

THE EFFECTS OF BUSINESS INTELLIGENCE AND THE KNOWLEDGE MANAGEMENT SYSTEM ON ORGANIZATIONAL PERFORMANCE (CASE STUDY OF BANK OF GEORGIA, GEORGIA)

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Abstract

A major objective of this study was to examine the relationship between knowledge management in the Bank of Georgia (BOG) operations, including knowledge generation, knowledge sharing, knowledge utilization, and business intelligence, as well as OLAP and data mining to assess the performance of organizations.

The sample for the research received a total of 126 questionnaires. The study's assumptions were tested using a multiple regression analysis. The research finds a link between knowledge management practices and organizational performance that is favorable. Furthermore, the elements of business intelligence had a favorable impact on how well the organization is performing and how the clients and customers are satisfied. The Georgian financial industry especially Bank of Georgia (BOG) will be significantly impacted by the findings.

Key words: *Knowledge Management, Business Intelligence, Organizational Performance*

Introduction

Companies throughout the world have come to the realization that in today's business environment, characterized by increasing competition, shifting customer needs, globalization,

government regulations, and other environmental factors, it is essential to achieve high-quality data and information in a timely manner in order to perform better. To meet this challenge, companies are using knowledge management technologies to research, organize, and extract value from a variety of data sources, including business documents, databases, e-mails, and daily and monthly reports (Moghimi, 2022., Arefin et al., 2018; Farzaneh et al., 2018; Abualloush et al., 2017; Chien et al., 2015). However, due to the sheer volume and complexity of data, many organizations face significant challenges in analyzing a vast amount of relevant information. In some situations, managers might not have timely access to data, which forces them to depend on their own judgment or domain knowledge. However, this strategy may lead to decreased efficiency and sloppy decision-making. (Ochara & Mokwena, 2016; Rostami, 2014; Moghimi and Abramishvili 2021). Organizations must be able to quickly access pertinent information and incorporate it into their decision-making processes in order to meet these challenges. In order to analyze the vast amounts of data in companies and provide the appropriate information for decision-making processes, business intelligence systems (BIS) have become necessary. (Scholtz et al., 2018).

Information management systems are essential for allowing organizations to access, examine, and share data and knowledge, which enables them to better comprehend, manage, and perform their operations. (Moghimi, 2022; Awuah & Reinert, 2012). The importance of technology and information systems has grown along with the role of knowledge, which is now seen as a fundamental component of wealth based on creativity, expertise, skills, and the capacity of individuals to produce new knowledge. (Moghimi and Dastouri, 2022; Abualoush et al., 2018). Individuals' knowledge, which is created and shared based on their experience, values, beliefs, and abilities, has emerged as one of the most potent and significant components in managerial and knowledge-creating processes. Knowledge has recently surpassed material resources as one of the most important strategic tools for creating a competitive advantage. (Sweis et al., 2011). For organizations to support decision-making processes, foster innovation, accomplish strategic goals, increase value, improve performance, and ultimately have a positive effect through competitive advantage, knowledge must be produced, prepared, and applied. (Shannak et al., 2012). The performance, effectiveness, and efficiency of organizations in carrying out their duties and accomplishing their objectives are also becoming increasingly important.

Organizations are constantly looking for ways to better their plans so they can take advantage of

market opportunities by efficiently using the resources at hand. (Obeidat et al., 2016). An organization's performance is influenced by both tangible and intangible resources, including the efficient management of knowledge, technological advancement, and the adoption of cutting-edge data collection and analysis systems. (Obeidat et al., 2017). The success of organizations in attaining superior performance has been linked to their capacity to exploit knowledge, develop new knowledge, and generate new knowledge. (Abualoush et al., 2018)

Literature review

Knowledge Management

This study's main goal is to examine the interrelationship and mutual effects of business intelligence tools and knowledge management procedures. The research also aims to investigate how business intelligence systems and knowledge management procedures can improve organizational performance, including both financial and non-financial performance metrics. According to Drucker, knowledge industries already exist in the world, with concepts serving as their products, data serving as their raw materials, and human minds serving as their tools. (Drucker, 1994). The ability to effectively complete tasks and direct activities toward achieving goals is a real asset for both people and organizations. Knowledge is also a source of excellence for organizations and the cornerstone of their success. In addition to people resources and capital, knowledge has emerged as one of the most essential production factors in contemporary organizations. These definitions emphasize the significance of knowledge management as a procedure that allows businesses to make use of the knowledge they already have and transform it into decisions that boost productivity and success. Development of policies and procedures that promote the production, exchange, and application of knowledge across a company constitutes knowledge management. This includes the application of policies and procedures to promote knowledge sharing and collaboration among workers, as well as the use of technology to record and store knowledge. In the end, efficient information management can result in better judgment, more creative thinking, and improved organizational performance. It is significant to note that while the definition and methods of knowledge management may differ among researchers, the common objective is to enhance the organization's success overall by utilizing its knowledge base. Creating new knowledge, sharing current knowledge, and using knowledge to support decision-making and problem-solving processes are all common components of knowledge

management processes (Moghimi, 2023). These procedures are designed to help the organization accomplish its strategic objectives, boost its competitive edge, and adjust to the shifting business environment. (Al-Shanti, 2017; Seleim & Khalil, 2011).

Knowledge creation

Knowledge creation is the process of combining explicit knowledge to create new explicit knowledge, such as bringing together various pieces of data to develop a fresh viewpoint on a specific topic. (Shujahat et al., 2019; Ranjbarfard et al., 2014). The process of converting explicit knowledge into implicit knowledge, such as applying recently learned information to a person's job process, is called internalization. (Al-Ti, 2016; Ranjbarfard et al., 2014). Organizations must continuously develop new concepts, goods, and services in order to maintain a competitive edge in their respective markets.

Knowledge sharing

Since knowledge sharing enables the efficient use and application of knowledge assets within a company, it is essential to successful knowledge management. People exchange both implicit and explicit knowledge during the process of knowledge sharing, which results in the creation of new knowledge. The dissemination and transfer of knowledge among employees are aided by a number of organizational processes and methods, including training, informal gatherings, best practices, knowledge bases, electronic communication tools, and the organization's culture. Knowledge cannot be developed or generated, and it will stay static in employees' minds, without active involvement and access to it. As a result, sharing knowledge is an essential procedure for fostering an organization's expansion and development.

Knowledge utilization

Any organization's knowledge management initiative must effectively use knowledge to be successful. Utilizing knowledge involves putting it to use in the workplace and turning it into useful applications that help solve issues and further organizational goals. The company should grant ample authority and freedom to use knowledge. The amount of knowledge used in proportion to what is stored determines the effectiveness of the knowledge management program. Knowledge should be used in organizational processes and activities like decision-

making, quality control of products and services, and human resource management in order to be used effectively.

Business Intelligence (BI)

Organizations rely on business intelligence (BI) systems to support strategic, tactical, and operational decisions by offering important data insights and analysis. These systems use a variety of methodologies, processes, and computer tools to gather and analyze data from various sources, turn it into information that is helpful, and produce intelligence that can be used to take action.

Better access to precise information, quicker and more accurate decision-making, and better support for organizational and strategic goals are all advantages of BI. BI systems can be used to gather and examine data from inside and outside the company, spot patterns and trends, and offer perceptions into how well the company is performing. Depending on the requirements of the organization, a BI system's technical components can vary, but usually include data repositories, data analysis tools, dashboards, and user interfaces. Organizations that effectively use these systems can gain a competitive edge in their respective markets as BI systems are constantly evolving to keep up with changes in the business environment.

Data Warehouse

Data warehouses offer an integrated and unified view of data across the company, supporting business intelligence (BI) and decision-making processes. The information is segmented into categories for research and query, including sales, inventory, and customer information. The data warehouse can also be used for advanced analytics, such as predictive modeling and forecasting, and data mining, which is the process of identifying patterns and connections in huge data sets. (Wang & Wang, 2008).

Improved data quality, consistency, and accuracy, as well as increased data accessibility and usability for decision-making purposes, are the primary advantages of data warehouses.

Data warehouses also allow for faster and more efficient reporting, analysis, and decision-making processes, as well as better collaboration among different departments and stakeholders within the organization. Moreover, data warehouses can help organizations to identify and respond to business opportunities and challenges, as well as to improve their overall performance

and competitiveness (Inmon, 2003; Aloush, 2015).

Online analytical processing (OLAP)

Data warehouses offer an integrated and unified view of data across the company, supporting business intelligence (BI) and decision-making processes. The information is segmented into categories for research and query, including sales, inventory, and customer information. The data warehouse can also be used for advanced analytics, such as predictive modeling and forecasting, and data mining, which is the process of identifying patterns and connections in huge data sets. (Wang & Wang, 2008).

Improved data quality, consistency, and accuracy, as well as increased data accessibility and usability for decision-making purposes, are the primary advantages of data warehouses. HOLAP combines the benefits of both ROLAP and MOLAP by using relational databases for storing detailed data and multidimensional cubes for aggregating and summarizing data (Laxmaiah & Govardhan, 2013).

Overall, OLAP is an important tool for decision support and business intelligence, and helps organizations to gain insights and make better decisions based on their data.

Data Mining

The process of extracting useful information from huge and complex databases is known as data mining, and it is a complicated one. This data can be used to enhance business procedures, spot trends, forecast outcomes, and assist organizational decision-making at various levels.

Clustering, classification, regression, association rule mining, and neural networks are a few typical data mining methods. Data mining can be used in a variety of industries, including marketing, healthcare, banking, and education. The quality and significance of the data, as well as the team's experience in choosing the best techniques and interpreting the findings, all play a significant role in how well data mining turns out.

Organizational Performance

Organizations strive to improve their performance by utilizing both physical and intangible resources to accomplish their objectives, making organizational performance a crucial variable and dimension in management research and business. The ability of an organization to

successfully execute strategies and accomplish its goals is a key factor in determining its success, and growth requires continuous performance. Performance is a broad and comprehensive concept that encompasses various aspects such as work quality, employee effectiveness in decision making, process development, employee-manager relationships, product and service provision, innovation, market share, staff skills, and problem-solving capabilities. Actual results are compared to desired results to determine how well an organization is performing. It is also evaluated on how well it can acquire and coordinate various resources to meet its objectives. Organizations need performance measurement systems because they give information on the caliber of internal processes, which helps with strategic planning and evaluating the accomplishment of corporate objectives. In Georgian banking and other financial institutions in the country, studies have focused on two major dimensions of organizational performance: financial score cards, which is measured by using financial indicators, and operational performance, which includes product quality, customer satisfaction, employee satisfaction, timeliness of delivery, productivity, efficiency, market share, strategic goal accomplishment, workforce development, and enhancement. Additionally, this research measures organizational performance using these factors.

Research theoretical model and hypotheses development

KM process and organization performance

Successful knowledge management is a challenge for many organizations, and the results it generates can be used to gauge how successful knowledge management is. Due to its potential to influence competitive advantage and innovation, knowledge is a crucial component of organizational performance. Organizations must use knowledge management processes like creation, transformation, dissemination, participation, storage, selection, and processing to accomplish positivity in the organizing environment. Since knowledge needs to be transferred and shared in order to be understood, sharing knowledge is essential for successfully using knowledge assets. Gaining and sustaining a competitive advantage requires access to both explicit and implicit information. Sharing information encourages creativity and invention, improves the caliber of goods and services, increases customer responsiveness, and boosts total organizational performance. Practices such as training and development programs, IT systems, reports, official documents, and multifunctional teams are all examples of knowledge integration

across a wide spectrum of environments.

BI and Organizational Performance

Business intelligence (BI) is a broad framework that includes numerous procedures, instruments, and methods for turning data into knowledge and enhancing a company. Managers can enhance business effectiveness and make better decisions by using the information obtained from BI. An efficient BI system helps decision-makers' knowledge and mental models. Additionally, BI goes beyond policy or database sharing; it also takes into account employee participation and experience, and it can be seen as a powerful catalyst for knowledge sharing among employees in the company. BI systems assist businesses in storing, analyzing, and retrieving massive quantities of information while also having favorable regulatory effects. The performance of the company can be enhanced by using this information to learn more about rival companies and cutting-edge technologies, develop new products, or enhance existing ones. By identifying current marketing initiatives and potential competitors, coming up with effective strategies, and learning more about the competitive landscape, BI can give businesses an edge over their rivals in today's cutthroat business climate. The theoretical model shown in Figure 1 illustrates how knowledge management procedures and organizational success are related. The model also illustrates the link between business intelligence and organizational success.

Independent Variable Dependent Variable

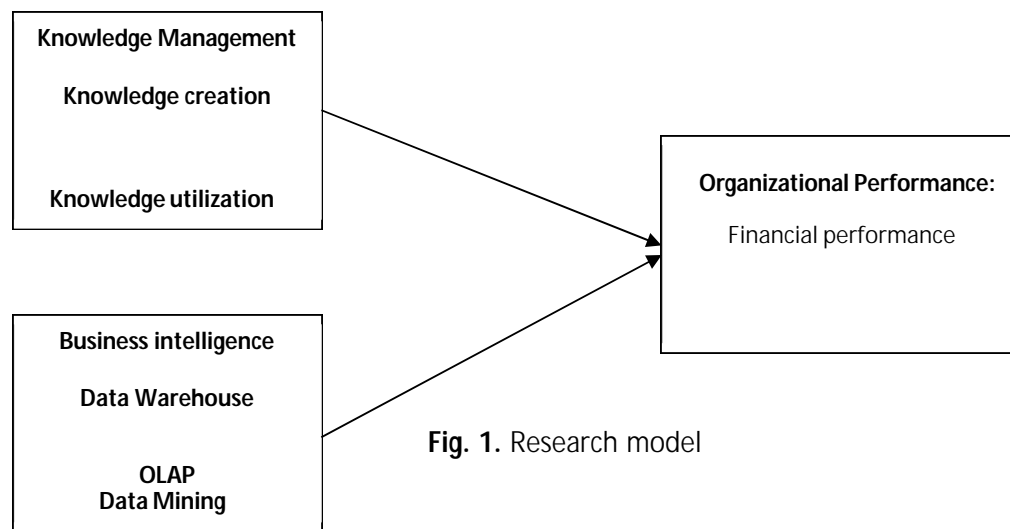


Fig. 1. Research model

Methodology

Population and Sample

Bank of Georgia Group PLC is a UK incorporated holding company and biggest state bank in the country with 1.7 million active users. The group comprises a retail banking and payments business (online and offline), and a corporate banking and investment banking business, both operating in Georgia. The company is listed on the London Stock Exchange and is a constituent of the FTSE 250 Index.

The bank's branches in the city of Tbilisi were 175. The “Research and Development Division” in contract with “Royal Business Consultancy LTD” sent the questionnaire to different branches in all parts of the city on random base and managed to receive 145 questionnaires that were filled by at all administrative levels. After the questionnaires were gathered, it was discovered that 126 valid questionnaires (86.8% of the total disseminated questionnaires) were appropriate for statistical analysis.

Respondents Demographic Profile

According to the demographics shown in Figure 2, a disproportionately greater proportion of respondents were male than female. 68.3% of respondents (88.6%) worked in operational administration, and 88.6% had bachelor's degrees. 75.6% of respondents had between five and fewer than ten years of expertise. (the items with zero percent contributions were excluded here)

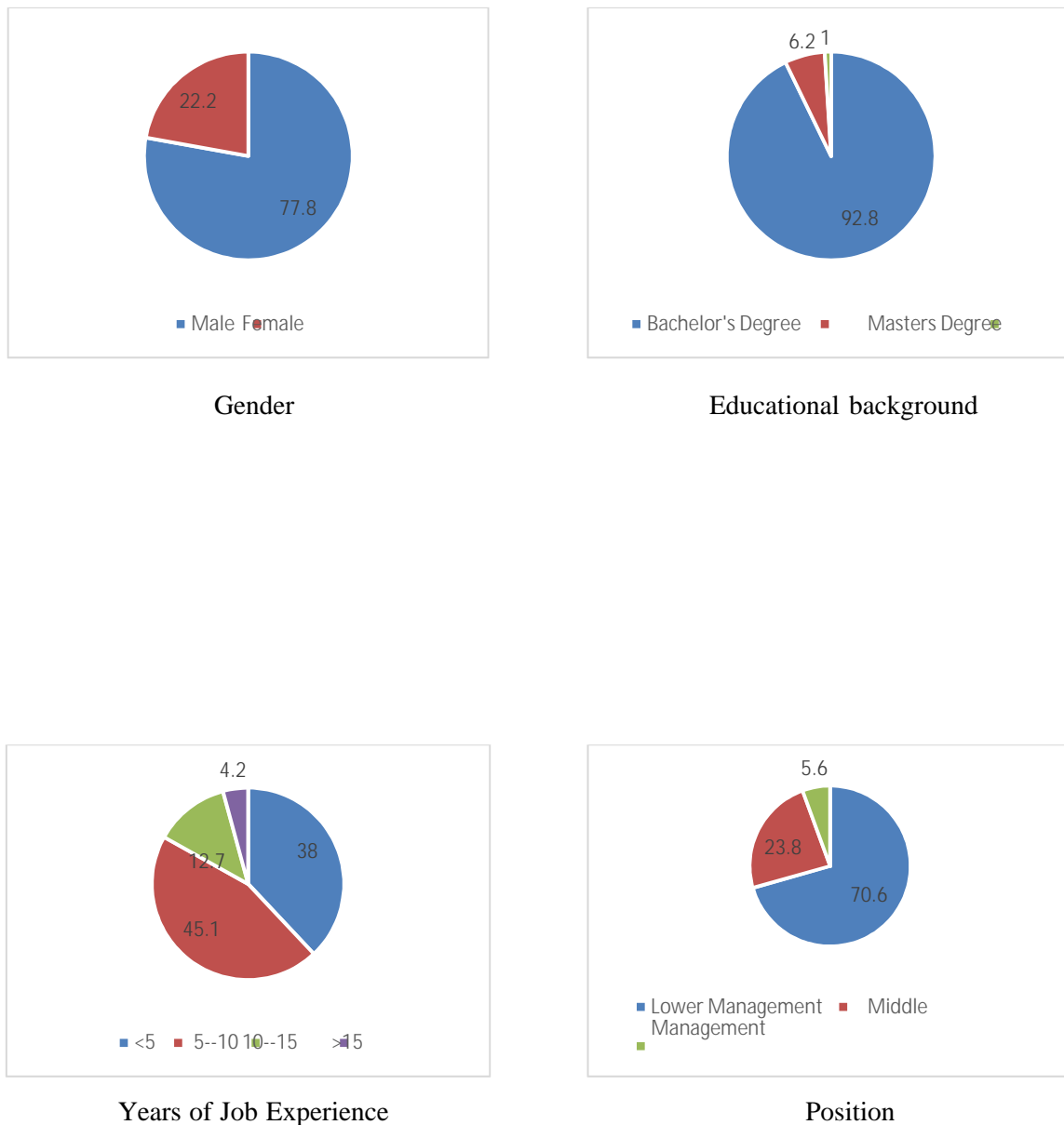


Fig. 2. Personal characteristics of the participants

As mentioned above, in order to meet the goals of the research, a questionnaire was used as the main data collection tool to gather information on the independent and dependent variables. There were two parts to the questionnaire. Questions about the gender, practical experience, administrative level, and educational level of the study group were included in the first part as

demographic section. The categories of the independent variables, such as business intelligence (including data warehouse, OLAP, and data mining), organization performance, and knowledge management and processes (including knowledge generation, sharing, and utilization) were the focus of the second part. (Both financial and non-financial). To assess the variables, a Likert scale with five possible values—from "1" for "strongly disagree" to "5" for "strongly agree"—was used in the questionnaire. The model constructs, which were adapted from earlier empirical study, were measured using a questionnaire with 30 items. These items underwent minor modifications to meet the requirements of the Georgian Banking System. Studies by Abualosh et al. (2018a,b), Shujahat et al. (2019), Masa'deh et al. (2016), and Zawaideh et al. were used to modify the dimensions of the knowledge management process. (2018). Business intelligence variables were modified from research by Ochara and Mokwena (2016), Eidizadeh et al. (2017), and Wang et al. (2012), while organizational performance variables (financial and non-financial performance) were taken from Tomislav et al. (2012) and Wang et al. (2012). (2014).

Validity and reliability

A panel of experts comprised of 12 business management and knowledge management academics from Bank of Georgia received the questionnaire from the researchers. They offered suggestions, which the experts included in the survey. The reliability of the questionnaire was examined by the experts using Cronbach's alpha, which assesses the degree of correlation and coherence between paragraphs. The test's results showed numbers above 70%, which indicates a reliable level. (Bagozzi & Yi, 1988). The test's findings are displayed in Table 1.

Table 1 - Cronbach's Alpha for all the variables

Variables	Number of items	Cronbach's Alpha
Knowledge creation	8	0.854
Knowledge sharing	4	0.821
Knowledge utilization	4	0.854
Data Warehouse	4	0.782
OLAP	8	0.801
Data Mining	3	0.793
Financial performance		0.781
Operational performance		0.785

Descriptive Analysis

The research variables are described in this section of the study. To assess the level of approval

and the relative importance of each paragraph, the mean and standard deviations of the answers were computed.

Table 2 - Mean and standard deviation of the research's Variables

Type of Variable	Variables	Mean	Standard Deviation	Order
Independent Variables	Knowledge creation	3.84	0.934	3
	Knowledge sharing	4.14	0.865	1
	Knowledge utilization	4.02	0.831	2
	Data Warehouse	4.08	0.799	1
	OLAP	4.06	0.856	2
	Data Mining	3.92	0.842	3
Dependent Variable	Organization Performance	3.87	0.907	1

The study also discovered that Bank of Georgia had a high level of organizational performance, with a mean of 4.06, demonstrating that the bank's management has been successful in reaching high levels of both financial and non-financial performance according to the respondents. This shows that the bank has adopted successful tactics and procedures that have helped it succeed in reaching its aims and objectives. According to the study's findings overall, the Housing Bank for Trade and Finance employs sophisticated information technology and systems, such as business intelligence, and has attained a high degree of organizational performance.

Testing hypotheses

The primary goal of this study is to examine how business intelligence (information storage, OLAP, and data mining) and knowledge management (knowledge sharing and utilization) affect organizational success in Bank of Georgia. Multiple regression was therefore employed to investigate the hypotheses related to this article. The probability value (p-value) derived using the statistical hypotheses test is regarded to be the rule of thumb for rejecting the null hypotheses, and the level of significance (level) was set at (0.05).

H1. Knowledge management (knowledge sharing and knowledge utilization) and company performance statistically correlate (at the level (0.05)). (OP).

Table 3 - Multiple Regression of the H1

Knowledge management	(B)	(β)	T	Sig t*
knowledge creation	0.263	0.342	3.376	0.002
knowledge sharing	0.254	0.387	3.369	0.000
knowledge utilization	0.253	0.356	3.378	0.000

R = 0.658 R² = 0.432 F = 61.165 Sig F* = 0.000

Note: The impact is statistically significant at level ($\leq \alpha 0.05$)

a-Predictors: (Constant), knowledge creation, knowledge sharing and knowledge utilization

b. Dependent variable: organization performance

The results of Table 3's research show that there is a statistically significant link between knowledge management and organizational success. Knowledge management and organizational success have a positive correlation ($R = 0.658$), as shown by the F-value of 61.165 and the significance level of less than 0.05. The R^2 value of 0.432 shows that knowledge management and its three processes can account for 43.2% of the variation in organizational success. With respective coefficient values of 0.342, 0.387, and 0.356 and t values of 3.376, 3.369, and 3.378, all at a significant level of less than 0.05, the regression coefficients of knowledge creation, sharing, and utilization demonstrate a significant direct effect on organizational performance. With a calculated F value of 64.182 and Sig F = 0.002, the study's second hypothesis also identifies a significant positive link between business intelligence (data warehouse, OLAP, and data mining) and organizational performance. With an R^2 value of 0.399, business intelligence can be used to describe 39.9% of the variation in organizational performance, demonstrating a positive correlation between the two with a R value of 0.632. With respective values of 0.376, 0.345, and 0.392 and t values of 4.354, 3.562, and 3.429, all at a significant level of less than 0.05, the regression coefficients of data warehouse, OLAP, and data mining also demonstrate a significant direct effect on organizational performance.

Table 4 - Multiple Regression of the H1

Business intelligence	(B)	(β)	T	Sig t*
Data warehouse	0.298	0.376	4.354	0.002
OLAP	0.354	0.345	3.562	0.000
Data mining	0.326	0.392	3.429	0.000

$R = 0.632$ $R^2 = 0.399$ $F = 64.182$ Sig. $F^* = 0.000$

Discussion of results

Investigating the effects of knowledge management, sharing, utilization, and data mining on the performance of organizations working in the branches of the Bank of Georgia (BOG) is the goal of this study. Two hypotheses are put forth by the researchers.

The first hypothesis (H1) states that there is a significant correlation between knowledge management, which includes sharing and utilizing knowledge, and organizational success (at a level of 0.05). (OP). According to this study's findings, businesses that encourage their staff to

create, share, use, and implement new knowledge perform better than those that don't. Superior performance can result from effective information management, which has a significant impact on the organization's operations, relationships with customers, and capacity for innovation. Effective knowledge management, in particular, manages corporate knowledge resources to boost competitive advantage, boost creativity, and support efficient and creative performance. Additionally, organizations that use an efficient knowledge management application have the capacity to pick up new information rapidly, giving them an advantage over rivals in terms of strategic potential. The success of the business depends on its ability to utilize its knowledge assets and create knowledge-based organizational and management processes. Therefore, efficient knowledge management is crucial to developing long-term success and boosting an organization's ability to compete.

The second hypothesis (H2) asserts that business intelligence (including data warehouse, online analytical processing (OLAP), and data mining) and organizational success are significantly correlated (at a level of 0.05). (OP). The results of this study are in line with those of earlier studies, which show that business intelligence is a data-based decision support system that gathers, stores, and presents data ready for analysis, allowing staff members to use a variety of data to analyze enormous amounts of information. All data from internal and external sources are housed in data repositories, where they are cleaned, organized, and improved. Decisions that enhance and advance the organization's overall performance are made using the results of these analyses. Analyzing customer, product, and sales data, keeping an eye on competitors' actions, and spotting market trends and conditions are all things that can be done with business intelligence. Business intelligence's data integration and forecasting tools can significantly strengthen a company's standing in the market. For instance, developed analyzing abilities can reinforce the connection between the company and its consumers, forecasting features enable organizations to boost their earnings potential, and business intelligence is used to support internal methods such as arranging, production, and quality assurance.

Implications

The significance of knowledge assets, including knowledge management and intellectual capital, and their influence on organizational performance have been highlighted by this research. It also places emphasis on how business intelligence, in particular, and information

technology and systems in general relate to organizational success. Research on the connection among knowledge management and business intelligence in BOG and Banking market environment is, proven that is very crucial success factor in the stiff industry competition as they now know how to develop their operations and knowledge management systems to improve their efficiency and competitiveness. The research suggests that in order to effectively produce, acquire, and share knowledge, organizations and managers should give priority to knowledge management and data mining models and resulting operations. This can be accomplished through a variety of actions, including perusing professional reports, getting in touch with outside experts, attending training sessions and workshops, and setting up knowledge-sharing platforms like intranets and databases management systems. Additionally, rewards should be given to employees who share information, engage in communities of practice, and gain from data exchange outcomes in order to improve organizational performance and competitiveness. Also of course, managers should adopt and apply business intelligence to enhance the performance of their company. The value of their company can be maximized by an integrated business intelligence system with all of its components. To increase the use of business intelligence and add to the value for the bank and stakeholders, modern systematic methods of data collection and storage in common databases or inherited systems should be avoided. Bank of Georgia (BOG) and of course other banks and financial institutions must add knowledge management and business intelligence to their strategic plan and all sections of value chain of the organization so the mission and goals shall be redesigned to rebirth of the function, process and as mentioned the whole value chain so the data is gathered, saved, logically analyzed and transferred to information and information in to strategic valuable knowledge in bank and the society so the tactics and steps can be affected by the shared and transferred knowledge in all online and offline operations and activities.

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