

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
http://ageconsearch.umn.edu
aesearch@umn.edu

Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.







The Journal of the Caribbean Agro-Economic Society

Vol. 10, No. 1, August 2018









EDITOR-IN-CHIEF

CARLISLE A. PEMBERTON,

Department of Agricultural Economics & Farm Management, The University of the West Indies, St. Augustine, The Republic of Trinidad and Tobago.

EDITORIAL ADVISORY BOARD

Compton Bourne, UWI, St. Augustine, The Republic of Trinidad & Tobago Carlton G. Davis, University of Florida, Gainesville, Florida, USA Vernon Eidman, University of Minnesota, St. Paul, USA Holman Williams, UWI, St. Augustine, The Republic of Trinidad & Tobago

EDITORIAL COMMITTEE

Govind Seepersad, UWI, St. Augustine, The Republic of Trinidad & Tobago

Edward A. Evans, UF/IFAS, University of Florida, Homestead, Florida, USA

Isabella Francis-Granderson, UWI, St. Augustine, The Republic of Trinidad & Tobago

Cover Design: Kavita Butkoon

ISSN 1019 - 035 X

Articles



Exploring the Talent Needs for Food Safety Professionals in Established Food Processing Companies in Trinidad

Dharamdeo Singh¹ and Jenelle Yarde Blackman²

¹Lecturer, Faculty of Agriculture and Forestry, University of Guyana. ²Quality Manager at Vemco Limited, Trinidad

Abstract

Globalization and the advancement of technologies have contributed to an extended and more complex food chain and increased competitiveness in the local and world markets. Food manufacturing companies are therefore forced to rely on efficient production systems which require individuals with specific skills. This study seeks to identify the skills that are necessary for quality food production and to determine if the undergraduate food programs adequately equip students with these skills. It also determined the advantages and disadvantages of employing graduates with adequate/limited theoretical and practical food skills.

A total of 33 food processing companies in Trinidad participated in the study. Questionnaires were administered to participants using electronic mails and interviews. Data was collected on the characteristics, employees' skills, and the employment needs of each food companies.

Fourteen types of food companies were surveyed across Trinidad. Majority of the respondents (94.1%) stated that University of the West Indies (UWI) graduates working in their companies lack the practical skills required (P=0.001); while 58% stated these graduates were not adequately trained (P=0.23). Food companies indicated that the most important skills needed were: teamwork, communication and people skills (P=0.001). There were several advantages and disadvantages of employing persons with adequate/limited food skills; the most popular advantage was "employees carrying out tasks efficiently" and the most popular disadvantage was "employees producing poor quality work" (P=0.13 and P=0.85 respectively).

This research provided an overview on the food skills of graduates from the UWI food programs currently working in the food and beverage sector of Trinidad. It also indicated the most highly desired skills by employers and provided recommendations for the improvement of skills in the food sector.

Keywords: Hard Skills, Soft Skills, Food Safety Professionals, Food Processing Companies, Food Security, Food Safety

Introduction

According to the United Nations for Food and Agriculture, "food security exists when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life," (FAO, 2006).

Food borne diseases greatly affect the health of individuals as well as the quality and quantity of food (WHO, 2015). Food safety policies for both government and public industries exist

to guide and enforce action from the production to consumption of the food cycle (WHO, 2015). The production of safe food and drinks is the main priority for individuals involved in the production, distribution and preparation of food.

The food industry is very vast in some countries and plays an integral part in a country's economy. It not only provides food but also allows food to have longer shelf life and be free from hazards. Food industries also assist in providing foreign exchange and domestic revenue as well as provide employment for the people of a nation (Economy Watch, 2010).

Knowledge of foodborne diseases have increased which creates a demand for better quality and food that are safe (FDA, 2015). One of the major issue affecting the food industry is "food safety" (US Department of Commerce, 2008). These foods may sometimes be contaminated and cause serious illness and may even be life threatening when consumed. Foodborne contamination is responsible for two hundred diseases; this includes liver and kidney problems and even cancer and neural disorders (Gain Health, 2015).

To ensure that there is always a constant supply of food that is safe and has standardized quality, food industries have implemented strategies such as: Hazard Analysis Critical Control Point (HACCP), Good Agricultural Practices (GAP), Sanitation Standard Operating Procedures (SOP), Standard Operating Procedures (SOP's) and Good Manufacturing Practices (GMP's); in order to combat microbes and produce safer foods (EUFIC, 2015).

To ensure production does not decline in its standards and to improve productivity food companies usually have personnel who are trained in food safety and quality management. Each of these food safety professionals take on various difficult responsibility for food safety within their organization and are usually held accountable for any illnesses caused as a result of their negligence (Noel 2013). This implies that skills that govern food safety are vital to the progression of the food company. These skills are divided into two categories; hard skills and soft skills.

Hard skills are skills that are "easy to observe", "quantifiable" "tangible" and "measurable" (Education Planner 2012). Hard skills can be defined as the technical skills that are needed to carry out a specific task. Soft skills also referred to as "core", "key", "transferrable", "general" and "non-technical" skills that are considered valuable employability skills required in all work places today (Robinson 2008). The term "soft skills" is defined as the interpersonal, human, people or behavioral skills needed to apply technical skills and knowledge in the workplace (Robinson 2009).

Methodology

Site of the Experiment

The study was carried out in Trinidad. Only food companies that were registered with the government of Trinidad were asked to take part in the study. Data was collected from various food processing companies. Questionnaires were pilot tested from six (6) food companies that were not registered with the government of Trinidad Manufacturers Association.

Data Collection

Surveys were emailed to twenty four (24) food companies and nine (9) companies were surveyed using the face to face discussion method. A total of forty-six (46) food processing companies were surveyed and thirty-three (33), (71.73%) companies responded. Companies who received questionnaires via email were urged to call or email any questions, concerns or assistance needed in answering the questionnaire. In the various sections of the interview the employers were asked to indicate the level of importance/agreement (on a seven-point Likert Scale) of

student's skills (where 1 will be rated as not important/strongly disagree and 7 is most important/strongly agree) (Wachenheim and Lesch, 2002). Questionnaire consisted of nine (9) sections that dealt with general information of the company, capabilities of UWI undergraduates, importance of various food skills, advantages of having necessary food skills, disadvantages of not having necessary food skills, skills that require improvement, provision of training of food companies, and profile of the various respondents of various food companies.

A few of the skills surveyed included: people skills; teamwork skills; leadership ability; technical skills; communication (written and oral) skills; interpersonal qualities; grade point average. Skills regarding food safety and quality were also assessed. Some of which included: the knowledge and understanding of Good Manufacturing Practices (GMP), Hazard Analysis Critical Control Points (HACCP), Sanitation Standard Operating Procedures/ Standard Operating Procedures (SSOP/SOP), and equipment maintenance.

Statistical Analysis

All statistical analyses, including the means, standard deviation, medians, and graphs were conducted using the SPSS Statistics Base 17.0 program. One-way analysis of variance tests were performed to detect the statistical differences (P <0.05) of the various level/degree of importance/agreement of respondents from the food companies. The Tukey HSD test was used to perform multiple comparisons (P<0.05). Significance was measured at the 0.05 probability.

Results & Discussion

Over half (18) of the questionnaires were answered by managers, seven (7) by food line supervisors, four (4) by human resource officer, two (2) by assistant managers, and two (2) by quality technicians.

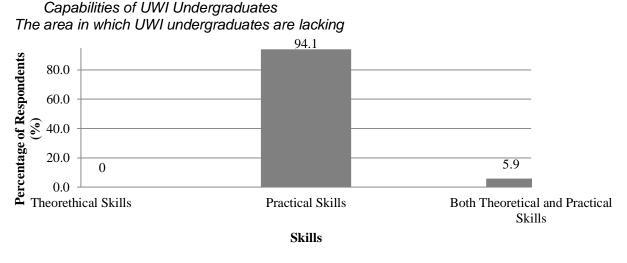


Figure 1: The area in which UWI undergraduates are lacking

Most (94.1%) of the respondents stated that UWI undergraduates lack the practical skills (HACCP, GMP, SOP and SSOP, ability to test foods, maintenance of food production equipment, skills for research and development) required by their companies and this was significantly higher than the percentage of respondents who stated that the area lacking was both theoretical knowledge and practical skills (5.9%) and theoretical knowledge only (0%) F (2, 98) = 192.80, P = 0.001.

Hard Skills

Food Safety is a major issue of food processing due to its health and economic importance (United Nations Industrial Development Organization, 2015). This implies that skills governing food safety are vital to the progression of the food company. Hard skills are skills that are "easy to observe", "quantifiable" "tangible" and "measurable" (Education Planner 2012). Hard skills can be defined as the technical skills that are needed to carry out a specific task. Hard skills are basically the skills gained from education, experience and level of expertise (Hewitt, 2005). It involves the theoretical foundations and practical exposure an individual should have to successfully execute a planned task (Amhed and Fernando 2013).

Major theoretical and practical skills that students should possess when seeking employment at food companies.

Table 1: Major theoretical knowledge and practical skills that students should possess when seeking

employment at food processing companies

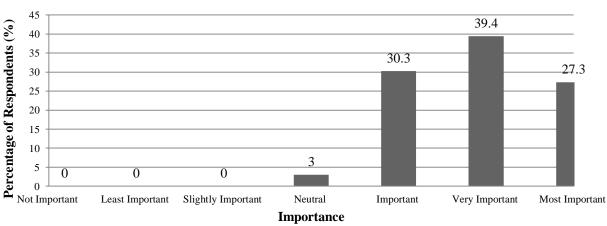
| Agreement | Knowledge and understanding of GMPs | Knowledge and understanding of HACCP | The importance of SSOPs and SOPs | Maintenance of food production equipment | Ability to test foods at the end of processing for quality and safety | Skills necessary for research and development | Knowledge and understanding of food safety laws at a national and international level |
|----------------------|--|---|----------------------------------|---|---|---|--|
| Strongly Disagree | 0.0 (0) ^a | 0.0 (0) ^a | 3.0 (1) ^a | 3.0 (1) ^a | 9.1 (3) ^a | 9.1 (3) ^a | 3.0 (1) ^a |
| Moderately Disagree | 21.2 (7) ^a | 6.1 (2) ^{ab} | 6.1 (2) ^a | 12.1 (4) ^a | 9.1 (3) ^a | 12.1 (4) ^a | 3.0 (1) ^a |
| Slightly Disagree | 6.1 (2) ^a | 6.1 (2) ^{ab} | 12.1 (4) ^{ab} | 6.1 (2) ^a | 18.2 (6) ^a | 18.2 (6) ^a | 24.2 (8) ^a |
| Neutral | 12.1 (4) ^a | 6.1 (2) ^{ab} | 12.1 (4) ^{ab} | 15.2 (5) ^a | 18.2 (6) a | 21.2 (7) a | 15.2 (5) ^a |
| Slightly Agree | 18.2 (6) ^a | 21.2 (7) ^{abc} | 15.2 (5) ^{ab} | 24.2 (8) ^a | 27.3 (9) ^a | 15.2 (5) ^a | 21.2 (7) ^a |
| Moderately Agree | 15.2 (5) ^a | 27.3 (9) bc | 36.4 (12) ^b | 27.3 (9) a | 6.1 (2) ^a | 9.1 (3) ^a | 12.1 (4) ^a |
| Strongly Agree | 27.3 (9) ^b | 33.3 (11) ° | 15.2 (5) ^{ab} | 12.1 (4) ^a | 12.1 (4) ^a | 15.2 (5) ^a | 21.2 (7) ^a |
| P-Value | 100.0 (33) | 100.0 (33) | 100.0 (33) | 100.0 (33) | 100.0 (33) | 100.0 (33) | 100.0 |
| Total | 0.032 | 0.001 | 0.004 | 0.05 | 0.19 | 0.77 | 0.056 |
| F | F(6, 224) = 2.36, P = 0.032 | F(6, 224) = 4.86, P = 0.001 | F(6, 224) = 3.28,P=0.004 | F (6, 224) = 2.18, P = 0.05 | F (6, 224) = 1.47, P = 0.19 | F (6, 2294) = 0.55, P = 0.77 | F (6, 224) = 2.09, P = 0.056 |

Table 1 demonstrates that most of the respondents (27.3%) strongly agree that students should have knowledge and understanding of GMPs when seeking employment at their food companies. The number of respondents who strongly agree on the importance of GMPs was significantly higher than respondents who disagreed and slightly and moderately agreed (P = 0.032).

Knowledge and understanding of HACCP was another important requirement for food companies as majority of the respondents (33.3%) strongly agreed that this skill was crucial for graduates working in food processing companies. The percentage of respondents who strongly agreed on the importance of this skill was significantly higher than respondents who disagreed (P = 0.001) (see table 1).

Majority of the respondents (36.4%) moderately agreed that students should possess the knowledge and understanding of SSOPS and SOPs. There were significant differences among respondents who moderately agree and those who strongly (3%) and moderately disagree (6.1%). There were no significant differences between the number of respondents for neutral, slightly disagree, slightly agree, and strongly disagree (see table 1).

There were no significant differences in the number of respondents who stated that the ability of UWI graduates to maintain production equipment was necessary in food processing companies (P = 0.05) (see table 1). The ability to test food at the end of processing for quality and safety and the ability to undertake research were not important skill requirements for food processing companies as there were no significant differences in the number of respondents who agreed, disagreed and remained neutral (P = 0.19 and P = 0.77 respectively). Similar was observed for the importance of knowledge and understanding of food safety laws at a national and international level (see table 1).



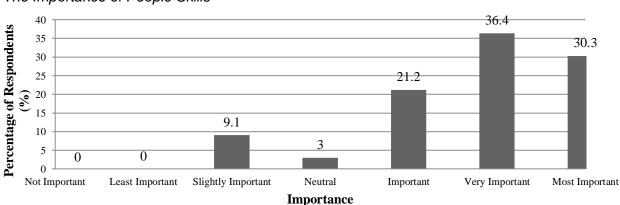
The importance of technical Skills

Figure 2: The importance of technical skills

Technical skills are necessary for UWI graduates working at food processing companies; 30.3% of the respondents stated it was important, 39.4% stated that is was very important and 27.3% stated it was the most important skill. This was significantly higher than the number of companies who stated that technical skills were not important (0%), least important (0%), slightly important (0%) and those who remained neutral (3%) (see figure 2). F (6, 224) = 9.89, P = 0.001 Soft skills

According to Hewitt in 2005, soft skills are as good an indicator of job performance as hard skills and determine an employee's strength as a leader, listener, negotiator and conflict mediator (Hewitt 2005).

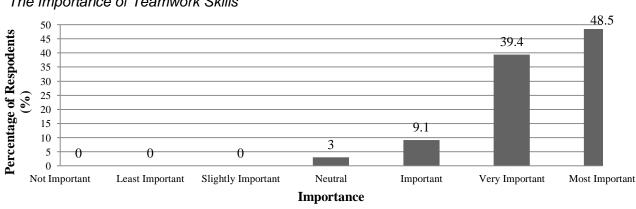
In this study, the perception of employers on the importance of several soft skills (people, teamwork, leadership and communication, were investigated. The most important non-technical skills according to employers were teamwork (48.5%) which was followed by communication (45.5%). Robinson in 2006 also found that employees working together and communication skills; particularly listening attentively, were considered the most important skills required by supervisors (Robinson 2006). In 2013, a survey carried out by Pritchard also indicated that teamwork and communication skills were considered among the most important skills required by manufacturing companies.



The Importance of Various Skills to Food Processing Companies The Importance of People Skills

Figure 3: The importance of people skills to food processing companies

Majority of the respondents determined that people skills were very important. This was significantly higher than the number of respondents who stated that people skills was not important, least important, slightly important and those who remained neutral (see figure 3). (P = 0.001)F (6, 224) = 7.00, P = 0.001



The Importance of Teamwork Skills

Figure 4: The importance of teamwork skills to food processing companies

Most of respondents from the food companies determined that teamwork skill was one of the most important (48.5%) skill graduates should possess. This was significantly higher when compared to the number of respondents who stated that teamwork skill was not important, least important, slightly important, important and those who remained neutral (see figure 4). F (6, 224) = 15. 95, P = 0.001.

In this study, the perception of employers on the importance of several soft skills were investigated.

The importance of communication skills

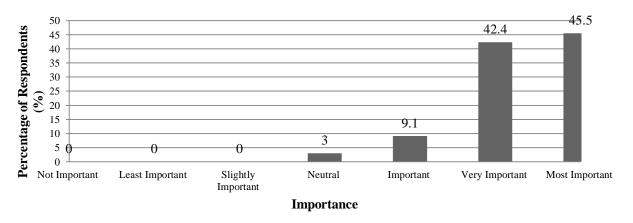


Figure 5: The importance of communication skills.

Communication skills was also crucial when working in food processing companies as 42.4% of the respondents stated that it was very important and 45.5% stated that it was the most important skill. This was significantly higher that the number of respondents who stated that communication skills was not important (0%), least important (0%), slightly important (0%), important (9.1%) and those who remained neutral (3.0%) (see figure 5). F (6, 224) = 15.63, P = 0.001

Most Important Skills

Table 2: The most important skills in food processing

| Skills | Percentage of Respondents (%) Who stated Skills were Most Important | | |
|------------------|---|--|--|
| People | 30.3 ^{ab} | | |
| Teamwork | 48.5 ^b | | |
| Leadership | 12.1 ^{ac} | | |
| Technical skills | 27.3 ^{ab} | | |
| Communication | 45.5 ^b | | |
| P-Value | 0.000 | | |
| F | F(13, 448) = 7.19, P = 0.000 | | |

Table 2 demonstrates the skills that were most desired in the food sector; this was based on the number of respondents who perceived them to be the most important skills. The skills perceived to be the most important were teamwork (48.5%) followed by communication (45.5%) then people skills (30.3%). The percentage of employers who perceived these skills to be important was significantly higher than those who believed that the participation in co-curricular activities, GPA, foreign language and higher education was the most important skills (P = 0.001)(see table 2).

Table 3: Percentage of employers who strongly agreed on the various advantages of having employees with adequate food skills

| Advantages | Percentage of Respondents who Strongly Agreed (%) |
|---|---|
| Employees taking initiatives | 45.5 ^a |
| Work carried out efficiently | 60.6 ^a |
| Confidence of managers of work done by employees | 33.3 ^a |
| Requires little or no supervision | 33.3 ^a |
| Production of good quality goods | 48.5 ^a |
| Increase in overall production | 33.3 ^a |
| Food safety management and food safety control skills | 42.4 ^a |
| Ability to develop and evaluate research and development for practical production | 27.3 a |
| F | F(7, 256) = 1.63, P = 0.13 |

Table 3 shows the percentage of respondents who strongly agreed on the advantages of employees having the necessary food safety skills. More than half of the employers (60.6%) stated that "work carried out efficiently" was the greatest advantage of employing graduates with the proper food skills; however, there was no significant difference when compared to the percentage of respondents for the other advantages (see table 3).

Employers in every industry prefer employees with certain skills set that is related to the job task at hand. These skills can benefit both employer and employees and contribute toward the progression of the industry or company (National Network of Business and Industry Association, 2015).

Employees taking initiative demonstrates a willingness to work and seek out new work challenges and it is a personal skill that employers prefer in their employees (National Network of Business and Industry Association, 2015). This relates to the employees' skills; a combination of their hard and soft skills to successfully complete a task (Targoutzidis *et al* 2014).

In this study it was determined that most of the respondents either strongly agree or moderately agreed that the following were advantages of employees possessing the necessary food skills: employees taking initiatives; work carried out efficiently; confidence of managers in the work carried out by employees; requires little or no supervision; production of quality goods; increase in overall production of company; and food safety management and control skills. The ability to develop and evaluate research for production was the only advantage where most of the respondents slightly agreed.

Table 4: Percentage of employers who strongly agreed on the various disadvantages of having employees with inadequate food skills

| Disadvantages | Percentage of Respondents who Strongly Agreed (%) |
|---|---|
| Employees unable to perform task/s | 30.3 ^a |
| Employees take long period to perform their designated task/s | 24.2 a |
| Poor quality work from employees Employees require constant assistance Employees are constantly making mistakes | 36.4 ^a 21.2 ^a 24.2 ^a |
| Managers have to resign task/s to more capable employees | 24.2 ^a |
| Employees have to be retrained in the area of food production | 23.5 ^a |
| F | F (6, 224) = 0.45, P = 0.85 |

Table 4 shows the percentage of respondents who strongly agree on the disadvantages of employees not having the necessary food safety skills. The most popular disadvantage was "poor quality work from employees". However, there were no significant differences in the percentage of respondents among any of the disadvantages (P = 0.85) (see table 4).

Due to a lack of the necessary food skills, a skill gap can occur. A skill gap is a significant gap between an organization's capabilities and the skills it needs to reach its goal (American Society for Training & Development, 2012). This is a result of a lack of employees that possess the right skills, knowledge and abilities and can result as a disadvantage for companies who experience skill gap (American Society for Training & Development, 2012).

In this study it was demonstrated that most of the respondents agreed (slightly, moderately and strongly) that the above listed were disadvantages. The most popular disadvantage was: "employees produced poor quality work"; this was followed by "employees unable to perform the task". There were no significant differences among respondents who strongly agreed on the disadvantages.

These results can be used as an indication for lecturers and for students since these disadvantages can be linked to student's current performance. If lecturers are aware that students have poor quality work and take long period to carry out a task or unable to perform a task, it reflects on how the prospective employee would conduct themselves in a working environment.

Conclusion

This study takes an initial step towards understanding the skills that are lacking and required by food processing companies. Data was collected from a total of thirty three companies throughout Trinidad and was then analyzed for the: most important skill; advantages of having the adequate skills set; disadvantages of not having the necessary skills; and skills that needed improvement.

It was observed that the areas necessary for food safety education are not only the technical skills which directly relates to safety and quality but rather a combination of both hard and soft skills. It can be concluded that all the skills were important and contributed to the company overall achievement; however, some were rated higher than others. Soft skills such as teamwork, communication and people skills were considered more important than technical food safety skills (GAP, HACCP, SSOP, and GMPs) although there were no significant differences between them.

The results clearly indicated where educators should focus on within the food industry and strengthen those areas that which are of greater benefit to these industries. This will allow food industries to be better able to progress in food production, and create food that are safe and of high quality.

Acknowledgements

The authors wish to express gratitude towards all the food processing companies who participated in this survey. The researchers are also grateful for the technical guidance of the staff of the Food Production Department at University of the West Indies, St. Augustine, Trinidad.

References

- American Society for Training & Development. 2012. "Bridging the Skills Gap."

 Accessed March 30 2016.http://nist.gov/mep/upload/Bridging-the-Skills-Gap_2012.pdf
- Amhed, F. and L. Fernando. 2013. "Soft Skills and Software Development: A Reflection from Software Industry ."Accessed March 4th, 2016. http://www.eng.uwo.ca/electrical/faculty/capretz_l/docs/publications/Faheem-IJIPM-v2.pdf
- Economy Watch. 2010. "Food Industry, Food Sector, Food Trade." Accessed April 16, 2015. http://www.economywatch.com/world-industries/food-industry.html
- Education Planner. 2012. "Hard and Soft Skills." Accessed March 5th 2016. http://www.educationplanner.ca/resources/Articles/HardandSoftSkills.pdf
- European Food Information Council. 2015. "Processing's role in ensuring Food Safety and Quality." Accessed April 23, 2015. http://www.eufic.org/article/en/artid/processing-food-safety-quality-1/
- Food and Drug Administration. 2006. "Managing Food Safety: A Manual for the Voluntary Use of HACCP Principles for Operators of Food Service and Retail Establishments." Accessed April 26, 2015. http://www.fda.gov/downloads/Food/FoodSafety/RetailFoodProtection/ManagingFoodSafetyHACCPPrinciples/Operators/UCM077957.pdf
- Food and Drug Administration. 2015. "To Your Health! Food Safety for Seniors."

 Accessed April 23,
 2015.http://www.fda.gov/Food/FoodbornellInessContaminants/PeopleAtRisk/ucm182679
 .htm.
- Hewitt, S. 2005. "Nine Soft Skills for Success." Accessed January 29, 2016. http://www.askmen.com/money/career_100/121_career.html
- National Network of Business and Industry Association. 2015 "Common Employability Skills."Accessed March 6, 2016. http://businessroundtable.org/sites/default/files/Common%20Employability_asingle_fm.p df
- Noel.J and E. Qenani. 2013. "New Age, New Learners, New Skills: What Skills

- Do \Agribusiness Graduates Need to Succeed in the Knowledge Economy?" Accessed May 3, 2015. http://www.ifama.org/files/20120112.pdf
- Robinson, J. S. and L. Garton. 2008. "An Assessment Of The Employability Skills Needed By Graduates In The College Of Agriculture, Food And Natural Resources At The University Of Missouri." Journal of Agriculture Education 49 (04): 96 105. Accessed February 10, 2016. http://www.jae-online.org/attachments/article/100/Robinson_Garton_49_4_96-105.pdf
- Targoutzidis.A; Koukoulak. T. 2014. "The business case for safety and health at work: Cost-benefit analyses of interventions in small and medium-sized enterprises." http://www.cabiweb.dk/media/847178/arbeidsmiljoe-som-business-case.pdf
- US Department of Commerce. 2008. "Food Manufacturing." Accessed April 17, 2015. http://trade.gov/td/ocg/report08_processedfoods.pdf
- Wachenheim, C. and W. Lesch. 2002. "Assessing New-Graduate Applicants:

 Academic Perceptions and Agribusiness Realities." Accessed June 3, 2015. http://ageconsearch.umn.edu/handle/14724
- World Health Organization. 2015. "Food Safety." Accessed April 14, 2015. http://www.who.int/topics/food_safety/en/

