ABSTRACT

Information Technology (IT) is one of the most important human scientific achievements that seem to have offered many capabilities to human society and are expected to be effective in solving the existing economic problems. Many researchers believe that accelerating and modifying the process of knowledge and information exchange through communication and information technology will play a key role in achieving human resource development and sustainable development, and that knowledge-based it becomes. The complexity, changes, and variables of human factors and the unpredictability of environmental and global economic factors affect agricultural activities. Also, the strategic importance of food security and tackling poverty has added to the importance of agricultural development. The increasing globalization of trade in agricultural products and the widespread competition in this field, which has changed the framework of market equations, will subject all components of the agricultural industry to fundamental and structural changes. The impact of environmental factors and changes in water and climate, which have brought about fundamental changes in agriculture, will inevitably have the greatest destructive effect on agricultural activities. Given both of the above components, agricultural policymakers and researchers will face increasing and unpredictable challenges in the coming decade, despite their unpreparedness. The use of IT in the agricultural industry helped to improve many issues, however, achieving the effective use of IT is a great challenge for agriculture organizations. The data will be obtained from agricultural companies; Samples will be selected from four provinces of Canada (Saskatchewan, Alberta, Manitoba, Ontario). This topic of research has considerable significance in Canada; a significant contribution of this study is the construction of a theoretically based model that assimilates the effective information technology governance, and agricultural development of Canada.
Keywords: IT governance; agriculture industry; development; economic growth.

1. INTRODUCTION

Agriculture is an important sector of the economy of Canada, in 2018 there were 269 thousand jobs in farming. In Canada, agriculture is an important industry and only about 7 percent of Canada’s land can be farmed and other marginal (poorer) land can be used to ranch cattle [1]. Aquaculture operations are found on the East and West Coasts and in the Great Lakes, some crops such as tomatoes, cannabis, and flowers are grown in greenhouses in urban centers. Canadian agriculture faces many challenges; some of these challenges concern crop protection, soil conservation, labor, climate change, and health. Farmers, in turn, supply the much larger food production and processing industries [2]. Among Canada’s top agricultural products are canola, cattle and calves, beef and veal, vegetables, and poultry. Canadian companies export crops, meat, maple syrup, and many other products [3]. Canada is a top exporter of agricultural products in the world. These exports were worth more than $60 billion in 2016 [4]. The agriculture sector in Canada is varied and continues to change and most of it is still the traditional production of animals and crops for food. However, Canada now has a substantial amount of aquaculture. Another type of agriculture is called protected cultivation, this is the growing of food, flower, mushroom, and cannabis crops in greenhouses or warehouses [5]. Some farmers also breed animals for fur or grow crops for various uses like fiber for composite building materials. Some Canadian food production is organic, This means that livestock and crops are produced under audited conditions [6]. Canada’s federal and provincial governments provide funding to many industries, including agriculture. The current funding framework for agriculture is called the Canadian Agricultural Partnership [7]. Government funds support agricultural research, export, and trade. They also help farmers use new practices and technologies [8]. Such advances can reduce environmental impact and increase efficiency. Other roles that governments play include setting regulations and overseeing food safety and inspection [9].

2. PROBLEM STATEMENT

Predicting the factors affecting agricultural production, although complex; But is not impossible. One of the most important indicators and criteria of sustainable development is the expansion of the level of knowledge and information in each of the sections of leading and dynamic society. Canadian farmers are under pressure to produce more food. They must do this while caring for the livestock, land, and water on their farms. Some areas in which farmers face challenges include crop protection, soil conservation, labor, climate change, and health. Achieving a scientific and economic approach to agricultural development requires careful consideration and analysis of all issues and factors at the highest possible level. Despite being among the developed countries in the information technology industry, Canada still lacks effective use of IT in its agriculture sector.

3. RESEARCH QUESTION

How effective IT governance can improve the development of the agriculture industry in Canada?

4. LITERATURE REVIEW

Proper use of information technology can have a tremendous impact on making Canada’s agriculture more economical [10]. In this research, by mentioning the effective indicators in scientific and practical agricultural production that cause the reduction or elimination of probabilities, the effect of information technology in making these indicators more practical is investigated. Indicators that modern and scientific agriculture can be affected by relying on information technology and ultimately include the main goal, which is to increase the quantity and quality of production, including Scientific and advanced meteorology, Detailed information on input price fluctuations, Feasibility and needs assessment of national and international consumer markets, Combining scientific and practical methods, Export and import information through the private and public sectors, Providing advanced education [11]. Today, agricultural meteorology is one of the most important bases for choosing the type of agriculture and applying planting methods. Many times crops have been destroyed due to drought or flood, or freshly planted seeds and unharvested crops due to frost Have been destroyed [12]. The integration of agricultural meteorology based on information technology allows the competent assemblies and organizations to obtain the most accurate
meteorological information from the most accurate measuring devices, meteorological research satellites, and telecommunications in the shortest possible time [13]. Have noses about the weather conditions and the amount of rainfall and its impact on agriculture and specialized suggestions on planting, harvesting, and harvesting each of the crops of the season [14]. Processing this comprehensive information and transmitting it by telecommunication and electronic devices in ICT is projected to be able to control much of the situation for the farmer. It may not be far from the mind that all these cases can be solved and guided by a coordinated and integrated system planned on the principles of effective IT Governance [15]. Information regarding agriculture such as climate or mechanization can help the farmer to choose the type of crop that has the highest economic return for the country every year at the beginning of the growing season while leaving most conditions under the control and control of the farmer [16]. The most important challenge in agriculture is to have effective IT governance that can provide their business with accurate information and fast predictions [17]. IT Governance leads to improvement in the performance of IT and this, in turn, leads to improvement in the performance of the agriculture companies [18]. The significant framework of IT Governance links the performance of IT to the performance of the company through business value creation and states that value creation optimizes risk while benefiting optimal resource costing [19]. The creation of value can also be defined as having achieved particular IT goals concerning some of the overall corporate goals found in most companies.

5. RESEARCH FRAMEWORK

The theoretical framework shows the conceptual framework of the study and how effective IT Governance affects Canadian Agriculture Development.

![Research framework diagram](image-url)
6. METHODOLOGY

This study tries to focus on agriculture companies. Samples will be selected from four provinces of Canada (Saskatchewan, Alberta, Manitoba, Ontario) which contain about 96 percent of the agriculture industry [20]. The software that will be used to analyze data in this research is SPSS; it includes analysis such as descriptive analysis, frequency analysis, normality test, Collation analysis, and Coefficients Analysis. Correlation Analysis helps the researchers to find that the connection between independent variables and the dependent variable is strong enough and any change in the dependent variable can be explain using independent variables. Coefficients Analysis is used to compare the significance of different variables concerning the independent variables and their influence over the dependent variable [21]. Coefficients Analysis is one of the important analyses in this research where it can help us to gain a better understanding of the relationship between each variable. Descriptive analysis is defined as the analysis that helps for a better understanding of the target population that is analyzed, their gender, age, demographics, and other personal attributes are presented along with graphs to help study them.

7. FINDING, RESULTS AND DISCUSSION

Finally, it may be concluded with the government considering the phenomenon of IT and the launch of the e-government project, there is a lot of hope that each of the ministries and policymakers, according to their function, will inject IT governance in their planning structure and benefit from its results. The Ministry of Agriculture and Agri-Food, as the policy-maker and leader of the agricultural sector, can play an important role in the collection, processing, and transmission of information through principled planning, while connecting with other influential organizations and bodies in this sector, including the Industry, Trade and Commerce And the Ministry of Communications and Technology to provide all the infrastructure for the formation of IT in the agricultural structure of Canada. Paying attention to education and promotion based on IT capabilities is another way to achieve comprehensive development in agriculture. Leading academic research and considering innovations and science and the importance of transfer to the new production techniques based on communication and information technology can transform Canadian agriculture and provide practical grounds for IT-based development-oriented agriculture.

8. CONCLUSIONS

This research has concentrated on the effective IT governance impact on development in the Canadian agriculture industry. Due to the importance of IT governance in Canada, this study could aid Managers and researchers to promote their knowledge about the importance of IT governance and how it can benefit the agriculture industry. Also, it can encourage startup companies to consider implementing IT governance as an effective way to help and expand the agriculture sector in Canada. By considering effective IT governance's impact on the Canadian agriculture industry, effective IT governance could enhance the agriculture industry's productivity. Indeed, the findings provided useful information related to IT governance that enlightened the agriculture industry to their performance.

DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by the personal efforts of the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES


