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Creditworthiness Criteria According to the 5Cs Model and Credit Decision: The Moderating Role of Intellectual Capital

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ABSTRACT

The current study aims to examine how creditworthiness criteria based on the (5Cs) model with its dimensions (character, capacity, capital, conditions, and collateral) on the credit decision in the presence of intellectual capital as a moderating variable applied to the branches of Jordanian commercial banks in the southern governorates of Jordan. The study included 449 populations from these branches, with a sample size of 205 employees. The authors employed a quantitative approach and utilized Macro PROCESS v4.2 by Andrew F. Hayes for analysis within SPSS v.28 software to achieve the study objective and test its hypotheses. According to the findings of the study, there is a positive effect of creditworthiness criteria based on the (5Cs) model on the credit decision. Furthermore, the study discovered that there is a presence of a moderating role of intellectual capital on the relationship between creditworthiness criteria based on the (5Cs) model and the credit decision. The study recommends that banks should prioritize investing in training programs for employees to improve their ability to assess credit risk accurately.

Keywords: Creditworthiness (5Cs), Credit Decision, Intellectual Capital, Banks
JEL Classifications: F65, G21, G32

1. INTRODUCTION

Reports issued by the Central Bank of Jordan and the Association of Banks in Jordan indicated that total credit facilities increased by 8.6% compared to 2021, with a growth rate of 5% to reach 32.2 billion by the end of 2022 (Central Bank of Jordan, 2022; Association of Banks in Jordan, 2022). This underscores the significant importance of thoroughly analyzing credit decisions and creditworthiness criteria in the Jordanian banking sector.

To mitigate risks effectively, administrative leaders in the banking sector must prioritize a meticulous examination of the credit decisions offered to customers. As is known, the credit decision refers to the final point of view of the credit department in banks to accept or reject granting credit based on an analysis of a set of factors such as the credit ceiling, credit period, and other conditions (Al-Dabbas, 2014). Accuracy in the credit decision for customers, whether natural or legal, can be achieved through a detailed and comprehensive study of their creditworthiness.

Creditworthiness criteria are an advanced analytical method to study all financial and personal aspects of customers in order to reach a decision that determines the ability and willingness of customers to pay future obligations in conjunction with the terms agreed upon with the bank in terms of (amount, payment, and period) (Alammar and Kousayri, 2015). This process is crucial for the bank overall and especially for the credit department to make informed decisions that differentiate between customers based on creditworthiness criteria (Genriha and Voronova, 2012).

Also, intellectual capital is considered one of the main pillars in creating value across all branches of the economy, including the

financial and banking sectors. Intellectual capital plays a crucial role in the banking industry by creating value and influencing the quality of financial services offered to clients. It significantly contributes to achieving competitive advantage and enhancing financial performance in the banking industry. Furthermore, it serves as the primary catalyst driving company growth, differentiation, and competitive advantage. It refers to the talents and skills of individuals, extensive knowledge, information and software, technological and social networks used, as well as the culture that connects all these elements (Rutkowska, 2022; Yuliastuti et al., 2024; Astawa, 2019; Al-hajaya et al., 2019).

The study's problem issue revolves around the dual nature of credit decisions. It is an ongoing activity in the banking sector and contributes to achieving profits when studied correctly. It also causes losses, such as the risk of default if taken incorrectly. This means that it is necessary to conduct a credit rating for customers that shows the solvent customer and the insolvent customer in terms of creditworthiness when rating the credit (Genriha and Voronova, 2012; Dastoori and Mansouri, 2013). Therefore, it is necessary to study the credit decision provided to borrowers carefully to avoid risks or reduce them as much as possible by studying and analyzing the creditworthiness criteria (Pukala et al., 2020). Accordingly, the problem of the study arises by answering the following questions:

1. Does the creditworthiness criteria according to the (5Cs) model affect the credit decision?
2. Is there an effect of creditworthiness criteria according to the (5Cs) model on the credit decision in the presence of intellectual capital as a moderating variable?

The significance of this study is highlighted by its theoretical and practical relevance, particularly concerning bank branches in Jordan. From a theoretical perspective, creditworthiness and credit decision are important topics that are expected to contribute to reducing or avoiding the financial risks that lenders are exposed to. The study's practical significance is understanding how to adapt to ongoing changes in creditworthiness criteria and their impact on credit decisions, especially in the presence of intellectual capital that helps make accurate decisions.

Through the above, the current study aims to test the effect of creditworthiness criteria according to the (5Cs) model with its dimensions (character, capacity, capital, conditions, and collateral) on the credit decision in the presence of intellectual capital as a moderating variable.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. Creditworthiness and Credit Decision

Credit refers to the trust that a bank gives to a customer (individuals or companies) when placing an amount of money at its disposal in exchange for the customer's commitment to pay interest and installments, in exchange for the interest or profit that the bank obtains (Kandalaft, 2018). According to Al-Qudah et al. (2022) the credit approval process is preceded by a specific bank policy. This policy aims to ensure customers' fulfillment of obligations by analyzing relevant data and information. Metwally et al. (2021) emphasized that the lending decision involves both rational and irrational processes, highlighting the significance of the credit manager's experience and educational background in determining loan approvals.

According to the study by Kollin-Ondolos et al. (2022), bank credit officers take into account a variety of basic and behavioral factors in their assessment of credit and decision-making. Therefore, the credit decision is considered one of the most important, risky, and sensitive decisions in the banking sector as it directly influences financial stability, risk management, and overall economic health. Making the correct credit decision directly impacts the company's profitability, enhancing its competitive position and market share. Conversely, an incorrect credit decision can have severe repercussions on the banking sector, potentially leading to substantial losses, bankruptcy, and adversely affecting the local economy (Al-Jamal, 2021). Hence, the company's short-term solvency plays a crucial role in lending decisions for both creditors and lenders, with the information from the cash flow statement influencing both short- and long-term lending choices. Furthermore, cash flow data is crucial in lending decisions for institutions as it provides insights into the financial health and repayment capacity of borrowers (Nguyen and Nguyen, 2020).

Metwally et al. (2021) concluded that credit managers realize the benefit of disclosing both mandatory and optional information in the bank board of directors' report. (Idewele, 2019; Aifuwa et al., 2019) also concluded that accounting information provided by borrowers has a substantial influence on the lending decision-making process. (Saleh, 2018) found that borrower liabilities negatively influence credit decisions, whereas positive impacts were observed in credit decisions related to cash flow. Conversely, (Boushnak et al., 2018) found that the manager's character, the company's capital size, and the credit bureau report significantly influence credit decisions for small and medium enterprises.

In order to enhance the effectiveness of risk management related to credit and improve the opportunities for individuals and companies to obtain credit, which in turn reflects on maintaining financial stability and encouraging economic growth, it has become imperative to remain current with the laws, regulations, and instructions for banking work and to ensure the protection of all parties. Jordanian Banking Law 28, (2000) was implemented to regulate the financial system's infrastructure. Additionally, Credit Information Law 15, (2010) was implemented to oversee the legislative and legal framework of organizations related to credit information. The Central Bank was tasked with the responsibility of licensing and supervising these companies through the issuance of Credit Information Companies System No. 36 of 2011. (Amended Banking Law 7, 2019; The Approved Credit Information Law 15, 2010; Credit Information Companies System 36, 2011). On the other hand, (Aabed and Sabrina, 2013; Al-Dabbas, 2014) highlighted several fundamental principles that form the basis of the bank's credit decisions. These include:

1. Security: This is the bank's assurance that it will be able to collect all forms of credit that are extended to clients.

2. Profitability: The amount of money the bank makes in return for extending credit.
3. Liquidity: This refers to how quickly and simply a customer's credit request can be converted into cash.
4. Alignment: This refers to managing finances and making effective use of them in order to achieve alignment between the goals of liquidity and profitability.
5. Adherence to credit policy: This pertains to the guidelines and protocols that establish the extent of credit as well as the methods for granting, monitoring, and recovering it.

Al-Dabbas (2014) stated that the credit granting process in banks follows a set of procedures. The bank starts by receiving the credit request from the customer and thoroughly examines it. Then, the bank analyzes the customer's financial data, including the profit and loss statement, income statement, budgets, and cash flow statement. The bank further investigates the customer's background internally and externally, contacting other banks and the Central Bank for information. Next, negotiations take place between the bank and the customer to determine the terms of the contract, such as the credit amount, duration, and cost. The customer is required to provide any guarantees and supporting documents. Finally, after signing the appropriate banking contracts, the credit is implemented, and the bank monitors its repayment by following the loan's amortization schedule meticulously. Saliya (2020) determined that the credit officers and customers are impacted by the evaluation procedures, both formal and informal, as well as the nature of the relationship between bank officers and customers, which can be either personal or functional. These factors influence the decision to grant credit.

Researchers have defined creditworthiness differently; their opinions fell into several groups: the first group linked the concept of creditworthiness to the customer's ethics. The second group linked it to the efficiency in allocating borrowed funds, and the third group linked creditworthiness to the ability to pay. Then another group of researchers united to provide a complex theoretical account of the concept of the borrower's creditworthiness, from which the theory of credit emerged and developed, which in turn provided different interpretations of credit and its role in the economy (Caplinska and Tvaronavičienė, 2020). (Orlovs and Braslins, 2013; Kannon and Sudalaimuthu, 2016) indicated that the idea of creditworthiness refers to the supposed ability to meet the agreed deadlines for repaying credit and accrued interest without negatively affecting the borrower's financial position, financial results, or business entity. Creditworthiness is characterized by various models that have evolved with an increasing number of variables influencing credit decisions. These models include, but are not limited to, (Alammar and Kousayri, 2015; Othman, 2013; Theeb et al., 2012):

1. The three characteristics of credit (3Cs): Character, Capital, Capacity.
2. The four characteristics of credit (4Cs): Capacity, Capital, Conditions, Character.
3. The five characteristics of credit (5Cs): Character, Capacity, Capital, Conditions, Collateral.
4. The five professional characteristics (5Ps): People, Purpose, Payment, Protection, Perspective.
5. PRISM model: Perspective, Payment, Purpose, Safeguards, Management.
6. The six characteristics of credit (6Cs): Character, Capacity, Capital, Collateral, Conditions, Control.
7. The seven characteristics of credit (7Cs): Character, Capability, Capital, Collateral, Circumstances, Coverage, Cash Flow.
8. The eight characteristics of credit (8Cs): Character, Capability, Capital, Collateral, Conditions, Cash Flow, Commitment, Credit.
9. The nine characteristics of credit (9Cs): People, Purpose, Payment, Protection, Perspective, Culture, Compensation, Competency, Closeness.
10. The eighteen characteristics of credit (18Cs): Character/ Culture, Competence, Continuity of Management, Corporate Constitution, Consumer and Completion, Controls Over Cost and Cash, Capacity to Contract, Creditability of Accounts, Cause of Purpose and Term of Loan, Capital Required in Total, Capital Contribution of the Bank, Contribution to Bank Profits, Commitment, Contingencies, Comprehensive Cash Flow Projections, Current Trading, Conditions of Drawdown, Continuing Covenants.

In order to accomplish the study objective, the authors utilized the 5Cs model, which is widely recognized as the most often used method for assessing the creditworthiness of borrowers. The 5Cs model consists of five dimensions: Character, capacity, capital, collateral, and conditions, as supported by previous studies (Alammar and Kousayri, 2015; Semaye, 2018; Salim, 2019; Peprah et al., 2017):

1. Character: The general impression of the expected borrower's character through the credit department's experiences. This consideration studies the general information of the credit applicant in terms of his reputation, integrity, fulfillment of the rights of others, ethical behavior, and the degree of his education, culture, and experience in his field of work, which can be obtained from the bank's records and previous banking relationships with customers, if any. A customer with a strong credit character, good reputation, and a track record of fulfilling obligations is more likely to persuade the bank to grant credit.
2. Capacity: The ability of the credit applicant to pay the installments due and interest on time. The ability to pay is identified through information related to income and how to repay the loan. Assessing the borrower's ability to repay the loan from the cash flows generated by the business activity requires the financial institution in the bank to utilize accounting, legal, and financial expertise. In addition to the need to determine the timing and sufficiency of cash flows and analyze the risks of declining cash flows.
3. Capital: It is the ability of the borrowed capital to repay the loan. Here, the credit grantor studies the funds available to the credit applicant by studying his financial statements. Lending an amount exceeding the proprietor's capital is uncommon.
4. Conditions: Studying the prevailing economic conditions in the country, including factors like growth, unemployment, and inflation, and their correlation with the borrower's business nature helps estimate the success or failure of the project to be financed.

5. Collateral: While cash flows serve as the primary repayment source, the borrower offers guarantees as an additional means of repayment if they fail to repay on time. These assets, pledged by the borrower, can be sold by the bank in the event of repayment default, as per the agreement. They may be in the form of assets (a house) or a pledge by another person (a guarantor) to commit to paying if the borrower fails to do so.

In this regard, the study by Kannon and Sudalaimuthu, (2016) identified key factors affecting creditworthiness, including the borrower's status, performance, personality, relationship with the branch, and the quality of collateral provided. (Mwongeli, 2010) also determined that evaluating creditworthiness aided banks in reducing the likelihood of non-payment for loans extended to small and medium-sized businesses. However, according to the findings of Dower and Potamites (2014), the presence of collateral, such as legal land titles, has a favorable and substantial effect on the ability to obtain loans. (Abu Sheikha, 2016) also determined that the customer's reputation exerts a substantial influence on the choice to provide credit facilities. The study conducted by (Nicholas et al., 2000) found that credit limitations are mostly influenced by the length of the connection between material suppliers and contractors.

However, the study conducted by Samreen and Zaidi (2012) found that the credit scoring model for individuals accurately evaluated the creditworthiness of individual borrowers with a 100% success rate. A study conducted by Aabed and Sabrina (2013) found a statistically significant relationship exists between creditworthiness factors like personality, ability, capital, guarantees, and circumstances, and the credit granting choice. The study conducted by Al-Qudah et al. (2022) found that creditworthiness indicators, have a significant influence on the decision to grant credit in Jordanian commercial banks. Additionally, the study revealed that the quality of accounting information plays a role in modifying the impact of creditworthiness indicators on the credit granting decision. Based on previous studies, the authors developed the first study hypothesis:

There is a positive effect of creditworthiness criteria according to the (5Cs) model on the credit decision.

2.2. The Moderating effect of Intellectual Capital

In order to accurately assess the creditworthiness of borrowers, banks require s highly qualified credit who can gather, analyze, and interpret the financial information of borrowers. This is essential for making informed credit decisions, as any gaps in information introduce risks to the lender, and the level of risk escalates with the loan amount and duration, as noted by Cancino and Escalante (2020). (Feschijan, 2008) demonstrated that when there is a lack of highly skilled personnel, it is more advantageous to engage the services of specialist firms. This underscores the importance of conducting creditworthiness analysis when making credit-related decisions. Therefore, it is crucial to thoroughly evaluate all variables affecting the capital structure, investment decisions, and loan portfolio risks, while also conducting a detailed assessment of the credit history in the credit application (Al-Shaikhly, 2012). (Naseer and Siddiqui, 2021) highlighted that the banking facilities department in banks utilizes 5C metrics to make loan approval decisions based on intellectual capital.

Intellectual capital encompasses the intangible assets possessed by a corporation, which may be created, obtained, assimilated, and utilized in a cohesive manner to attain optimal levels of innovation and efficiency. These assets include expertise, skills, and knowledge. Intellectual capital is widely recognized as a significant catalyst for driving innovation through novel ideas, enhancing competitiveness by leveraging unique capabilities, and improving performance through efficient utilization of resources, and helps measure the company's human, structural, and relational assets of an organization (Bhatt et al., 2023; Inkinen, 2015; Ibarra-Cisneros et al., 2020; Muhammad, 2021).

Bhatt et al. (2023) suggested that to minimize the likelihood of default, the banking industry requires precise and dependable credit measurement. They argue that there is a connection between intellectual capital and credit measurement and evaluation. This connection is based on the idea that a well-equipped intellectual capital can develop and utilize reliable credit evaluation models. These models are critical in determining work quality and customer-oriented behavior, enabling informed decision-making and effective utilization of experience and knowledge.

Yousif (2022) pointed out that there are a set of characteristics of intellectual capital. These include organizational characteristics, which refer to the availability of intellectual capital at all administrative levels. Additionally, creative characteristics signify that intellectual capital must have the ability to innovate and renew. Lastly, professional characteristics indicate that intellectual capital is characterized by cumulative and high professional experiences. Intellectual capital is crucial for banks as it serves as an essential and competitive element, contributing significantly to their success in the current market environment. Creative and innovative ideas that enhance the bank's performance and create a competitive edge are key indicators of intellectual development within administrations. Intellectual capital is not only considered a source of wealth generation in banks but also plays a pivotal role in enhancing financial performance and fostering sustainable growth (Al-Khalaileh, 2020). Pshenychna and Skyba (2017) highlighted that intellectual capital represents knowledge that can be transformed into profits. This conversion is often evaluated based on the intellectual development of employees or their intelligence quotient levels.

Intellectual capital encompasses three main components: human capital, which refers to the ability to perform in various situations and generate tangible and intangible assets; structural capital, which includes loyalty, office concepts, and computer systems; and relational capital, which involves relationships with suppliers and customers (Astawa, 2019; Huang et al., 2010; Mohammadi et al., 2014; Alzuod et al., 2017).

To maximize intellectual capital in banks, the following must be available (Gwizdala, 2010):

- It must be one of the bank's core values.
- Information must be easy and generally available.

- Employees must feel that they are an important member of their bank, be loyal to work, and be able to continuously develop their professional skills.
- Each employee should have access to ongoing professional development opportunities to enhance their skills and knowledge.
- Employee motivation should be channeled towards fostering development and encouraging innovative thinking.
- It is essential to establish a conducive institutional climate that nurtures creativity, fosters innovation, and encourages learning from mistakes.
- Involving all employees in training processes.

Salman (2013) indicated that the elements of intellectual capital consist of:

- Attracting intellectual capital through strategies such as targeted recruitment of experts and high-skilled individuals.
- Creating intellectual capital by developing employee skills, fostering collaboration, and promoting a positive work culture to encourage idea generation.
- Activating intellectual capital by encouraging brainstorming sessions, soliciting employee feedback, and valuing their opinions.
- Maintaining intellectual capital through ongoing training programs, skill development initiatives, financial incentives, and recognition for achievements.
- Caring for customers by providing information to provide services to customers and seeking to retain them.

The process of managing intellectual capital includes the following (Minovski and Jancevska, 2018):

- Analyzing the knowledge present in the organization to better meet its business plans.
- Creating a suitable working climate.
- Identifying potential revenue streams derived from the organization's structural assets and devising targeted marketing strategies for them.
- Enhancing value creation through innovative projects and optimizing existing processes.
- Evaluating potential threats to intellectual property security and implementing a comprehensive strategy to mitigate risks effectively.

In this regard, Ibarra-Cisneros et al. (2020) found a positive and significant impact of human capital, structural capital, and relational capital on organizational performance. Likewise, (Astawa, 2019) found that intellectual capital has a positive and significant impact on the financial performance of banks and a negative and significant impact on credit risk. Similarly, (Muhammad, 2021) found that capital employed, loan loss provision adjusted by intellectual capital, capital adequacy ratio, income, and diversification have a positive relationship with the financial performance of banks. (Bhatt et al., 2023) found a positive relationship between bank performance and credit measurement and assessment. Furthermore, they observed that intellectual capital acts as a mediator in the relationship between credit measurement, assessment, and bank performance.

Mohammadi et al. (2014) concluded that there is a statistically significant relationship between intellectual capital and the financial performance of the organization, and that intellectual capital is greatly affected by relational, human and structural capital. Similarly, (Chiad, 2022) concluded that there is a significant correlation between the components of intellectual capital and financial performance. (Ahmad, 2024) also concluded that the components of intellectual capital affect the company's performance, market value and bankruptcy risk. Among the most important results reached by (Naseer and Siddiqui, 2021) is that the practice of earnings management has a positive and significant effect on the dimensions of intellectual capital, and that human and relational capital have a positive and significant effect on loan performance. (Kamukama et al., 2011) concluded that competitive advantage plays a crucial mediating role between intellectual capital and financial performance, with partial mediation observed between intellectual capital, competitive advantage, and financial performance. (Nawaz et al., 2019) also concluded that intellectual capital has a moderating role between the relationship with bank-specific factors and credit risk in Islamic banks.

Based on the above, the authors developed the second study hypothesis as follows:

There is a positive effect of creditworthiness criteria according to the (5Cs) model on the credit decision in the presence of intellectual capital as a moderating variable.

3. STUDY MODEL AND METHODOLOGY

Figure 1 shows the research model related to creditworthiness criteria according to the (Cs5) model with its dimensions and its impact on the credit decision through the moderating role of intellectual capital.

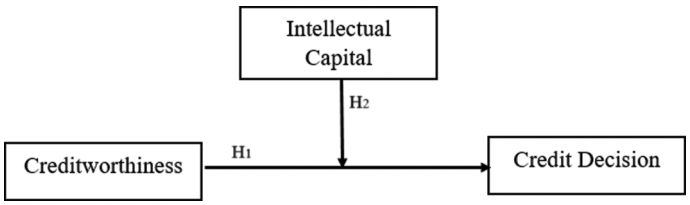
3.1. Method and Design

The authors used the quantitative approach to test the effect of creditworthiness criteria according to the (5Cs) model with all its dimensions on the credit decision in the presence of intellectual capital as a moderating variable. To test the study hypotheses, the authors used the analysis (Macro PROCESS v4.2 by Andrew F. Hayes) within the SPSS v.28 software.

3.2. Study Population and Sample

This study was applied to the branches of Jordanian commercial banks operating in the southern governorates of Jordan, which number 48 branches. The study population consisted of 449 employees (Association of Banks in Jordan, 2022). The study sample, comprising 205 employees, was selected using the

Figure 1: Research model



random sampling method with reference to the random numbers table (Krejcie and Morgan, 1970). Out of the 205 questionnaires distributed, 182 were returned. After filtering, 165 questionnaires, accounting for 80.4%, were deemed valid for analysis.

3.3. Measurements

The authors developed the questionnaire based on a set of previous studies such as (Aabed and Sabrina, 2013; Al-Shaikhly, 2012; Al-Qudah et al., 2022; Issa, 2004; Kandalaft, 2018; Sharaiyah, 2019; Al-Dabbas, 2014). The questionnaire consisted of four sections: The first section includes the demographic data of the respondents. The second section consists of questions related to creditworthiness. These questions cover different dimensions: character, measured by questions (1-4); capacity, measured by questions (5-8); capital, measured by questions (9-12); conditions, measured by questions (13-16); and collateral, measured by questions (17-20). The third section focuses on the modified variable of intellectual capital, measured by questions (21-29), while the fourth section delves into the dependent variable, the credit decision, measured by questions (30-38). In addition, the study relied on the five-point Likert scale to classify the answers of the study sample members, ranging from (strongly agree, agree, neutral, disagree, strongly disagree). Table 1 shows the demographic characteristics of the study sample.

3.4. Validity and Reliability

After presenting the questionnaire to specialists in the academic and banking fields and incorporating all their notes and suggestions, it was finalized and included in Appendix No. 1. Thus, the questionnaire became valid for the purposes of statistical analysis.

On the other hand, Table 2 indicates the values of the Cronbach's alpha test to ensure the extent of internal consistency between the questionnaire paragraphs, where the values are acceptable if they are >70% (Hair et al., 2010). The study variables demonstrated internal consistency with Cronbach's alpha values ranging from 0.756 to 0.843.

4. DATA ANALYSIS

4.1. Descriptive Statistic

Table 3 displays the arithmetic mean and general standard deviation values of the study variables. Evidently, the participants' responses indicate that their banks rank high in terms of creditworthiness across all five dimensions, including credit decision-making, as well as in terms of intellectual capital.

4.2. Tolerance and VIF Analysis

Table 4 displays the findings from the tolerance and Variance Inflation Factor (VIF) conducted on the research variables. It is evident from this information that all tolerance values exceeded 0.2 and were <1, indicating the absence of a multicollinearity problem among the study variables. Furthermore, all (VIF) values were below 5, which is within the allowed range for this test. Therefore, the study results can be considered reliable for the purpose of assessing and testing hypotheses.

Table 1: Demographic characteristics of the study sample

Variables	Category	Frequency	Percentage
Gender	Male	109	66.1
	Female	56	33.9
	Total	165	100
Age	30-20	34	20.6
	31-40	66	40.0
	41-50	39	23.6
	Over 50 years old	26	15.8
	Total	165	100
Education level	Diploma or Less	16	9.7
	Bachelor	112	67.9
	Master	37	22.4
	PHD	0	0
	Total	165	100
Experience	5 years or Less	24	14.5
	6-10	47	28.5
	11-15	68	41.2
	15 years and above	26	15.8
	Total	165	100

Sources: SPSS Output

Table 2: Reliability analysis

Variables	N of items	Cronbach's alpha
Independent variable: Creditworthiness		
Character	4	0.830
Capacity	4	0.775
Capital	4	0.843
Conditions	4	0.791
Collateral	4	0.777
Creditworthiness	20	0.756
Dependent variable		
Credit Decision	9	0.771
Moderate variable		
Intellectual Capital	9	0.789

Source: SPSS Output

4.3. Person Correlation Matrix

Table 5 shows the analysis of the Pearson correlation matrix between the study variables. From it, we see that the correlation coefficients vary in terms of their strength. The creditworthiness criteria in its dimensions are directly related to the credit decision with a value of 0.638. We also notice the existence of a direct relationship for the modified variable, intellectual capital, with creditworthiness and the credit decision with a value of 0.513 and 0.589, respectively. It is clear from the values of the correlation coefficients that they are <80%.

4.4. Means, Standard Deviations and Relative Importance of Questionnaire Items

4.4.1. Independent variable (creditworthiness)

Table 6 shows the arithmetic means and standard deviations of the dimensions of the independent variable creditworthiness, represented by (Character, Capacity, capital, Conditions, Collateral) and the scale as a whole.

The table above clearly indicates that the creditworthiness dimensions ranged from 3.731 to 3.971. The personality variable had the highest arithmetic mean of 3.971, indicating a very strong creditworthiness dimension. Similarly, the capital variable had the lowest arithmetic mean of 3.731, also high degree. The overall arithmetic mean for creditworthiness was 3.875, a high degree.

Table 3: Mean, standard deviations, and level

Variables	No. of Items	General arithmetic mean	General S.D	Level
Independent variable: Creditworthiness				
Character	4	3.971	0.765	High
Capacity	4	3.900	0.681	High
Capital	4	3.739	0.659	High
Conditions	4	3.813	0.635	High
Collateral	4	3.960	0.631	High
Creditworthiness	20	3.877	0.422	High
Dependent variable				
Credit decision	9	3.978	0.619	High
Moderate Variable				
Intellectual capital	9	3.752	0.595	High

Sources: SPSS Output
Means description (1-2.33 low, 2.34-3.67 moderate, 3.68-5 high)

Table 4: Tolerance and VIF analysis

Variables	Tolerance	VIF
Independent variable: Creditworthiness		
Character	0.867	1.153
Capacity	0.478	2.093
Capital	0.900	1.111
Conditions	0.538	1.858
Collateral	0.435	2.298
Dependent variable		
Credit decision	0.594	1.684
Moderate variable		
Intellectual capital	0.396	2.525

Sources: SPSS Output

Table 5: Person correlation matrix

Variables	Creditworthiness	Credit decision	Intellectual capital
Creditworthiness	1		
Credit decision	0.638**	1	
Intellectual capital	0.513**	0.589**	1

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

Sources: SPSS Output

Table 6: Arithmetic means and standard deviations of the "creditworthiness" dimensions and the scale as a whole

Rate	No.	Variables	Arithmetic mean	Standard deviation	Level
1	1	Character	3.971	0.765	High
2	5	Collateral	3.960	0.631	High
3	2	Capacity	3.900	0.681	High
4	4	Conditions	3.813	0.635	High
5	3	Capital	3.731	0.659	High
		Creditworthiness	3.875		High

Sources: SPSS Output

4.4.2. Moderate variable (intellectual capital)

Table 7 shows the arithmetic means and standard deviations of the paragraphs of the modified variable represented by intellectual capital and the scale as a whole, as follows:

It is clear from the table above that the highest arithmetic mean was for paragraph No. (27) with an arithmetic mean of (3.97) and a high degree. In last place was paragraph No. (23) with an arithmetic mean of (3.39) and a medium degree. While the arithmetic mean for the variable as a whole was (3.752) and a high degree.

4.4.3. Dependent variable (credit decision)

Table 8 shows the arithmetic means and standard deviations of the paragraphs of the dependent variable, which is the credit decision, and the scale as a whole, as follows:

The table above indicates that paragraph No. (34) achieved the highest arithmetic mean, scoring (4.22) with a high degree. Conversely, paragraph No. (30) had the lowest arithmetic mean, scoring (3.75) with a high degree. The overall arithmetic mean for the scale was 3.978, with a high degree.

5. TEST HYPOTHESIS

To test the study hypotheses, the first model was used within the Macro PROCESS v4.2 analyses by Andrew F. Hayes in SPSS v.28 software (Hayes, 2022). The model used in the analysis is a simple moderating model with three main variables: The independent variable (X) representing creditworthiness in all its dimensions, the dependent variable (Y) representing the credit decision, and the modified variable (M) indicating the intellectual capital of a sample of 165 participants, Appendix 2 explains in detail the Analysis Outputs (Macro PROCESS v4.2 by Andrew F. Hayes).

Table 9 presents the results of the multiple regression analysis conducted to examine the study hypotheses. The analysis reveals that the R^2 value (0.459) indicates that 45.9% of the variation in the credit decision can be accounted for by creditworthiness, intellectual capital, and their interaction. The coefficient R (0.678) signifies a positive correlation between intellectual capital and both creditworthiness and the credit decision. The F value also achieved a significance level of <0.05, reaching 45.534.

Table 10 shows the results of a multiple regression analysis, indicating the interaction between the independent variable (creditworthiness in all its dimensions) and the moderating variable (intellectual capital), with a regression coefficient of (0.397) and a t value of 3.030, significant at the (0.003) level, which is <0.05. It is possible to say that there is an interaction between the independent variable and the moderating variable because the confidence interval's lower limit is (0.138) and upper limit is (0.656), and zero does not cut these two values. As a result, intellectual capital governs the relationship between them. In addition to

Table 7: Arithmetic means and standard deviations of the "Intellectual Capital" and the scale as a whole

Rate	No.	Paragraph	Mean	Standard deviation	Level
1	27	Bank employees create new ideas.	3.97	0.879	High
2	24	Bank employees work as a team.	3.97	0.933	High
3	22	The bank seeks to advance employee knowledge.	3.87	0.880	High
4	28	Employees implement new ideas	3.78	0.776	High
5	25	Bank employees work as a team.	3.78	1.044	High
6	26	Training boosts employee productivity.	3.70	0.940	High
7	21	Bank employees are skilled.	3.70	1.055	High
8	29	The bank hires professionals in research and development.	3.62	0.807	Moderate
9	23	The bank seeks to improve employee skills.	3.39	0.997	Moderate
	Intellectual Capital		3.752		High

Sources: SPSS Output

Table 8: Arithmetic means and standard deviations of the "Credit Decision" and the scale as a whole

Rate	No.	Paragraph	Mean	Standard deviation	Level
1	34	The type of credit is verified to be within the purposes financed by the bank.	4.22	0.870	High
2	35	All supporting documents are submitted to the application to ensure the soundness of the credit applicant's financial position.	4.07	0.970	High
3	36	A decision is made to grant credit according to the economic and security conditions.	4.04	0.814	High
4	38	Financial analysis methods such as SWAT or Benchmarking are used when making a credit decision	4.01	0.841	High
5	31	The credit applicant is interviewed to determine the purpose of the credit.	4.01	0.876	High
6	33	The credit ceiling provided by the customer is not exceeded.	3.99	0.917	High
7	32	The credit application is submitted to the management according to the credit ceiling specified by the customer.	3.87	0.905	High
8	37	It is verified that the credit applicant adheres to the principles of transparency and disclosure in his transactions and financial data to obtain facilities.	3.84	0.943	High
9	30	The extent to which the purpose of the credit matches the rules of banking is verified.	3.75	0.768	High
	Credit Decision		3.978		High

Sources: SPSS Output

Table 9: Model summary

Model	R	R^2	F	df1	df2	p
1	0.678	0.459	45.534	3.000	161.000	0.000

Sources: SPSS Output

Table 10: Summary of moderated regression analysis predicting credit decision

Variables	Coeff	SE	t	P	95% CI	
					Low	Up
Constant	3.932	0.039	100.877	0.000	3.855	4.009
Creditworthiness (A)	0.880	0.087	10.073	0.000	0.708	1.053
Intellectual capital (B)	0.110	0.032	3.422	0.001	0.047	0.174
Int- A * B	0.397	0.131	3.030	0.003	0.138	0.656

Sources: SPSS Output

creditworthiness and intellectual capital has a direct positive effect on credit decisions with a significance level of <0.05.

While it is clear from Table 11 that intellectual capital has modified the value of R^2, as it increased by (0.031), and the value of F also reached (9.182), which is significant at a significance level of <0.05.

Table 11 displays the conditional effects of the independent variable creditworthiness across all its dimensions. This means that there are three predictions for the modified variable (intellectual capital):

Table 11: Test of highest order unconditional interaction

Variables	R2-chng	F	df1	df2	P
Int- A * B	0.031	9.182	1.000	161.000	0.003

Sources: SPSS Output

The first prediction is a value that is one standard deviation below the average, specifically −1.225. In other words, a deviation that is one unit below the average suggests a low level of support for intellectual capital, with an effect value of 0.394 and a statistical significance level of 0.034, which is lower than the threshold of 0.05.

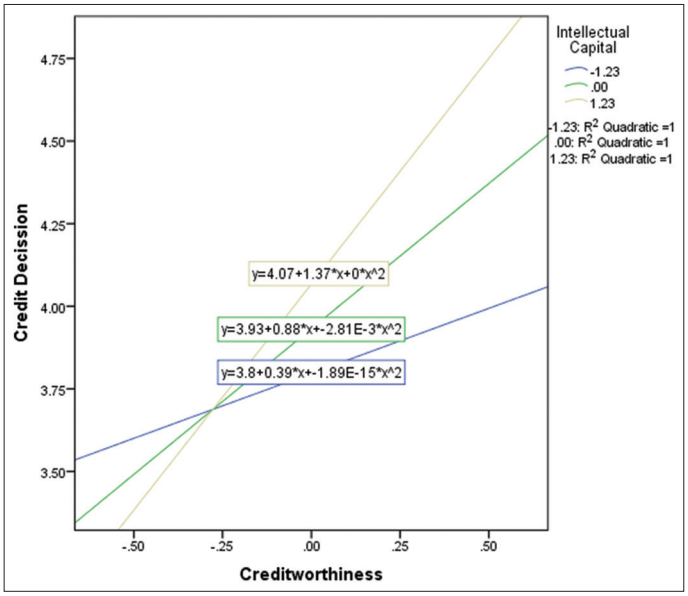
The second prediction has an average of 0.000. The mean value of 0.000 suggests moderate endorsement for intellectual capital, with a coefficient of 0.880 and a significance level of 0.000, which is below the threshold of 0.05.

The third prediction is that the value will be 1.225, which is one standard deviation higher than the average. With a value of 1.366 and a significance level of 0.000 (<0.05), a deviation of one above the average indicates strong support for intellectual capital.

Therefore, the greater the support of intellectual capital, the greater the relationship between creditworthiness and credit decisions.

The data presented in Figure 2 demonstrates a more robust relationship between creditworthiness and credit decision for clients who received substantial intellectual capital support.

Figure 2: Conditional Effects



Sources: SPSS Output

In contrast, the relationship is less pronounced for clients who received limited intellectual capital support. The figure corroborates the findings presented in Table 12 by displaying the conditional effect values.

Based on the previous analysis, the first study hypothesis is accepted, which is that there is a positive impact of creditworthiness criteria according to the 5Cs model on the credit decision. The second study hypothesis is also accepted, which is that there is a positive impact of creditworthiness criteria according to the (5Cs) model on the credit decision in the presence of intellectual capital as a moderating variable.

6. RESULTS AND DISCUSSION

The results of the current study indicate that creditworthiness in all its dimensions (character, capacity, capital, conditions, and collateral) has a positive impact on the credit decision. This result is consistent with a number of studies, such as Kannon and Sudalaimuthu (2016); Dower and Potamites (2014); Abu Sheikha (2016); Aabed and Sabrina (2013), and Al-Qudah et al. (2022). This finding highlights that Jordanian commercial banks depend on creditworthiness criteria across all dimensions when making credit decisions for both individual and corporate clients, with the importance of each dimension varying. Specifically, the assessment of corporate creditworthiness should be more comprehensive, taking into account the level of development of the company and the specificity of its activity to achieve the greatest level of efficiency in particular, evaluating corporate creditworthiness should involve a comprehensive analysis considering the company's development stage and the nature of its operations to enhance efficiency (Makhazhanova et al., 2022). This underscores the significance of assessing creditworthiness indicators of loan applicants and determining the suitability of granting them a loan (Dastoori and Mansouri, 2013). In other words, the significance of each of the five creditworthiness dimensions varies based on

Table 12: Conditional effects of creditworthiness

Intellectual capital	Effect	SE	t	P	95% CI	
					Low	Up
−1 SD=−1.225	0.394	0.184	2.136	0.034	0.030	0.758
Mean=0.000	0.880	0.087	10.073	0.000	0.708	1.053
+ 1 SD=1.225	1.366	0.181	7.540	0.000	1.009	1.724

Sources: SPSS Output

the customer applying for credit. For certain clients, collateral could hold the highest significance, whereas others may prioritize capital or capacity, showcasing the variability in the importance of creditworthiness dimensions. This underscores the necessity of utilizing a wide range of criteria and customizing them to the client's specific situation to minimize the likelihood of default.

The results showed that intellectual capital played a role in modifying the effect of creditworthiness on the credit decision, and this result is partially consistent with the study (Nawaz et al., 2019; Bhatt et al., 2023). This result indicates that the more Jordanian commercial banks rely on intellectual capital, the more it helps in attracting more new borrowing customers and thus increasing profits. In this regard, many researchers (Cancino and Escalante, 2020; Naseer and Siddiqui, 2021) confirmed that the credit facilities department in banks uses the (5Cs) model criteria of creditworthiness to approve loans based on intellectual capital. Therefore, highly qualified credit employees are essential for collecting, analyzing, and interpreting borrower data, particularly financial information, to ensure accurate credit decisions. This is because investing in intellectual capital not only strengthens relationships with customers but also attracts new customers while retaining existing ones. Furthermore, focusing on intellectual capital improves risk prediction by accurately analyzing borrowers' financial positions, resulting in lower default rates.

The integration of creditworthiness criteria based on the (5Cs) model with intellectual capital provides the Jordanian commercial banking sector with a robust tool for making accurate credit decisions. This enables the sector to mitigate risks, enhance its performance, and maximize its profits, this ultimately leads to a more stable and sustainable financial system.

7. RECOMMENDATION AND LIMITATION

The study recommends focusing on all dimensions of creditworthiness, especially capital, to ensure stability, ownership, and sustainability during credit granting, repayment, and interest payment.

The study suggests conducting advanced training courses to enhance innovation among employees for making accurate credit decisions based on customer creditworthiness criteria.

Additionally, the study suggests leveraging modern technological methods in conjunction with intellectual capital to verify customer creditworthiness indicators and make accurate credit decisions. The study also recommends that banks prioritize investing in employee training programs to enhance their ability to assess credit risks accurately.

The study recommends that researchers and academics conduct further research on creditworthiness, credit decision, and intellectual capital. They can explore other models like the (8Cs, 7Cs) model and apply them to various environments. Additionally, they should compare these models in different contexts, including commercial and Islamic banks in the Jordanian environment.

The study's results are specific to the branches of commercial banks in the southern governorates, limiting their generalizability to this sector only. Furthermore, the absence of prior studies utilizing the same moderating variable underscores the uniqueness and importance of this research gap.

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APPENDIX 1: STUDY QUESTIONNAIRE

Part 1: Demographic Information

Variables	Category
Gender	Male
	Female
Age	30-20
	31-40
	41-50
	Over 50 years old
Education Level	Diploma or Less
	Bachelor
	Master
	PHD
Experience	5 years or less
	6-10
	11-15
	15 years and above

Part 2: Creditworthiness

No.	Paragraphs	strongly disagree	disagree	Neutral	Agree	strongly agree
	Character					
1	Before granting credit, the bank considers the client's ethics, behavior, and reputation.					
2	The bank evaluates the credit applicant's project management to determine approval or rejection.					
3	The bank considers legal capability before lending.					
4	Banks consider work position and client culture when giving credit					
	Capacity					
5	Bank management determines funding sources that demonstrate client repayment potential.					
6	Through experts and specialists, the bank evaluates project economic feasibility.					
7	Client's technical and administrative efficiency and financial soundness are ensured by the bank.					
8	The bank evaluates the customer's creditworthiness using financial statements.					
	Capital					
9	Credit is granted contingent upon the client's capital.					
10	The client is obligated to preserve liquidity in order to address emergency situations.					
11	The client's financing sources must be identified prior to credit approval.					
12	The financial ratios of the client's investments are analyzes by the bank.					
	Conditions					
13	The bank bases interest rates on economic conditions.					
14	Economic conditions affect credit application approval.					
15	The bank bases credit size and type on the country's credit policy.					
16	Banks predict economic conditions and their impact on client activity.					
	Collateral					
17	Bank management sets credit limits based on customer mortgages and guarantees.					
18	The bank checks loan applicants' guarantees for validity.					
19	The bank requests all credit-related documents.					
20	The bank checks the guarantees' value and credit limit coverage.					
Part 3: Intellectual Capital						
21	Bank employees are skilled.					
22	The bank seeks to advance employee knowledge.					
23	The bank seeks to improve employee skills.					
24	Bank employees work as a team.					
25	Bank employees seek to gain experience from their work.					
26	Training boosts employee productivity.					
27	Bank employees create new ideas.					
28	Employees implement new ideas					
29	The bank hires professionals in research and development.					
Part 4: Credit Decision						
30	The credit applicant is interviewed to determine the purpose of the credit.					
31	The extent to which the purpose of the credit matches the rules of banking is verified.					
32	The credit application is submitted to the management according to the credit ceiling specified by the customer.					
33	The credit ceiling provided by the customer is not exceeded.					
34	The type of credit is verified to be within the purposes financed by the bank.					
35	All supporting documents are submitted to the application to ensure the soundness of the credit applicant's financial position.					
36	A decision is made to grant credit according to the economic and security conditions.					
37	It is verified that the credit applicant adheres to the principles of transparency and disclosure in his transactions and financial data to obtain facilities.					
38	Financial analysis methods such as SWAT or Benchmarking are used when making a credit decision					

Appendix 2: Analysis Outputs (Macro PROCESS v4.2 by Andrew F. Hayes)

Run MATRIX procedure:
********** PROCESS Procedure for SPSS Version 4.2 beta **********
Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2022). www.guilford.com/p/hayes3
Model : 1
Y: Y
X: X
W: M
Sample
Size: 165
OUTCOME VARIABLE
Y

Model Summary

R	R-sq	MSE	F	df1	df2	P
0.678	0.459	0.211	45.534	3.000	161.000	0.000

Model

	coeff	se	t	p	LLCI	ULCI
constant	3.932	0.039	100.877	0.000	3.855	4.009
X	0.880	0.087	10.073	0.000	0.708	1.053
M	0.110	0.032	3.422	0.001	0.047	0.174
Int_1	0.397	0.131	3.030	0.003	0.138	0.656

Product terms key:
Int_1: X x M
Test (s) of highest order unconditional interaction (s):

	R2-chng	F	df1	df2	P
X*W	0.031	9.182	1.000	161.000	003

Focal predict: X (X)
Mod var: M (W)
Conditional effects of the focal predictor at values of the moderator (s):

M	Effect	se	t	p	ULCI
−1.225	0.394	0.184	2.136	0.034	0.758
0.000	0.880	0.087	10.073	0.000	1.053
1.225	1.366	0.181	7.540	0.000	1.724

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.
DATA LIST FREE

X	M	Y
BEGIN DATA.		
−0.422	−1.225	3.631
0.000	−1.225	3.797
0.422	−1.225	3.963
−0.422	0.000	3.560
0.000	0.000	3.932
0.422	0.000	4.303
−0.422	1.225	3.490
0.000	1.225	4.067
0.422	1.225	4.644

END DATA.
GRAPH/SCATTERPLOT=
X WITH Y BY M.
********** ANALYSIS NOTES AND ERRORS **********
Level of confidence for all confidence intervals in output:
95.0000
W values in conditional tables are the mean and±SD from the mean.
The following variables were mean centered prior to analysis:
M X
------ END MATRIX -----