

Investigation of the complete supply chain for potatoes in Northern Ireland

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Abstract

Supply Chain Management (SCM) is an integral approach of management where lots of beneficiaries work together with their professional interest. Potatoes supply chain like other agricultural products in developed country like the United Kingdom included some important beneficiaries. Interests are not same due to the nature of the professional activity. In distribution systems in developed country always have problems to organise all beneficiaries. Some beneficiaries are discriminated some are not their status as profitable either company or sole trader. In the study, potato farmers of Northern Ireland produce potatoes and these potatoes supposed to be distributed directly to the consumers. As the work in the capitalist society divided in many ways with profit motive, therefore there were many intermediaries between producers and consumers who worked for distributing NI potato to the consumers. They were related together with their own interest and goal. One beneficiary was not thinking about another beneficiary with any kind of interest sacrifice. Finally farmers who were the main producers became discriminated with the price. This is the main problem found in the study. Consumers also have no intention to know the life of farmers. If farmers' society is not survived in sustainable development way then the potatoes will not be cultivated. Therefore in potatoes farming everybody in the society needs to make their attention for the right of the potatoes farmers of NI.

Keywords: Potato, Policy, Supply chain, Management

Introduction

Agri-food supply chain is not only a local issue of business management, but also an issue related with globalise process in the international trade. After cold-war in Europe, it became a process of balancing demand and supply around the world especially for the developed country. The trend of production in developed countries changed in developing countries. Globalisation is responsible for changing the economic situation around the world. There are lots of significant advantages and disadvantages of globalisation and supply chain. According to Roekel *et al.* 2002, globalisation offered huge opportunity for producers and exporters of developing countries. Those opportunities are significantly working in the agricultural sectors globally. There are many intermediaries or transitional distributors who play acting role in the process of agri-food supply chain in the world. Transitional companies like retailers and importers are responsible for expanding the agricultural product market through international operations to create demand among new customers. That kind of customers' demand of agri-food products are not confined with local supply while agri-food markets are now globally expanded through big companies (Roekel *et al.* 2002). Supply chain of any products is a management with integral approach in which partners (say growers, suppliers, retailers, customers) jointly have to have target plan and control the flow of goods through different nature of intermediaries to the final consumers in the market (Roekel *et al.* 2002). As agri-product like potatoes are highly demanded products for every household in Northern Ireland So to maintain sufficient supply in Northern Irish market, NI potato growers, supplier like Wilson Country, retailers like Tesco, Sainsbury's should have complete integral approach of plan and flow of supply to satisfy the customers demand in the NI market. Lambert and Cooper (2000) stated the aim of supply chain management is coordination of production processes. As it's a complete integral approach of production and distribution to the final consumers, so it should have relationship between producers, intermediaries and consumers in the chain. In this study it will be investigated the relationship and problems in the field of potatoes supply chain in Northern Ireland. Traditionally potatoes are an important crop in Northern Ireland (Dardni.gov.uk, 2011). Potatoes were the stable for survival of many generations. On the other hand, potatoes farming caused to many Irish people immigrates to North America (Wright, 2010). Therefore potatoes are treated as main agricultural crops still in North and south Ireland. The supply chain approach was integral part of any phase on it, so potatoes growing in NI are not only

dependent on farmers' own choice of production. The target of cultivation depends on the demand in the market finally. The supply of potatoes from growers to the consumers passes through different intermediaries' phase where natures of interests are not same with others. Therefore there are some critical problems and relationship take place in the path of potatoes supply chain. In this study, it will be investigated critically the problems and relationship among all beneficiaries in that supply. Moreover, product assortments have enlarged dramatically and it has been increasing day by day to fulfil the requirements of market which are product quality, traceability, delivery services and sustainability (Hsiao *et al.* 2010). So, the products which are produced in the agricultural field need to be distributed in a proper cost-effective and legal way to the retail market through intermediaries. The process of distribution is not so simple as because there have lots of difficulties for managing the products supply with good quality and competitive price in market. As there have lots of different considerable things in the supply chain so this study will be investigating the problems and relationship between producers, intermediaries and customers of potato supply chain in Northern Ireland. It is well known that potatoes came to the Isles of United Kingdom and Ireland from South America in the era of Elizabeth. Two adventurisms Drake and Raleigh introduced potatoes to the United Kingdom and Ireland in 1586 (Wcf-phonix.co.uk, 2011). From that time in the history, it has been running potatoes production with sophisticated and systematic way. The varieties of potatoes developed through breeding by beneficiaries companies, individuals or government initiatives (Wcf-phonix.co.uk, 2011). Product assortments have enlarged dramatically and it has been increasing day by day to fulfil the requirements of market which are product quality, traceability, delivery services and sustainability (Hsiao *et al.* 2010). Therefore, potatoes supply chain in Northern Ireland also need to maintain the quality, traceability and delivery services in a sustainable way in local markets or supermarkets. As potatoes are big issue in culture and politics of Northern Ireland and overall Irish people, therefore the supply chain of potatoes should need some extra care for fulfilling the exact demand in the market efficiently. Every system has some problems to run automatically. Supply chain of potatoes in Northern Ireland is not out of that truth. NI potatoes growers cannot sell their potatoes to consumers directly. They need to go through supplier and supplier to consumer. Some value adder also get potatoes either directly or from supplier and finally sells their value added potatoes product to the supermarket. Therefore scenario is not smooth and simple to move potatoes to consumers. This is like the problems of distribution system in the capitalist society which also described by Adam Smith (father of economics). Furthermore there have complex relationship act among the beneficiaries in that chain. The reason for choosing the topic: i) Potato is very important issue in NI; ii) With knowing the nature of chain, it is possible to take further action of potatoes cultivation more in NI; and iii) Due to large percentage of unemployment in service sector, unemployed people should be motivated for farming.

Objectives of the study

- i. To identify the potato supply chain process in Northern Ireland;
- ii. To identify the intermediaries in the potato supply chain in Northern Ireland; and
- iii. To investigate the problems of potato supply from producers to customers.

Materials and Methods

As it should have done with face to face basis questionnaire procedure in the data collection method, some of the data collection have been done through email system. Same copy of questionnaire was provided at first to every respondent with ethics form. It was provided also pen to every respondents for their answers in the sheet. Also same time it was told every questions orally to all respondents who provided their answers in face to face method. When some of the respondents were busy that time, it was sent same soft copy to their email address for getting back to the study worker. Most of the time, it was travelled to different places of data collection by taxi, bus, train, etc. The travelling was very costly to touch farmers and suppliers. Retailers and Customers were available for data collection in Belfast city. Finally it was found 70 respondents for their opinions in the survey.

Questionnaire: Questionnaire is defined as the technique of data collection method where same set of questions will be asked to the different respondents either in a same organisation or in a different organisations of same industries in a predetermined order which are related to the questions of the research (DeVaus, 2002). For the purpose it was sorted some questions related with the objectives of

the research. It has made 4 questions regarding farmers' demographic situation were made regarding farmers' situation of potatoes production and relationship with beneficiaries in the chain. Though retailers were also an intermediary in the chain, it was made some regarding their role in the potatoes supply in NI. Finally some important questions were representing to get view of consumers in the potatoes supply chain

Sampling: It is important to discuss about population and sample before explaining sampling procedure. To discuss about the relation of population and sample in primary research methods, Bryman and Bell (2003) described that sample is to be selected from the universal units of population. In this research there were many samples in the large population of farmers, supplier, retailers and consumers in NI potatoes chain. More samples from large were not possible to get due to time constraints of the research. As the research should be done in a tiny period of academic time, therefore only 70 respondents were taken from the large population in research field.

Issues of reliability and validity: As it will be taking 70 data from different types of farmers, supplier, retailers and consumers in the potatoes supply chain of Northern Ireland, so it is not possible to reflect actual scenario of the fact of research title. There are a good chance not reflect the actual scenario of potatoes supply chain. The decision which will be coming as research outcome will also be validated during its boundary of circumstances.

Ethical considerations: Ethical issue is important due to the social responsibility of the research. The beneficiaries were asked politely about research ethics before. The ethics were included with data protection, not biased with any one of beneficiaries in the chain. It was given full right to withdraw the opinions given by the beneficiaries in the chain.

Results and Discussion

This chapter is giving results by analysing the data found from the different field of beneficiaries related with NI potatoes supply chain. For this purpose data have been collected from the different farmers, suppliers, retailers and consumers from different county of NI. Analyses of the demography of the Respondents: demography is important for any survey. For sampling it is important to know the demographic situations of the respondents. For this reason, it was done later on some demographic situations of farmers as because farmers were working as a self-employed in their way. Other beneficiaries like supplier, retailers found in the chain were not working independently for them. Customers were free in the chain as they are consumers in distribution system of potatoes.

Gender of respondents: In Figure 1, the percentages of male representation of the study were higher than female representation. In producing potatoes, mostly males were contributing more than female. As potato cultivation is a laborious job, therefore representation found in the survey from male group.

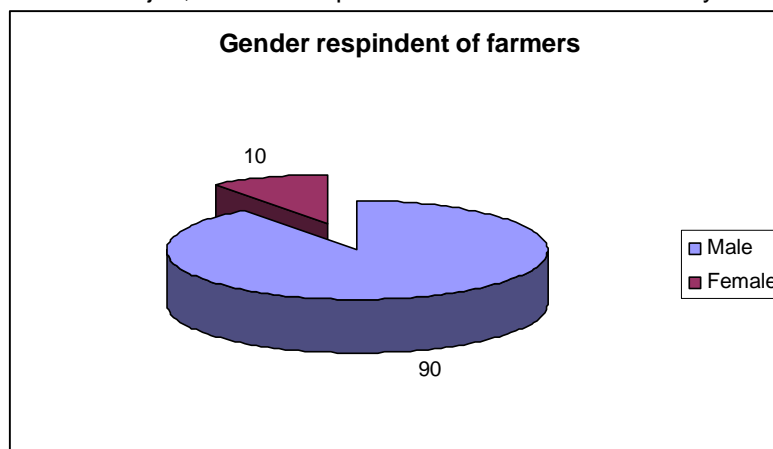


Fig. 1. Gender of respondent

County of farming: The sampled data found from the case study are survey shown in In this figure 2, it is observed that most of the respondent farmers are from Antrim (40%) and then the representation from Armagh and Tyrone are same (15%). There is similar type of representation found in case of all counties except Antrim. As the researcher, lives in the county Antrim and it are easy to get data from the same county, therefore the most data concentrated on the same county.

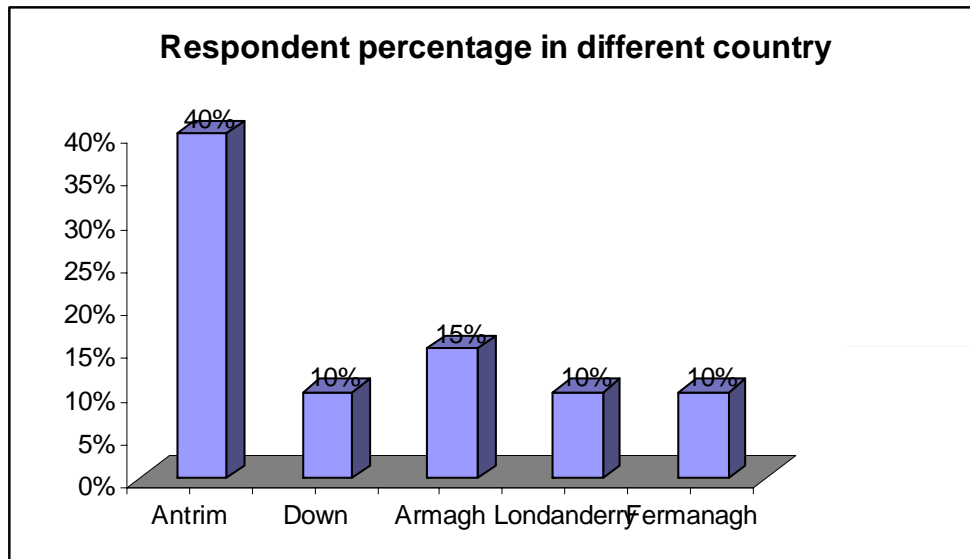


Fig. 2. Country of respondent

Respondent's length of work: The length of service in potatoes growing field of NI is an important issue to know. That is why, figure 3 was illustrated. This figure shows that most of the farmers they served in the potatoes growing more than 9 years and their percentages (60%).

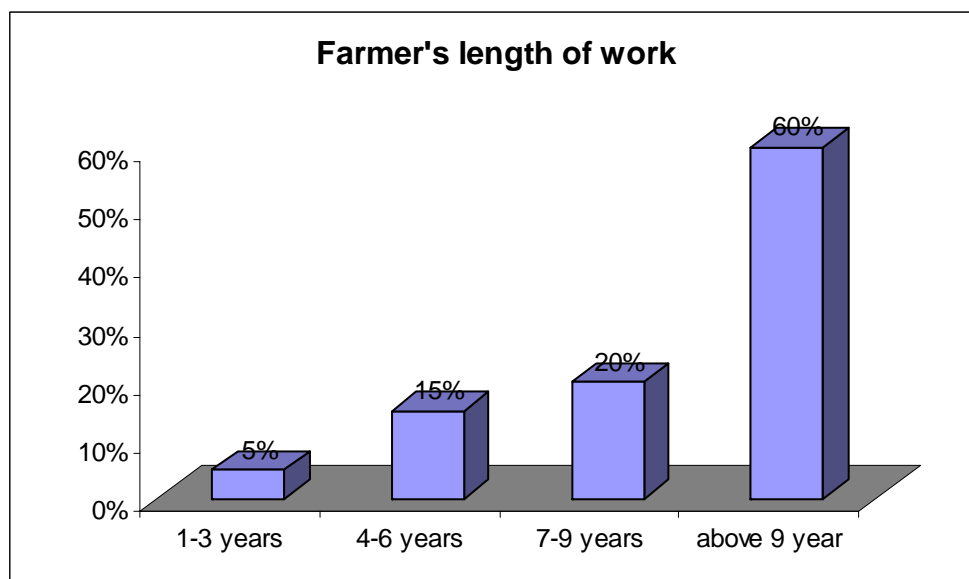


Fig. 3. Farmer's length of work

Analyses of the questionnaire responses of farmers: It has been designed to include some important questions on research topic by which a clear concept can be achieved from the questionnaire opinions finally. For this purpose, it has been arranged to visit to farmers' places in different villages and their houses. Figure 4 shown related with farmers post-harvest facilities where almost all farmers given their opinions that they didn't have any post-harvest facilities like cooling, cleaning. Potato farmers in NI should have those facilities for being located in the developed part of the world. If they could get those facilities they could supply more products to local market rather than supermarkets' supplier.

In developing in the questionnaire in accordance with their relationship with their next stage beneficiaries named supplier. In answer of question 8-9, 90% farmers distributed their potatoes to supplier. Only 10% farmers were exceptional in responses while they used to supply their products to different local markets. Farmers produced for knowing exiting relationship between farmers and supplier. The position of supplier in supply chain is an intermediary or middleman who has not direct contribution to production. Almost all farmers had given their opinion that any supplier is not contributing to the farmers' production. 100% farmers had given their opinion that in their production supplier had no financial contribution. Fig. 4. shows that 80% farmers faced pressure of reducing price of their produced potatoes. In these questions almost all farmers (more than 70%) have represented that they are not receiving any kind of production support from the government. Other said they received some financial and agricultural input support.

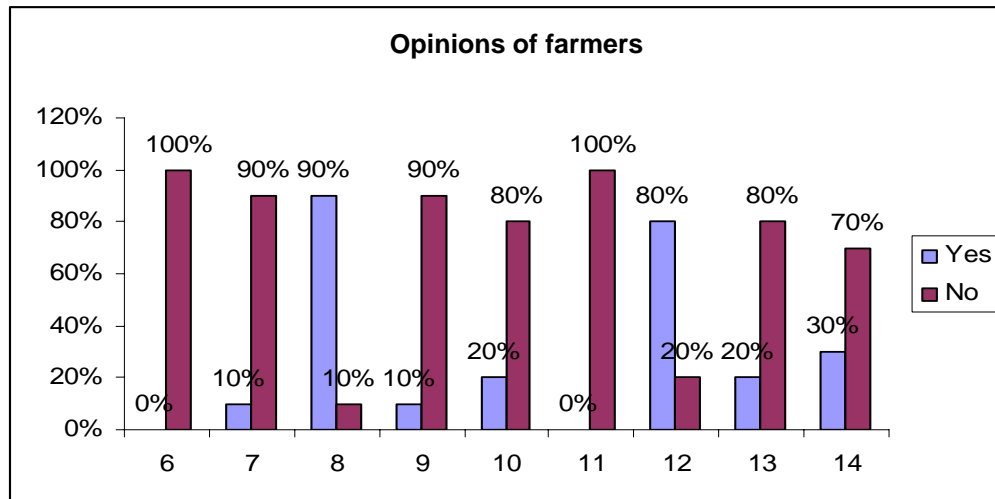


Fig. 4. Opinions of respondent farmers

Analyses of the questionnaire responses of supplier: In this questionnaire was designed to get information of supplier in potatoes supply chain of NI. For this purpose, questions (1-10) represent the questions of problems and relationship of supplier with other beneficiaries. Questions (1-4) are represents type of supplier where 50% suppliers are big company and another 50% suppliers are individual sole trader supplier. 100% supplier supplied potatoes to retailers which they collected from NI farmers. Questions (5-7) represented the relationship between farmers and supplier. Fig 4.5 shows in question 5, 70% supplier had influences on their farmers for control of quantity of supply. 50% supplier had given their opinion about the right price of potato of their companies which was made differences with other 50% sole trader supplier. In questions 7, 50% supplier had given their opinion that they used to give the target of production to farmers. Those 50% suppliers are big companies in potato supplying to supermarkets. Other 50% sole trader supplier did not give any target to their farmers.

In design of questions (8-10) represented the relationship with supermarket or any legal issue in existing environmental law. Almost all suppliers said they followed environmental law for potatoes supplying around NI. None of them were getting any kind of payment before supplying which indicates that they had to work depending on supermarket's wish. 50% suppliers said in question 10 that they did not get any government support for their supplying activities, other 50% sole trader suppliers were different when they were getting support from government.

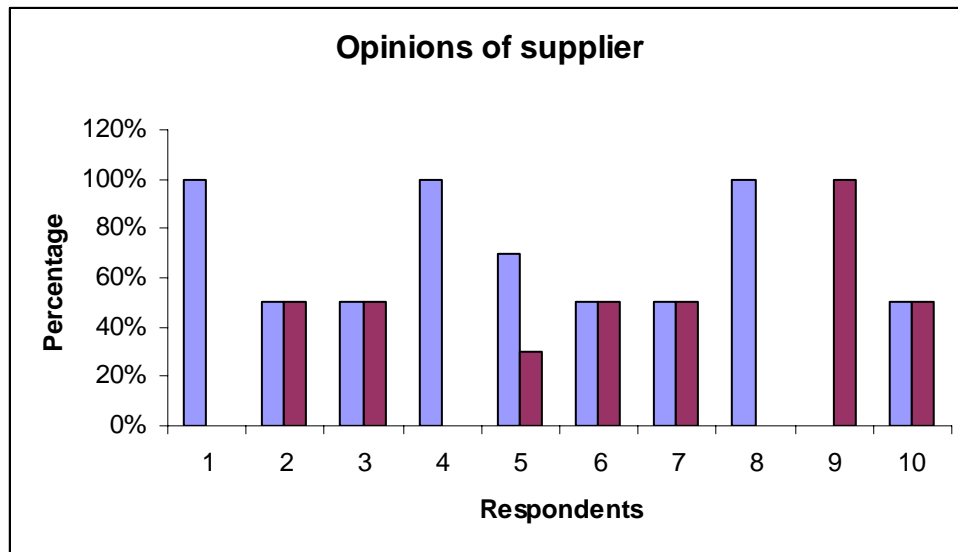


Fig. 5. Opinions of supplier

Analyses of questionnaire responses of retailers: In this questionnaire design, questions (1-8) designed based on the type of markets who were getting potatoes from supplier. In this case, 50% retailers found in the survey were local and other 50% supermarket. In question-3, 100% retailers had no price arguments with their retailers. In questions 4, 100% retailers had given target of supplying to their supplier. Therefore it proves that with the retailers' requirement, supplier supplied the potatoes to supermarket. In questions 5, 100% retailers had no connections with the farmers who were producing potatoes for their store. As question 5 was based on question 6, therefore answer of question 6 not makes any sense while all retailers had no connection with farmers. 50% retailers said they had fair trade policy for their supplier to maintain the right of farmers. Those 50% were big companies and they do not think about their competition just corporate responsibility of the company to the society. Other 50% retailers are small grocery shop and local market, therefore they even do not think about the right of farmers. In answer of question 8, all respondents have been found to face competition on price to other market or supermarket.

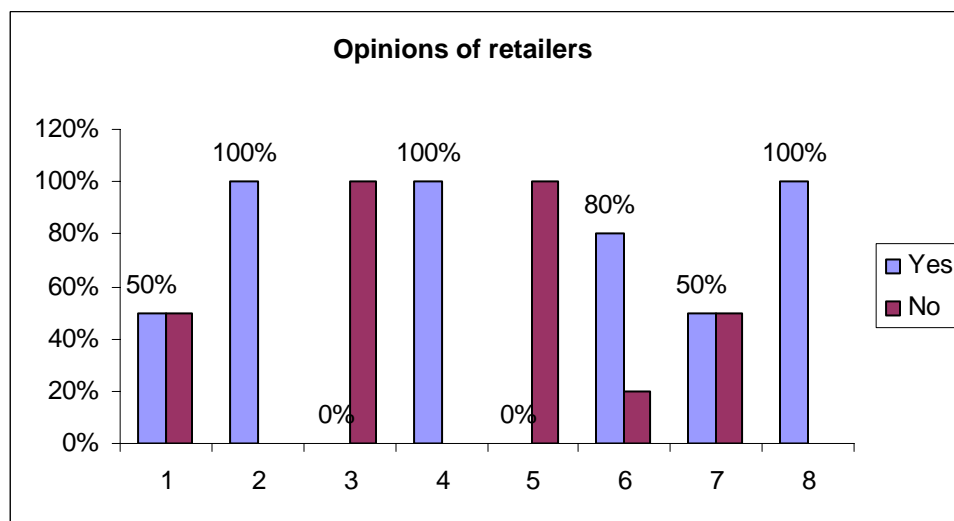


Fig. 6. Opinions of retailers

Analyses of questionnaire responses of consumers: In this questionnaire design, it was asked some questions related with consumers consciousness about the farmers and society. In answer of question 1, 100% consumers consumed potatoes in their daily life. All of them in answer thought that potato supply should be smooth in the market though all of them do not know the procedure and method of potatoes cultivation. In the questions 4 about the correct price of potatoes to the farmers, 80% consumers thought that farmers were getting right price of their potatoes production though 60% of them wanted to know the life of farmers. Another 40% did not want to know. 100% consumers thought in answer of the question 6 that finally government should take proper management of price in supply chain for farmers.

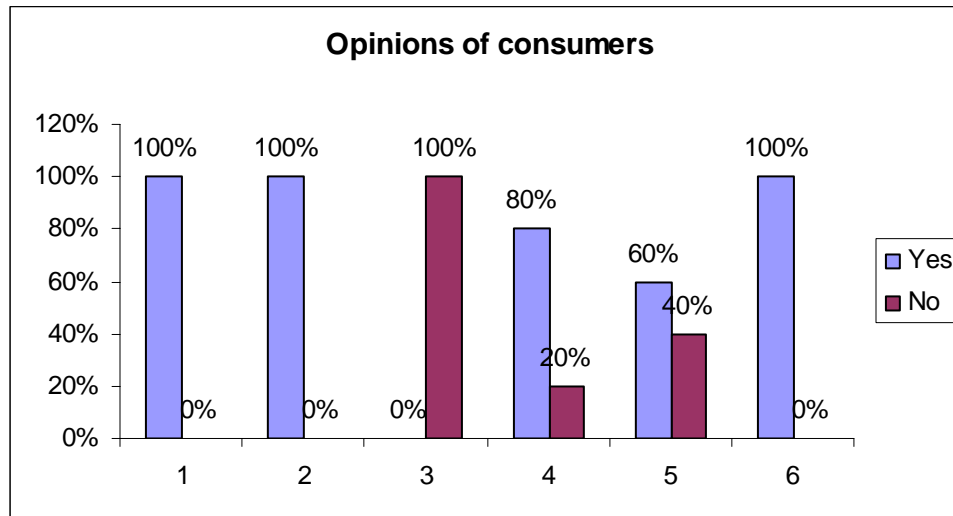


Fig. 7. Opinions of consumers

Problems found in the complete potatoes supply in NI: Lele (1981) stated that there are more intermediaries in supply chain of any agricultural products. That kind of evidence is also found in the current study. In this study, it was found there are many intermediaries such as – supplier, value adder and retailers who were treated in view of benefit or profit share in the process of price increment in the production and distribution system. In the results, it is found there are many problems about right price, pressure of quantity of production, government involvement, environmental law, consciousness of normal consumers into farmers' conditions etc. Like other supply chain, NI potatoes farmers are not getting right or fair price, inputs of productions, other support from supplier, retailers and even though government. In existing production system, all beneficiaries are putting their product price without any control of government and support. Farmers are used to do farming long time traditionally as family work in the society. And also they are helping to increase the GDP of Northern Ireland. But NI potato grower were not happy about their prices while all suppliers were trying to push to reduce the selling price to them. In this study, it was found that supplier also controlled by the retailers though supermarkets retailers had price argument with the supplier. Consumers only consumes in the chain without any social responsibility or any political stands for farmers who are cultivating for them. Though Supply Chain Management of any product is a combined and integrated process of producers, intermediaries and consumers, but in case study of NI potatoes supply chain, it found only integration of interest and that was profit.

Relationship of complete potatoes supply chain in NI: Like other supply chain, in the case study, it had found all beneficiaries described in the potatoes chain were related together with their interest of profit. Common interest of all of them was profit. As there were found not any good legal option in the study, therefore it can be decided that potatoes supply chain of NI is an automatic process. Government role in the chain was as usual role like other departments. It was found no concrete policy for potatoes farmers in NI.

Conclusion and Recommendation

Supply chain management is an integration of all kind of management in the production and distribution among the beneficiaries. In this study, it was found farmers are discriminated with the price in potatoes chain while other beneficiaries are not suffering with price. Consumers all time want to consume product with the cheap price. The price which was finally decided by the retailers depends on the production price, supplying cost and profit of supplier, retailers operations and profit and finally competitive environment in market. Potato farmers of NI cultivate almost in every county for their livelihood. Their main intentions were to achieve good price of potato and good support from the other beneficiaries. In this study, it is found that most of the potatoes farmer was not getting any fair good price from the supplier while supplier became big company to bigger company.

Recommendations in any business research are important due to the next probable scope of the research and any fruitful suggestions against the research problem.

Following are the considerations which can be improved in the potatoes supply chain in NI:

- i) As NI farmers are producing potatoes with their own afford, if any afford like input support from supplier may be initialised by the supplier or retailers.
- ii) Government should have critical considerations of farmers' price, reduction of taxes or provide any kind of subsidy of agricultural inputs into potatoes farmers of NI.
- iii) As consumers are important part of potatoes supply chain, therefore consumers need to know the life of farmers and should have consciousness about their rights in the society.
- iv) Retailers may create pressure to their supplier for giving good support of potatoes production.

References

- Cscmp.org. 2011. CSCMP Supply Chain Management Definitions, [online] available at <http://cscmp.org/aboutcscmp/definitions.asp>.
- Bryman, A. and Bell, E. 2003. *Business Research Methods*, Oxford: Oxford University Press.
- Douglas, J.A. 1993. New crop development in New Zealand, *New Crops*, John Wiley & Sons: New York
- DARD.org. 2011. Action Plan – DARD Future Support to the Northern Ireland Potato Industry, [online] available at www.dardni.gov.uk/action-plan-future-support-to-the-northern-ireland-potato-industry.doc .
- Dardni.gov.uk. 2011. Potato production, [online] available at http://www.dardni.gov.uk/ruralni/index/bussys/organic_production/organic_cropping/potato.htm.
- DeVaus, D.A. 2002. *Surveys in Social Research*, 5th ed. London: Routledge
- Fearne, A. 1996. Editorial note, *Supply Chain Management*, Vol. 1, No. 1, pp. 3-4.
- Ghuri, P. and Grønhaug, K. 2005. *Research Methods in Business Studies a practical guide*, Third edition, FT Prentice Hall, An imprint of Pearson Education Limited, Essex, England.
- Roekel, J.V., Willems, S. and Boselie, D.M. 2002. Agri-Supply Chain Management – To Stimulate Cross-Border Trade in Developing Countries and Emerging Economies. *World Bank Paper: Cross Border Agri Supply Chain Management*. Hertogenbosch cited in www.infodev.org/en/Document.923.pdf.
- Supply Chain Council. 2008. Supply Chain operations reference-model, [Available in Internet at www.supply-chain.org, accessed at 1.40 am on 10/03/2011
- Hines, P., Howe, M. and Rich, N. 2004. Learning to evolve: a review of contemporary lean thinking, *International Journal of Operations and Production Management*, Vol. 24 No. 10, pp. 994-1011.
- Hobbs, J.E., Kerr, W.A. and Klien, K.K. 1998. Creating international competitiveness through supply chain management: Danish pork, *Supply Chain Management*, Vol. 3. No. 2, pp. 68-78.
- Hsiao, H.I., Van der Vorst, Omta, J.G.A.J. and Kemp, R.G.M.. 2010 Developing a decision-making framework for levels of logistics outsourcing in food supply chain networks, *International Journal of Physical Distribution & Logistics Management*, Vol. 40 No. 5, pp 395-414.
- Knox, E.G. and Theisen, A. A. (Eds). 1981. Feasibility of Introducing New Crops, *Final Report to the National Science Foundation*, Washington, DC.
- Lambert, D.M. and Cooper, M.C. 2000 Issues in supply chain management. *Industrial Marketing Management* 29:65-83.
- Wcf-phoenix.co.uk. 2011. Brief History of Potato Growing in the UK [online] available at <http://www.wcfphoenix.co.uk/Web/Site/home/BriefHistoryofPotatoGrowingintheUK.asp>,
- Wright, S, 2010. The history of potatoes in Ireland, [online] available at <http://www.helium.com/items/1720655-potatoes-and-famine-in-ireland>,