CORPORATE RESOURCE PLANNING SYSTEMS AND THEIR ROLE IN DEVELOPING VALUE CHAIN PERFORMANCE RESEARCH APPLIED IN THE DAIRY INDUSTRY COMPANY

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SUMMARY

The study explores how Enterprise Resource Planning (ERP) systems can enhance value chain performance in the dairy manufacturing sector. The paper aims to evaluate the role of ERP-based enhancements in integrating processes, improving efficiency, and coordinating resources to create value along the value chain. The study uses an analytical research design and secondary financial and operational data obtained by extracting dairy industry reports for the 2012-2020 period. Statistical methods, such as correlation analysis and significance testing, were used to assess the effect of the ERP implementation on key performance indicators related to value chain activities. The results show that the working capital ratio has a negative growth rate of -0.9 percent, indicating short-term financial instability for the reviewed dairy companies. Also, the value-added ratio declined by 1.5 percent over the period of study, indicating reduced productivity and cost-to-output efficiency. Despite these decreases, ERP systems showed a statistically significant positive effect on value chain performance at the 0.01 significance level. Findings also indicate a positive relationship between ERP adoption and value chain effectiveness at the 0.01 level, suggesting that resource planning directly increases value chain coordination. In particular, the more the ERP integration, the greater the probability of creating a more effective and responsive value chain, by 0.018 percent. In general, the research concludes that, even amid the introduction of more comprehensive financial performance measures, ERP systems are essential for enhancing strategic alignment, operational consistency, and positioning in the dairy industry.

Key words: *corporate resource planning systems, dairy industry, operational efficiency, process integration, competitive advantage.*

INTRODUCTION

The single software is Corporate Resource Planning Systems, which is used to implement any business processes and assets of any organization. These systems contribute largely to the operation of the value chain in the industries to which they are applied, the dairy industry being no exception. CRPS could be used to support the results of process optimization and streamlining in a dairy company; the overall effect may be improved functioning of the value chain [18]. The dairy industry is the most competitive and established business, dealing with milk processing and production, milk delivery, and marketing. The value chain performance in this case is the effective performance and efficiency of such activities to generate value to the customers at the lowest costs and at the highest profits that can be achieved at

maximum profit. It provides dairy companies with a chance to integrate and organize internal processes, resources, and information flows, thereby enhancing the performance of the value chain [19]. One of the most important functions CRPS performs in the dairy business is automating and integrating various business processes. These systems integrate information and data across production, procurement, inventory management, sales, and finance. CRPS centralises all these processes and automatises them, thus enabling real-time access to real and updated information, with the assistance of which the process of making better decisions and distributing resources becomes feasible [13] [14].

The Corporate Resource Planning Systems (CRPS) is being implemented by the management of business processes and resources in the organization in all corners of the world [11] [12]. It is unveiled that CRPS could be significant in enhancing the value chain of activities in the dairy industry. However, CRPs do not have much information regarding the contribution to the performance of the dairy industry companies' value chain [20]. Therefore, the research problem will be to determine the impact of investing in CRPS on the development and improvement of value chain performance in these firms.

The study would be set to explore the lapse of the missing information in the CRP of the dairy industry in improving the functioning of the value chain. The study examines the effects, functionality, strengths, and weaknesses of CRPS adoption. It aims to disseminate this information so that milk firms can continue operations and become more competitive, thereby enhancing the dairy industry as a whole.

The value chain analysis is important because it helps create and share gains among the chain's actors. Using the chain, the stakeholders making gains by being part of a chain can be easily picked out, and those that may need additional support and control can be identified with the assistance of a margin analysis and the profit analysis in the chain. This becomes even more relevant to the developing countries (and the agrarian sector in particular) because of the fear that the poor are especially susceptible to globalization. As he puts it, poor connections among the various parties in the dairy value chain are among the main causes of the underdevelopment of the dairy industry in Ethiopia. Although the reaction of the private sector to the high demand for dairy products will be extreme, the small household farms in the highlands present one of the best dairy development prospects. Value is added to skim milk, hydrolyzed dairy products, butter, and cottage cheese, which make up the cottage cheese industry. A typical example of dairy products, which is growing in demand, is milk [4] [5] [6].

This was in ORDER to reveal the stage of ERP systems or systems in a dairy manufacturing company, as well as to determine the level of performance on the level of the value chain in the dairy manufacturing company. The study was directed at determining the influence on the formation of value chain performance in the dairy manufacturing enterprise due to the usage of ERP systems.

The CRPS plays an inner role in the dairy business to create traceability and quality assurance. A complete product value chain also allows the company to follow and trace products without breaking any regulatory requirements and quality standards. It helps in quick identification and solution of any issues, memorization, etc, hence, more confidence in the product is created and preservation of the integrity of the product. The contribution of the system of corporate resource planning to the value chain performance in the dairy industry is positive. The better cutdown of operations and information-based actions can be improved with highly developed supply chain management, and it can allow better reductions, trace problems, and quality assurance. CRPS simplifies the process of enabling the dairy companies to maximize efficiency, maximize savings, customer content in the proper mix, and competitiveness in the market.

The contribution the research makes to the accessible literature is the examination of the impact of corporate resource planning systems on the development of value chain performance in dairy industry companies. The findings give information to the decision-makers and the stakeholders in the dairy industry on the benefits, challenges, and implications of CRPS changes in the dairy industry. Additionally, the research findings can recommend the best practices that would aid in the proper use of the CRP in the improvement of the value chain performance of the dairy industry firms.

LITERATURE REVIEW

Corporate Resource Planning Systems (CRPS)

The term Corporate Resource Planning Systems (ERP), which also refers to Enterprise Resource Planning, is the combined software system that is aimed at streamlining effective operations of the organization and organizing them [2] [3]. These systems have been in a position to incorporate several features like finance, human resources, procurement, inventory management, production, sales, and customer relationship management in a single package. Accompanied by this are enhanced operational efficiency and effectiveness, and an enhancement in decision-making. The existence of many special programs and applications that were specific to a given sphere, e.g., human resources management, accounting, logistics, production, etc., defined the pre-Enterprise Resource Planning period. However, they lacked mutual reliance and did not coordinate and relate to each other. This relationship between a tremendous amount of autonomous programs was named ERP, with the aid of a database that organizes the programs.

Kennerely has identified it as a set of standardized applications software that simultaneously provides the integration of solutions to the most important organizational functions. This organization was designed in such a way that the competitiveness of the organization is amplified and developed through the development of information of the highest quality, such as maximum accuracy and delivery of the information on time.

It is an information systems subdivision that possesses multiple features as stipulated by Lequeux. As the successful coordination of the different functions of the organization with integrated modules or coordinated programs so as to achieve procedural integration, the same point of reference to data, rapid adaptation to business rules, including the internal functions and the rules made by the external environment, a distinction in the management of each subprogram, unifying the same work interface, the same screens, buttons, menu bars, keys, and shortcuts, and the development tools or customization of the application integrations [15].

The enterprise resource planning system can be described as a complicated information system in which the information system software is integrated into a single database to be used in all the major processes in the organization, as well as the needs of the various functional departments and levels of administration, depending on the data and information needs. It is achieved through the plasticity of options and benefits offered to each user based on their functional level of such data and information.

Preconditions to effective ERP system implementation

It is inconsistent, and there is a disagreement over the appropriate success factors to be used in the implementation of an ERP system in terms of quality and quantity. The requirements of the ERP system implementation have been categorized into organizational and behavioral requirements that, in the larger aspect, consist of the argument factors that have been assented by the majority of the researchers. The approved requirements can be developed as follows:

Regulatory requirements

Top Management Support: The perception and intentions of the top management to embrace information technology, which is the Enterprise Resource Planning (ERP) system, are listed among the success determinants. The backing of top management and its ability to create the proper environment in which work, implementation, and change may succeed are the decisive and critical factors in the success or failure. Kamhawi has pointed out that perhaps the most important success factor in the implementation of an ERP system is the top management support. Also, top management must demonstrate that it wants to succeed at the first level, since without such support and intent, the possibility of failure or the inability to derive all benefits will be high.

When adopting such a system, the emerging strategies and setting of initial plans need a common and clear future vision of the transformation project. There is a need to establish the future evolution of the Enterprise Resource Planning (ERP) system implementation project, its scope, and requirements. Rosari and Nahetel noted that it is necessary to have a clear vision and a clear plan that will help in directing the project in all the stages of the ERP lifecycle.

Information and Communication Technology (ICT): The recent research and studies in information technology emphasize its nature as the most accurate, fast, contemporary, and broadest resource that ought to be employed in the development of innovations and high performance. The requirement to successfully implement an Enterprise Resource Planning (ERP) system is of high technological development. ERP systems can replace the old technology that is not easily adopted in an organization (Swanepoel), and the maturity of the information technology will eventually be realized. Additionally, the ERP systems allow consolidating the business processes into a single system, and this is why the primary strategic significance of IT and the components and parameters that should be employed to assess its performance should be mentioned. Ritzman and Krgeuski view the notion of IT as a significant facilitator of business in various sites and functional sectors, which facilitates the introduction of an ERP system into the corporate framework.

Behavioral Requirements

The significance of an Enterprise Resource Planning (ERP) system is provided mainly by the fact that it is a transformation project, it is process-oriented in the organization, and aimed at achieving integration. Ehie and Madsem noted that the ERP implementation process involves significantly more than the changes in the software programs and hardware systems. Ideally, business process reengineering (BPR) is capable of streamlining the ERP implementation and generally performing better. Further, Appleton also highlighted how in situations where an organization is experiencing a shift in information system environment founded on ERP, the relationship between employees also changes. Some of the employees will have to build new relationships, share new information among various departments, and have new duties and responsibilities. These changes can be inclined towards opposition, disorientation, and intimidation of the employees.

Education and Training: The importance of training is that the beneficiaries will be introduced to the basics of the ERP system and its advantages, as well as how to adopt it. Properly training the beneficiaries of ERP is the primary goal, as it will make them learn about the various business processes that will be involved in the actual implementation of the systems. It also involves training and informing the beneficiaries about the knowledge of the ERP system, and this is the greatest challenge. The process of enacting the system presupposes the existence of a significant volume of knowledge that will assist beneficiaries in confronting and tackling the problems within the framework of this system.

Value Chain Performance

Value chain performance. The manner in which an organization conducts and attends to the activities of adding value to the customer following the value delivery to the customer is explained as value chain performance by [7] [8], since the entire value chain exists. The value chain is a totality of all the processes that are involved in sourcing raw materials, production, distribution, marketing, sales, and customer service. The latter are efficiency in costs, product qualities, delivery speed, customer satisfaction, and overall profitability, that is, the value chain performance of a particular company. The efficient value chain gives a business firm an advantage and is a great promoter of its success in the market.

A value chain is a series of sequential operations occurring in business enterprises where value can be added to an item (good or service) that is delivered to the customers. The value chain is a potent tool for the most suitable exploitation of some resources. All the activities that entail initiation of the procurement of the supplies through the suppliers to the final usage of the product by the customer and disposal are incorporated in this chain. It is also defined as the sequence of successive functions in which value is added to products or services since the beginning of inception when they were mere ideas until

the end when they are consumed by the customer, respectively, as design, production, marketing, and distribution. As [17] put it, the value chain can be defined as a set of activities in which a company is involved in designing, producing, marketing, delivering, and supporting the products in an attempt to create value for its customers. These are the special materials and technological activities that a company goes through in producing a product with value that is sought by the customers.

They described it as a group of sequential company operations in which properties or value are created to commodities and services in a chain of research and development, design and production, marketing and distribution, and customer service [9] [10]. The other analytical instruments used by the organization include the value chain, which in turn collects, diagnoses, and provides feedback data. Such technologies cannot lead to any reorganization of processes and structures; on the contrary, they promise to reveal easy problems and issues and consume the attention of a company and concentrate the strategic resources. Porter has developed the value chain in the form of a series of activities, which create value starting with the production of the raw materials to products and all the way up until the end point of the supply of the goods to the consumers.

One of the avenues that can be explored using the value chain model is one of the ways through which the nurture and the degree of synergy or positive interaction that exists between the inner processes of an organization can be examined. Through this idea, any organization may be managed as a system that comprises activities, which result in designing, production, marketing, distribution, delivery, and maintenance of its products. These activities all form the value chain, and the variations among competitors in the quantity of such value are an important competitive advantage. The value chain analysis is useful because it is possible to think about how it can be delivered to customers and consider all processes and activities that might be involved in adding value to it [1]. The value chain analysis seeks to enhance the work done to decrease the costs and the quality of the products, the nature of the organization and its activities and functions, and its role by taking note of the happenings that started it.

Linkages between value-hosting facility internal activity, and locations of value-hosting functioning excellence.

Connection between Corporate Resource Planning Systems and Value Chain Performance

According to [21], Corporate Resource Planning Systems (CRPS) can influence the improvement of the value chain performance at least in the following ways. CRPS is capable of adopting various functions and departments of the organization that will bring together all departments of the company's value chain. As such, it consolidates different silos of information and does away with handoffs that result in errors within the process. CRPS automates the functions that eradicate the routineness, promote efficiency, and reduce the lead times and, consequently, value addition.

Real-Time Data Visibility CRPS will be able to have real-time access to the available and updated data across the whole supply chain to stop and track the key performance indicators (KPI) of production, inventory, sales, and customer satisfaction of the company. Information will be received in real-time and can be used to reliably identify the bottlenecks or to enhance the processes and make a decision based on information, and this may contribute to the value chain performance.

The CRPS enhances the supply chain management by attaching the procurement, inventory management, and logistics functions. This gives businesses a chance to control the movement of products and stock levels and attain optimal production-related processes and distribution processes. CRPS enhances the transparency and collaboration of the supply chain to reduce the expenses, avoid stock-outs, and add value to the supply chain in general.

CRPS assists in planning and predicting demand based on the analysis of past sales transactions and trends within the market, consumer behavior, among many others. A specific demand forecast can help to reduce the quantity of the stock, increase the ability to create the products, and provide a quick response to the requirements of the clients. The best thing is that the inventory control has been increased, the stockouts diminished, and the value chain has become more functional.

CRP: CRP also has CRM modules that are used to manage the customer relationship of a firm, once more, and to increase consumer satisfaction. CRPS centralized the customer data and tracking of the interaction and displays the insights as the customer preferences, thus it assists the customers with the service, marketing customization, and customer loyalty. The customers also value this experience, which gives value to the value chain in the form of sales and retention of customers.

Corporate Resource Planning Systems play substantial roles in Corporate Performance of the value chain, and on realizing this fact, it would be desirable to incorporate Corporate Resource Planning Systems in the Value Chain operation planning. It also combines and automates operations, enables real-time data availability, enables a person to efficiently manage the supply chain, tracks demand planning and forecasting, and enhances relationship management with the customers in the execution of the activities within the value chain. It implies that the organizations have high efficiency, the cost is reduced, customers are retained, and they achieve their full profitability and eventually maximize their revenue.

METHODOLOGY

Research Design

The analytical quantitative research design was adopted in the research since the study was meant to investigate the impact of Enterprise Resource Planning (ERP) systems on the value chain of the dairy industry. Using this design also allowed the derivation to systematic accumulation and statistical analysis of historical financial data over a specific time span in order to determine the correlation between the ERP implementation and performance measures or metrics that result in process integration, operations, and value creation efficiency.

Population and Sample

The data of one financial report of one of the dairy industry companies of choice of 2012-2020 served as the sample of the data. The sample consisted of the annual financial records and operations records, which were of interest in the case of ERP implementation and value chain performance, such as (Working capital ratio, Value-added rate, ERP investment/implementation timelines, Production efficiency metrics).

Data Collection Tool

The study was grounded in the secondary data, which was obtained with the help of the official financial reports, company records, and the internal performance dashboards. Comparisons are made of operational and financial Key Performance Indicators (KPI) of data mining before and after the implementation or upgrade of ERP systems. The researcher developed a data extraction sheet in an attempt to simplify the process of data collection standardization and to ensure the relevance and consistency of the data.

Dataset and Parameters

The research was based on the secondary data obtained from the annual financial and operations reports of a dairy manufacturing enterprise, comprising the analysis of the working capital ratio, value added rate, and the indicators of production efficiency, as well as the timeline of the ERP implementation. Data were analyzed in SPSS 26 and Microsoft Excel, which were used to perform descriptive statistics, correlation analysis, and regression modelling. The critical parameters studied were the ERP implementation score, the value chain performance index, the working capital ratio, and the value-added rate, which were chosen to determine the process integration, operational efficiency, and resource coordination that the ERP adoption yielded.

Validity and Reliability

- The content validity was achieved using the framework that was founded on the known value chain and performance indicators of ERP that were employed in the previous literature.

- The data that were extracted were also cross-validated with internal audit records to make sure that it was reliable, and validated by a second reviewer to make sure that the data were consistent across the years.

Mathematical Model and Description

Correlation Model

Pearson correlation coefficient was used to measure the association between the level of ERP and the value chain performance, as shown in equation 1:

$$r = \frac{\sum(E_i - \grave{E})(V_i - \grave{V})}{\sqrt{\sum(E_i - \grave{E})^2}\sqrt{\sum(V_i - \grave{V})^2}} \qquad (1)$$

Where E_i is the ERP score and V_i is the value chain performance score.

The study result $r = 0.662(\text{p} < 0.01)$ indicates a strong positive correlation.

Regression Model

The changes in value chain performance with the help of ERP were examined with the help of a simple linear regression, as shown in equation 2:

$$VCP = \beta_0 + \beta_1\,ERP \qquad (2)$$

This demonstrates the fact that every one unit change in ERP integration enhances value chain performance by 0.018 units (p < 0.01).

RESULTS AND FINDINGS

The dynamics of the working capital ratio and the value-added rate of changes in the dairy industry at various times in the year 2012 and 2020 under ERP implementation are in Table 1. The 18.5 of 2012 (pre-ERP) working capital ratio decreased to 16.6 (full operation of ERP) by 0.9, and also the value-added rate decreased by 1.5. These were on top of the incremental deployment of the ERP systems, from early adoption to full adoption. Although the financial indicators reduced slightly, the given tendency can be justified by the fact that the process of ERP implementation had been accompanied by the re-organization of the processes, redirection of the resources and optimization of the systems, thus the impact of the ERP may be more evident in the effectiveness of the process in the long-term perspective and alignment of the strategy than the direct financial gains.

Table 1: Descriptive analysis

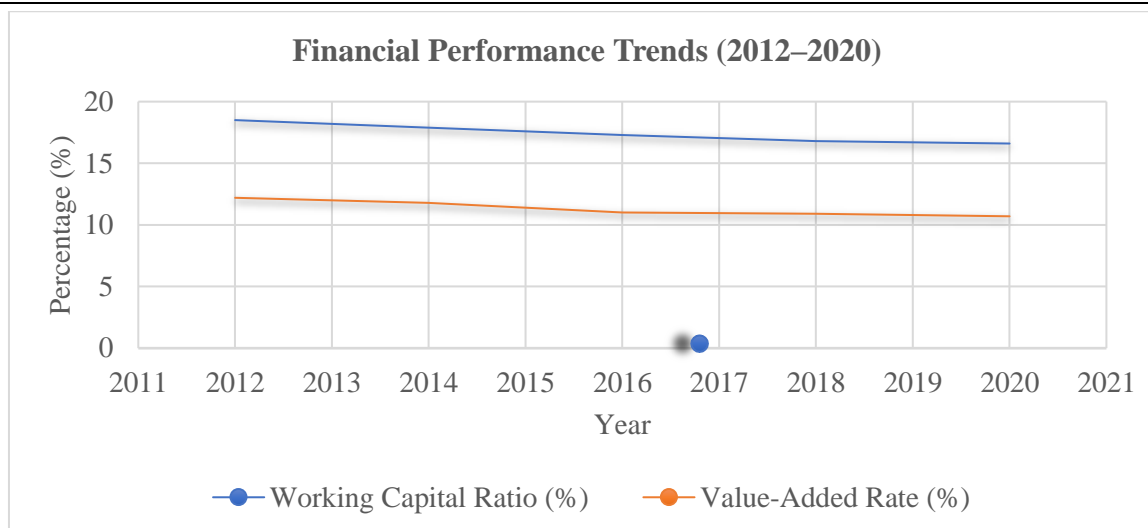| Year	Working Capital Ratio (%)	Value-Added Rate (%)	ERP Implementation Phase
2012	18.5	12.2	Pre-ERP
2014	17.9	11.8	Early ERP Integration
2016	17.3	11.0	Mid ERP Integration
2018	16.8	10.9	Advanced ERP Use
2020	16.6	10.7	Full ERP Operation

Figure 1. Trend of working capital ratio and value-added rate (2012–2020)

Figure 1 Trends of key financial performance indicators in the dairy company between 2012 and 2020, where one can see a slow decrease in the Working Cash Ratio and Value-Added Rate in various stages of the ERP implementation. Figure 1 shows the way financial indicators changed were experienced in pre-ERP, early integration, mid-integration, advanced ERP use, and complete ERP operation periods.

Table 2 indicates that the level of the ERP and the value chain performance have a statistically significant correlation with a correlation coefficient (r) of 0.662 and a p-value of less than 0.01. This implies that the correlation will be high and positive, and the greater the degree of implementation of ERP, the greater the likelihood that the value chain will deliver at a high level. The significance level (0.01) indicates that it is not a mere coincidence between the two but a statistically significant relationship that satisfies the hypothesis that the ERP systems have a positive impact on the enhancement of the operations of the value chain within the dairy industry.

Table 2. Correlation analysis

Variables	Correlation Coefficient (r)	Significance (p-value)
ERP Level vs. Value Chain Performance	0.662	$p < 0.01$

The results of the regression analysis of the impact of the ERP systems on the value chain performance are included in Table 3. The coefficient of ERP Score is not standardized (B = 0.018), but is positive, and thus it means that an increase in the level of ERP of one unit increases the value chain performance by 0.018 percent. The standardized Beta coefficient (0.662) describes that it has a strong positive effect, and the t value of 5.76 with a significance level of 0.000 ($p < 0.01$) shows that this effect is not negligible. The constant (10.01) is the anticipated value chain performance having the ERP score of 0. Overall, it is found that the implementation of ERP has a high positive influence on the performance improvement in the value chain of the dairy industry.

Table 3. Regression analysis

Predictor	B	SE	Beta	t	Sig.
Constant	10.01	1.21	—	8.27	0.000
ERP Score	0.018	0.003	0.662	5.76	0.000

Discussion

Study outcomes revealed that Enterprise Resource Planning (ERP) systems serve to integrate and coordinate all activities of a company, from production to procurement. This is due to the effectiveness of internal processes in the dairy industry, the reduction of waste, and further effectiveness in utilizing resources. This study is consistent with the work of [3], who discovered that there exists an ERP

implementation effect in the UAE among the Emirati companies. It is also indicated in the findings of the analysis that ERP systems made strategic decisions better. This has to do with the provision of a proper supply of analyses and reports that facilitate informed strategic choices, such as production volumes, market trends, and other factors that can be analyzed better to suit the needs of the customers.

The results showed that the ERP systems would be applicable in achieving quality control in the dairy industry by including quality information in the production flows. The working capital has been decreasing in the course of the period of study (2012-2022). The rate of the decrease was 0.9 according to the study period. This can be explained by the fact that this rate is also shrinking in dairy firms. The study established that the period of the research (2012-2022) proved the decline of the value-added rate by 1.5 percent in the dairy company and the value of the enterprise resource planning systems in the continuous improvement of the value chain performance and its positive correlation with resources and value chain. This can be interpreted to mean that the further the resource planning is developed, the greater the chances of developing the value chain. The study was consistent with the one that determined that value chain analysis also affects the overall quality management and the competitive advantage of small and medium agriculture enterprises [16].

CONCLUSION

The paper has analyzed how Corporate Resource Planning Systems (CRPS/ERP) can be used in improving the performance of the value chain in the dairy manufacturing sector. The results indicated that ERP implementation has a positive impact on the process integration, operation coordination, and the overall effectiveness of the value chain. Although there was a minor decline in financial indicators like working capital ratio and value-added rate in the implementation years, the statistical findings indicated a high correlation towards the positive side. ($r=0.662$, $p<0.01$) and a significant regression effect that the higher the level of ERP integration, the better it leads to value chain performance by quantifiable margins. These findings support the fact that ERP systems help achieve better decision-making, improved resource use, and increased operational consistency for dairy firms. According to the results, the dairy companies are urged to make their ERP use potential to have a perfect process integration and add value to the chain. It is necessary to focus on the constant improvement of the system, training of the staff, and coordination of the processes supported by ERP with the strategic goals to achieve maximum efficiency and competitiveness. Another aspect that companies should embrace is data-based decision-making, which is made possible by ERP tools to save costs, enhance product flow, and contribute to sustainable growth. To conduct future studies, more extensive datasets based on a group of more than two dairy companies or comparisons across multiple sectors would be more informative as to the effectiveness of ERP systems in various operational settings. Other potential areas of inquiry in futures research could be the impact of ERP implementation on profitability, market growth, and the level of digital transformation maturity in the dairy industry. Also, the mathematical modelling, statistical analysis, and graphical trends presented in this paper support the strength of these results that ERP implementation can be statistically significant and quantifiable to enhance the value chain performance.

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