems that track customer interactions and preferences can provide actionable insights to support faster and more effective innovation. Moreover, AI-powered CRM systems, such as Zoho CRM's generative AI tools, automate insight extraction from unstructured data (e.g., social media interactions), reflecting a reduction in manual analysis costs [58, 59].

Moreover, the study findings brought attention towards the need of fostering a culture of knowledge-sharing and collaboration in firms in Jordan's financial services sector [60, 61]. The findings suggest that prioritizing CKM practices not only enhances innovation outcomes but also builds stronger customer relationships, which are fundamental for long-term success in this industry [62, 63].

6.4. Theoretical and Practical Implications

The findings emphasize the applicability of the Knowledge-Based View (KBV) to address customer-centric industries in emerging and dynamic markets. Linking KBV with CKM dimensions supports the integration between external and internal knowledge over resource hoarding in firms [2].

Practically, managers and decision-makers in financial firms, based on the study findings, should be able to better strategize the use of customer insights to make data-driven decisions to face the increasing regional competition. Leveraging CKM promotes a culture of shared knowledge and cross-functional collaboration, as in Jordan, there is a need to include mid-level managers and even frontline employees to participate in the decision-making process. This will accelerate the product lifecycle as well as minimize market failure risks to help firms become more innovative.

7. Conclusion and Recommendation

This study underscores the essential role of Customer Knowledge Management (CKM) as a strategic driver of innovation capability and business performance, particularly within Jordan's financial services sector. By systematically leveraging knowledge from, for, and about customers, firms can transform customer insights into high-quality innovations that align with market demands. The findings validate the Knowledge-Based View (KBV), demonstrating that customer-derived knowledge serves as an inimitable resource, enabling organizations to overcome resource constraints typical of developing economies. Notably, innovation quality emerged as a stronger predictor of business performance than speed, emphasizing the sector's prioritization of reliability and compliance in a competitive, regulated environment.

The study also drew attention to CKM's broader applicability across knowledge-intensive industries, from healthcare to manufacturing, where customer-centric innovation is critical. As digital transformation reshapes global markets, integrating CKM with advanced technologies offers untapped potential for enhancing agility and competitiveness.

In a nutshell, this study bridges theoretical and practical gaps by contextualizing CKM within Jordan's financial sector. By prioritizing customer knowledge as a strategic asset, firms can not only improve their innovation capabilities but also build resilient, customer-centric organizations capable of thriving in global markets. Future efforts should focus on scaling these practices through technology and collaboration, ensuring sustainable growth in an era of rapid digital disruption.

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