

extension contact culminated in reduced level of awareness of organic fish farming practices. This could be attributed to low emphasis on organic farming practices in extension teachings. It could also be that extension agencies still dwelt on conventional farming practices.

The other variables which included education, sex, marital status, household size, farmers association, farming experience, income and religion had no significant relationship with organic farming practices.

CONCLUSION

The findings of the study revealed that fish farmers were aware of organic fish farming practices in the study area. Farm size, contact with extension agents had significant relationship with level of awareness of organic fish farming practices and. as farm size increases, the level of awareness of organic farming practices increases. Whereas increased extension contact culminated in increasing the level of awareness of organic fish farming practices.. The study therefore recommends that training on organic fish production practices should be emphasized in extension activities in the study area. Socio-economic variables of education, sex, marital status, household size, farmers association, farming experience, income and religion were not significantly related to awareness of organic farming practices and as such should be discountenanced in decision making and policy implementation.

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Is Organic Farm Challenges by Profitability an Interdisciplinary Approach in Nature? A Review

Yasser Ghoreishi

Human Studies and Interdisciplinary Department, Laurentian University,
935 Ramsey Lake Road, Sudbury, ON - P3E 2C6, Canada.

ABSTRACT

This paper outlines whether organic farming profitability research is an interdisciplinary approach. It draws inspiration from the relevant literature and disciplines surrounding this topic (Public health, Environmental studies, Economic/Finance). It focusses on the complex nature of organic farming in terms of profitability and how it affects all parties involved (policymakers, farmers, and consumers). This report argues that through an examination of the relevant literature surrounding this research area, the current topic has been developed and reviewed from various disciplines and foci points (Public health, Environmental studies, Economic/Finance). Organic farming research associated with a broader range of interdependent factors, and it is more likely to rely on a more significant component of value judgement or intuition. Research methods for studying organic farming and profitability depend on an acceptance of complexity as an essential part of the research process. Employing this perspective aids the consideration of organic agriculture and profitability because each discipline used to explore this topic has its strength, weakness, and also examined this topic from a particular vantage. Therefore, an interdisciplinary approach is a means of opening up a more meaningful account of this process.

Keywords: Organic farms, Profitability, disciplinary, Interdisciplinary, sub-disciplines, Environment, Health, Economic

Corresponding author: yx_ghoreishi@laurentian.ca

INTRODUCTION

Organic farming is a holistic approach to production management, which promotes and enhances agro-ecosystem health and avoids the use of synthetic materials to fulfill any specific function within the system (Codex Alimentarius 1999). According to the International Federation of Organic Agriculture Movements (IFOAM 2007), organic farming includes all agricultural policies that promote environmentally, socially and economically sound production of food and fibers (Suutari 2007). Recycling nutrients and strengthening natural processes helps to maintain soil fertility and ensure successful production (Codex Alimentarius 1999, IFOAM 2007). By respecting the natural capacity of plants, animals, and the landscape, it aims to optimize quality in all aspects of agriculture and the environment. Organic farming dramatically reduces external inputs by refraining from the use of synthetic fertilizers and pesticides, in that diseases/pests are controlled with naturally occurring means and substances by traditional as well as modern scientific knowledge, increasing both agricultural yields and disease resistance (Mahmoudi et al., 2009). This paper seeks to advance this line of inquiry in an attempt to understand better how organic agriculture adheres to globally accepted principles implemented within local socio-economic, climatic, and cultural settings. The gaps in the research surrounding organic farming and profitability related to the lack of studies advocating for a more holistic approach and the utilization of reductionist techniques to organic research (Woodward, 2019). More recently, there have been calls for secure integration of interdisciplinary perspectives and for the development of diverse methodologies to assess new research targets and existing research surrounding organic farming (Keatinge and Rasmussen, 1999). This line of investigation intertwines with various fields of academic inquiry. Presumably, organic food/farming itself is an inherently interdisciplinary endeavor, encompassing a wide range of research areas, including economic/commerce, public health, environmental studies, and much more. Following the review of the literature, the paper attempts to answer the overarching research question on the profitability of Ontario farms and its implications on this field of study. The research question comprised of interrelated segments such as organic farming, farmland, agriculture, labour cost, production, sale, distribution, profitability, and challenges associated with organic farms (Klaus Ammann, 2008; Langemeier et al., 2014).

MATERIALS AND METHODS

This paper describes and analyses the incentives of using the interdisciplinary methodology research concept concerning the organic farms' profitability context to capture and understand the essence of the issues of this research methodology. It focuses on the review of journals, websites, and other related and reliable sources collected under the Preferred Reporting Items for Systematic Reviews and Meta-Analyses convention from 2010 to 2017. The data will be both private and public, as Cheng and Phillip (2014) recommend. Several environmental, health, public health, and economic databases from government, non-profit agencies, and research organizations would help this report to access a wide range of information on organic farming and its probability. The secondary collection of data would be befitting for this kind of study, is that it would require an analysis of the existing linkages between various disciplines to establish a review of the profitability of organic farming. This method maximizes, as Cheng and Phillips (2014) explain, outputs of data collection that exist from existing primary research. Often, initial researchers do not expansively conceptualize the implications that their data has on the fields of study.

Additionally, restrictions such as time and resources may inhibit the research (Logan, 2020). Using this data as part of other research papers allows optimization of the data. Secondary reviewers may have more comprehensive insights. This research will have a question and a data-driven approach. This report has its prior hypothesis on the profitability of organic farming in Ontario via the exploration of an interdisciplinary approach. This theory helps in establishing the primary datasets that would apply to the scope of the research. Under the data-driven method, the researcher will look at the available variables within the identified datasets to determine which can address the concerns of the report (Cheng and Philips, 2014). This report has to incorporate an analytical plan that will specify variables. Secondly, the researcher will look at the strengths and weaknesses of the datasets using the PRIMA method. Again, there will be operational definitions of variables that will assist in crosstabulations of the factors that will feature in the principal analysis (Cheng and Phillips, 2014). Lastly, the emerging themes will help in the re-coding of the data.

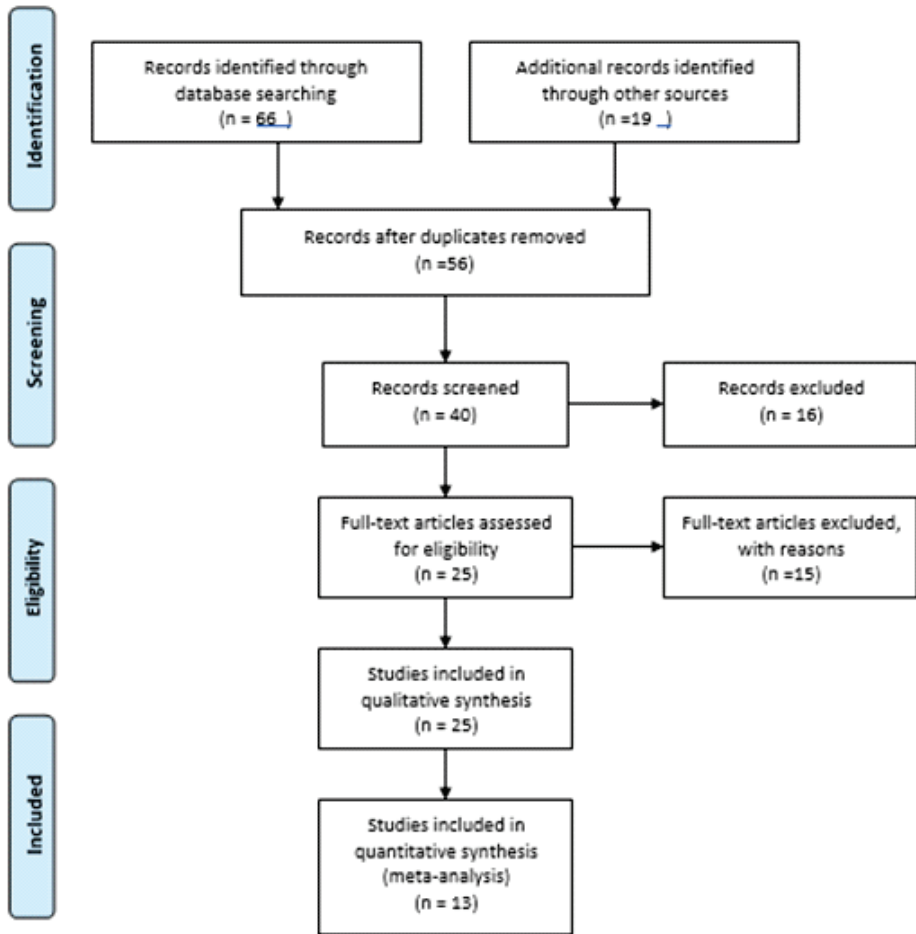


Image 1: Preferred Reporting Items for Systematic Reviews and Meta-Analyses Model for the Study. (Source: Liberat, et al., 2009)

Organic Farming and Public Health

Public health is a discipline within science that focuses on protecting the safety and improving the health of communities and individuals in society through education, policy-making, and research for disease and injury prevention (Andresen and DeFries-Bouldin 2010; Joyce 2009). For thousands of years, individuals have been concerned with sanitation, housing, the provision of safe, clean food and water, and the control and

treatment of diseases. Public health evolved to address these concerns and issues in society. It is an area of study that focuses on providing interdisciplinary efforts that can address the multiple determinants of health, such as: the biological, behavioral, environmental, cultural, social, living, and working conditions and populations at risk for disease and injury (Fertman and Allensworth, 2016). Research in this field describes how public health has evolved in both practices and as an academic discipline through the bacteriological period, the sanitary period, and the social reform movement and through the excellent society era forward to the current landscape of health reform (Erwin and Brownson, 2016). In essence, the definition, goals, and organization of public health as a discipline has changed over the last 170 years with social reform. Through this evolution, the roles and responsibilities of those working in public health professionals have been influenced and tested by various other disciplines. Public health has five core disciplines in which practitioners train in epidemiology, biostatistics, social and behavioral sciences, environmental health, and health management (Andresen and De-Fries-Bouldin 2010). Professionals in different fields work together in solving problems that benefit from the application of more than one set of skills. The hallmark of public health is the philosophy of social justice and a focus on populations and a focus on prevention.

Rohr et al., (2005) argue that research on public health and organic foods may align with a consumer's need to be physically fit and improve their quality of life. The public health discipline may also focus on an aversion to the kinds of food safety issues that are associated with highly processed foods. As such, scholars and researchers must examine the motivation and the acculturate needs of organic food consumers thoroughly. Additionally, academics seek to appreciate better the motivation and needs of persons who do not consume these foods. This understanding can help to explain why specific consumers choose to eat organic, while others prefer to eat conventional foods (Hjelmar 2011). Economics plays a significant role in food choice, but there may be other factors that are as of yet unknown (Aertsens et al. 2009). Therefore, it is necessary to study other factors that play a role in food choice and why consumers exhibit various health habits in regards to food irrespective of illness patterns and frequencies for both physical and mental conditions. Furthermore, research would refocus on the

psychosocial dispositions that influence purchase and consumption strategies (Gittelsohn et al., 2010).

Organic Farming and Environmental Studies

Environmental studies are a multidisciplinary discipline that systematically focuses on studying human interaction with the environment in the interest of solving complex societal problems/issues (Montello and Sutton, 2012). This area of study provides a broadly integrated understanding of the social, political, and historical facets of our environmental challenges with a focus on policy, law, and social aspects of these challenges (Bissonnette and Contento, 2001; Tobler, Visschers and Siegrist, 2011). The scope and meaning of environmental studies include social sciences and the following disciplines in conjunction with one another (i.e., biology, chemistry, physics, geology, meteorology, agriculture, economics).

While the environment has been the subject of numerous studies, only recently (the early 1960s) has it become an active mainstream scientific investigation and discipline. Due to growing public awareness of environmental issues and a need for action is one factor in the growth of ecological studies to what it is today. This broad interdisciplinary research approach examines human interaction with environmental processes, from different natural and social science disciplinary viewpoints. From its beginning, environmental studies have always been an academic field that embraces a philosophy of advocacy, in which research promotes particular values such as the ethical value of environmental conservation (Montello and Sutton, 2012). Understanding both ecological and social sciences is necessary for the understanding of the complexity and multidimensionality of ecological issues and problems, including organic farming and profitability.

Belon et al. (2016) argue that it is essential to study the various environmental factors associated with organic farming and profitability, such as farmers, suppliers, and consumers concerning conventional and organic foods. The conventional food supply system, especially the food commodity chain, can lead to extreme forms of environmental degradation or conservation (Ahearn, Armbruster and Young, 2016). However, the

economic costs of participating in conventional food production may outweigh the environmental costs associated with organic farming. Researchers argue that ecological management strategies that can promote economic and environmental sustainability concerning food production will be achieved only through a coalition of the willing, in which environmental sustainability receives considerable analysis as profitability (Sazvar, Rahmani and Govindan, 2018). By assessing the basic economic concepts behind pollution, environmental management, and emissions targets, there is demonstrable connectivity with the social cost of pollution that consists of all environmental damages. These social implications include health costs and reduced enjoyment from consumer locations, as well as direct financial accruals by farmer and supplier companies that need consideration as food resources decrease (Zander and Hamm, 2010).

Organic Farming and Economic/Finance

Finance is a discipline or subject area that describes how individuals, governments, and corporate organizations manage the flows of money through an organization (Chang 2005; Mayo, 2011). In essence, finance enables us to understand better how people make decisions about the collection and allocation of resources in organizations. Although finance is a separate academic discipline, its roots are in accounting and economics. In many ways, finance is a sub-discipline of economics, and many financial principles are rooted in economic theory. The development of empirical tools further augmented financial analysis, as statistics became a means to verify economic theory as it applies to finance (Mayo, 2011). The ability to test economic and financial hypotheses further enriched the field of finance. Popov (2018) explains that finance was a branch of economics until the closure of the 19th century that it witnessed significant developments and shifts with regards to scientific rigor. The academic discipline of finance includes the following specialized areas in its scope (i.e., public finance, institutional finance, securities and investment, international finance, financial management). Approaching finance from more than one perspective is fundamental, especially in organic farming and profitability. An interdisciplinary approach can fuse knowledge and insights from other disciplines within an economic framework of analysis to form a more

inclusive means of examining the research questions, thereby fostering a more detailed and productive description of the issue/problem.

This paper draws inspiration from a wide range of literature associated with organic farming and profitability from the discipline of finance, despite being circumscribed technical fields, finance, and accounting touch on a vast number of areas (Popov, 2018). Finance seeks to capture the essence of the relationship between a company and its stakeholders, a relationship that has legal, financial, managerial, and cultural dimensions. As such, finance is not a discrete discipline, but rather as a cornerstone of business theory, management, and economics (Kavussanos and Visvikis, 2016). The primary focus/core of this research is on issues related to the profitability of Canadian organic farming, staying in business to contribute to environmental sustainability and farming social responsibility.

Another specific research agenda of great importance to the researcher is how to frame the cost-benefit analysis of organic food used by Canadian organic farming, since in the absence of profitability; organic farming cannot achieve pro-social and pro-environmental goals (Bergendahl, Sarkis and Timko, 2018). With these considerations, it is fundamental to examine organic profitability and agriculture from an interdisciplinary vantage point, leading to new insights that would have been undiscovered if a discipline-specific approach was adopted to understand this phenomenon.

Integrating these disciplines and sub-disciplines

As evident from the review of literature, a significant number of researchers have tried to understand the links between corporate financial performance and benefits for the development of human society, specifically those associated with health and the environment. However, there are gaps in this body of research surrounding organic farming and profitability. The author is particularly interested in some of these gaps as outlets for this journey of scholarly work at the interdisciplinary research level. The research questions above reflect on significant holes within the literature and knowledge/disciplines. The report intends to allow integration from the specific perspective of organic food use in society. To date, only a few studies have examined how to support sustainable, healthy, and organic food systems and its link to social responsibility. However, this has not

generated scholarly answers to the research questions mentioned in the literature.

More importantly, existing methodologies and empirical approaches can allow the exploration of the research questions. For example, brand premiums and customer engagement have experimentally, pseudo-experimentally, or correlational measurements. Additionally, accounting methods based on the use of secondary data can measure the profitability of organic food and the utilization of organic food by significant companies (Flora, 2018). Although we have considered this research topic to be novel and worthwhile, the author needs additional research practice and sophistication to answer these questions within the current study more empirically. In academia, working across disciplinary boundaries helps scholars to avoid silo thinking, which in turn creates alternative perspectives to viewing an issue, resulting in a better reflection of real-world complexities (Augsburg and Henry 2009; Chandler 2009; Morin 2008; Repko 2012; Shailer 2005). Due to the contributions from the various disciplinary perspectives and modes of thinking, organic farming can be, therefore, a complex interdisciplinary research domain.

It is important to note that the researcher's approach to understanding organic farming is diverse and calls attention to a breadth of various interests. The researcher believes that different educational backgrounds (i.e., accounting and commerce) and personal connection to the topic stimulated a desire to frame the current study around the tenets of interdisciplinary research. This insight results in opportunities for conceptualizing relationships with other parallel disciplines. Organic farming and organic food utilization present a unique opportunity to understand a system of interconnected profitability, sustainability, and operational concerns shared by individuals in society. As a cornerstone of knowledge production, organic farming, and profitability require an interdisciplinary approach to comprehend the various facets associated with this phenomenon. This research topic covers broad areas of science, including natural, humanistic, social, and economic/commerce. The critical aspect studied in the current study is the profitability of organic farmers. If they are to survive in a competitive market, then they will be a benefit to society, including in the domains of health and the environment. Therefore, one can argue that organic food is fundamentally an interdisciplinary

subject. As such, this study intends to demonstrate how these interdisciplinary and innovative facets can undergo the integration of multiple perspectives.

According to MacRae (1993) and McLaughlin and Clow (2008), in terms of food production, farmers, customers, and companies ethically react in the sense of acceptable ways within a particular ecological, economic, and social fact.

Research originating from this area of the study describes research methodologies in organic farming that clearly distinguish between organic and conventional food research methodologies and indicates the different blend characteristics (Keatinge and Rasmussen, 1999).

Organic farming research associates with a broader range of interdependent factors (Gallin and Ferguson, 2019). It likely relies on a more significant component of value judgment or intuition.

The table below demonstrates how organic farming embodies this integrated outlook as compared to conventional agriculture. The section below highlights the various disciplines and sub-disciplines (i.e., public health, environmental studies, and economic/finance) integrated into understanding organic farming and profitability better.

Table 1. Generalized characteristics of organic and conventional experiments (Keatinge and Rasmussen, 1999)

Organic	Conventional
Inter (multi) disciplinary	Discipline-based
Interdependence of activities	Singularity of activities
Role of value judgment/intuition	Objectivity
Longer-term	Short-term
Environmental interaction	Environmental control
Greater range of parameter studies	Fewer parameters evaluated
Based on farmer goals	Involve 'commercial' goals
Applied	Fundamental

(Source: Keatinge and Rasmussen, 1999)

Research methods for studying organic farming and profitability focus on acceptance of complexity as an essential part of the research process. Furthermore, conducting interdisciplinary research is far from an easy task. According to Francis and Hildebrand (1989), holistic and multidisciplinary approaches focus on the total systems. Farming Systems Research and Extension (FSR/E) takes into account the multiple goals of the farm family as well as the economic and resource situation such as profitability, sustainability, organic food, and operational concerns in which the farm operates (Poats, 2019).

Additionally, when considering the time dimension within which families make decisions and plans for the future, the long-term sustainability of production and profit become central to system design (Francis and Hildebrand 1989). A systems methodology (i.e., real-world activities and systems thinking about the real world) suggests interdisciplinary efforts in research and education. This kind of research necessitates not only a consideration of various disciplines, including farmers, farmworkers, consumers, and policymakers, but also profitability, sustainability, organic food, operations, and others (Poats, Schminck and Spring, 2019).

This paper integrates the knowledge, concepts, theories, and methods from these diverse disciplines on organic farming by drawing inspiration from Repko's (2008) conceptualization of how to conduct interdisciplinary research. Repko (2008) identified ten steps to help guide the multidisciplinary researcher. First, state the problem or question, justify using an interdisciplinary approach, identify relevant disciplines, and conduct the literature search. Then develop adequacy in each related subject, analyze the problem, and evaluate each insight into it. Again, identify conflicts between each idea, establish common ground, and integrate insights. Finally, produce an interdisciplinary understanding (Jones et al., 2019).

Similarly, Szostak (2003) employs a similar approach to conducting interdisciplinary research. The researcher explores these ten guidelines suggested by Repko (2008) to encourage quality work instead of superficial multidisciplinary research and practice. These guidelines allow flexibility for researchers to revisit earlier steps as they perform later stages, alter the

questions as one discovers new information, embrace new theories and methods as the limits of the first ones chosen to become apparent.

CONCLUSION

This paper seeks to advance the understanding of the organic farming and profitability in the province of Ontario through the integration of two or more disciplinary perspectives, leading to a deeper, richer and broader understanding of this issue than is typically possible through a single disciplinary approach (Frodeman et al., 2012; Moran, 2010; Newell, 2013; Shailer, 2005; Szostak, 2007). Employing an interdisciplinary perspective to understanding organic farming and profitability is essential because each discipline that explore this topic previously had their strengths, weakness, and also examined this topic from a particular vantage. Therefore this approach can be seen as a means of opening up a new meaningful research ground. The secondary review of data is appropriate in its capacity to look at existing data and repurpose and contextualize it within other fields of study. This report aspires to create a paradigm shift in the analysis of the profitability of organic farming.

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