A STUDY ON CAREER PREPAREDNESS BY FOOD

TECHNOLOGY STUDENTS

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DECLARATION

I hereby declare that this dissertation is my original work, and it has not been submitted for the candidature for any other degree at any other university.

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DEDICATION

This dissertation is dedicated to my dearly departed father Ganesh Prasad Shrestha, in appreciation of his support and encouragement throughout my educational journey. His moral guidance always empowered me in every step of my learning. Similarly, how my mother Malati Shrestha inspired me to continue learning, I also want to dedicate my work to her. She made an environment where I could study peacefully and enhance my knowledge.

ABSTRACT

Of the dissertation of *Meera Shrestha* for the degree of *Master of Philosophy in Education (Development Studies)* presented at Kathmandu University School of Education on 14 October, 2022.

Title: *A Study on Career Preparedness by Food Technology Students*

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Food science and technology is one of the technical fields that seeks to educate students for potential careers after graduation. The food programs are designed to provide theoretical and practical training in processing, preservation, storage, value addition, and quality control of food products. The main objective of the programs is to equip students with the knowledge and abilities necessary to compete as qualified, well-educated candidates in the job market. Career preparedness is a key issue among students pursuing a successful career. Colleges and universities state that they aim for students' career preparedness; however, after completing a degree, students have been facing problems in performing work-related tasks.

This study aims to find food student confidence related to career preparation, learning experiences, and supports and barriers system in career preparation. The key research question of this study is how food technology students think about their future. It investigated how food students relate their learning activities and experiences with their future careers. According to the Social Cognitive Career Theory (SCCT) tested in this study, self-efficacy, outcome expectations, and goals are

associated. In this study, SCCT is tested on the career preparedness of food technology students. A customized questionnaire was used in this survey of 146 students of food technology (70.5 % females and 29.5% males) studying at the undergraduate level. Statistical tools and techniques like correlation, t-tests, and analysis of variance (ANOVA) were utilized to examine the collected data using the statistical program for the social sciences (SPSS) 25.0. The result of the study showed that learning experience, social support, and educational environments help students in career preparedness.

The study has various implications for the future. Firstly, educational institutes and universities may benefit from the result of the current study while revising the curriculum of various technical subjects. The study pinpoints their weaknesses from the perspective of career preparedness. Secondly, particularly in the context of Nepal, the study might be helpful for other researchers who are researching career readiness in the same profession or other fields. Thirdly, by understanding how their study is connected to vocational readiness and ultimately to a successful career in the future, students of technical subjects, particularly, food science and technology, may benefit themselves.

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ABBREVIATIONS

BSc	Bachelor in Science
BTech	Bachelor in Food Technology
DFTQC	Department of Food Technology and Quality Control
GC	Gender and Career
GDP	Gross Domestic Product
IFT	Institute of Food Technologists
INGO	International non-governmental organization
LE	Learning Experience
MDGs	Millennium Development Goals
MTech	Master in Food Technology
NARC	Nepal Agriculture Research Council
NAST	Nepal Academy of Science and Technology
NGO	Non-governmental organization
OE	Outcome Expectations
PhD	Doctor of Philosophy
PU	Purbanchal University
R & D	Research and Development
S & T	Science and Technology
SC	Skills and Competencies
SDGs	Sustainable Development Goals
SE	Self-Efficacy
SS	Social Support
STI	Science, Technology and Innovation

TU	Tribhuvan University
UGC	University Grants Commission
UN	United Nations

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CHAPTER I

INTRODUCTION

Food science and technology is the subject that covers different sectors of food: food processing and preservation, research and innovative work of food items, and their nutritional improvement. These initiatives not only help to maintain quality but also aid in enhancing the supply of food products to meet market demand. Gartaula and Adhikari (2014) have identified food technology as one of the disciplines of applied science that deals with engineering and the technical process involved in transforming edible raw materials and other ingredients into delicious food products. Similarly, it includes all important aspects of food such as food security, nutrition, diversification, and high-quality food production etc. Therefore, the program equips the students to be effective food technologists and to match the job demand of many sectors such as the food industries, research and development, quality control, educational institutions, and the public and private sectors (Central Campus of Technology, n.d.). After completing the programs, food technologists work to ensure safe, nutritious, and plentiful food distribution. The programs aim to strengthen the food system, minimize the risk due to unsafe food, and maximize the benefits and yield of food. Moreover, the programs' courses are designed to reduce malnutrition and its related diseases and minimize food waste during post-harvesting. In a nutshell, the field of food technology examines every component of the food we consume regularly.

The curricula of the discipline are composed of a combination of food chemistry, processing engineering, nutrition, and microbial science, which aim to strengthen the understanding of students about food components and processing

(Titus et al., 2018). Moreover, Floros et al. (2010) have broadened the scope of the discipline. They have stated that the discipline ensures meeting the future demand by the progress of the agricultural and food manufacturing sectors instead of meeting the current demand only. By studying the curricula of the discipline, a food technologist must be competent in maintaining nutrition and food quality, preserving food items, and inventing new food products through research and development.

After completing the first degree in food technology, a student can start a career in the same field or join a higher degree. A student should be equipped with a foundation of theoretical and practical academic knowledge of the subject and generic and transferable skills to prepare them for a career. However, Floros et al. (2010) have claimed that food science is facing problems due to insufficient qualified food technologists. Authors have concluded that food professionals must be committed to contributing to the development of food science and distribution of food products.

Career preparedness skills for food technologists help students develop their confidence and prepare for a job in the food sector, according to Coorey and Firth (2013). The authors list a variety of abilities, including those related to administration and customer service, coordination and collaboration skills, personal skills, problem handling skills, and self-management skills. Agreeing with the authors regarding communication skills, Roberts et al. (2010) have suggested that food students also need to develop critical thinking and learning skills that extend their career success. Hartel and Iwoaka (2016) have developed an outline of mandatory expertise for food technology students. The authors' listed skills and competencies are language skills, problem-solving skills, use of education materials, new idea generation, timeliness of the given work, headship, and moral decision-making. This list partially matches Coorey and Firth's and Roberts et al.'s observations. In addition, they have also

proposed expected outcomes after completing a food program. This way, food science and technology education is a skill-oriented discipline with the immediate aim of preparing the students for the job market.

Career preparedness is the key to success in any career. Different scholars have defined it in different ways, considering different dimensions. Salmela-Aro et al. (2012) have stated that career preparedness is about developing confidence to accomplish a given task and preparing to face challenges during work. The major elements of career preparedness assessed by Marciniak et al. (2020a) are professional proficiency; workplace knowledge; personal skills; professional commitment; professional confidence; professional clarity; social support from the school, family, and friends; networking; career; and self-exploration. Further, skills and competencies are mandatory to perform well and succeed in any job. Soft and hard skills are the assets to get a good job that fosters a youth workforce in the workplace. According to Cimatti (2016), soft skills include social skills, language and communication skills, behavior and teamwork, while hard skills include job-related competencies. Consistent with the authors, Lippmann et al. (2015) have listed important skills as societal skills, communique skills, decision-making skills, self-determination, and self-motivated skills.

Career preparedness can be defined as a developmental process for a school-to-work place (Oliveira et al., 2017). Moreover, Jaensch et al. (2016) have identified career planning, work-related confidence, career commitment, and work involvement as the signs of career preparedness. Hence, career preparedness is a broad area that involves not only the achievement of skills related to a particular profession but also developing a package of knowledge and skills that prepares students of a particular degree to stand as a competent professional in any field. SCCT is the theoretical

foundation of this study. Various scholars have used this theory to comprehend the professional development process, career planning and development process, the significance of learning experiences, career decision-making, test the different models of SCCT, the effect of support and barriers in career planning and preparedness etc. (Dickinson, 2007; Kavas, 2011; Akman, 2016; Oliveira et al., 2017; Kusumawati & Wahyuningsih, 2020; Wendling & Sagas, 2020). Researchers and academicians have recognized SCCT as an academic and career development theory and used it to predict career development. It suggests that preparing students for a career is a developmental process and many factors influence it. In this setting, the current study examines how prepared students studying food technology are for their future careers. SCCT is a suitable instrument to understand this process.

Statement of the Problem

Preparedness for a future career helps to get decent jobs and acquire the necessary skills and competencies. Different studies have shown that students are underprepared in the skills and competencies needed in the workplace. Flynn et al. (2013) have emphasized incorporating soft skill components into food science and technology courses to increase their competency. Due to less preparedness for a career, students face several problems in the workplace. They are at a high risk of unemployment.

In contrast, Roberts et al. (2010) have found that different programs in food science are insufficient for all roles in food businesses, government, and the academic world. From these two studies, it can be concluded that food programs have scope to work on both quantity and quality of graduates. However, the current study's focus is on the latter.

Various studies have shown that career development issues are not limited to this field only. Salmela-Aro et al. (2012) have observed the gap in the career preparedness of trainees in human resource management and occupational health services. They found that hands-on work interventions increased career readiness in terms of motivation towards intrinsic work goals. Similarly, Nussipkozhayev et al. (2020) have observed poor social skills and a lack of career preparedness in engineering students at local universities in Kazakhstan. The authors' observation suggests that career preparation is the field of research that has a scope in different disciplines in different contexts.

Douglas et al. (2020) have stated that communication skill is important for the career preparedness of medical professional. The result of the authors' study has shown positive effects of communication skills on medical professionals' career development and stated that those skills are very important, effective, relevant, and valuable. However, the communication component is not included in any Nepal curriculum except the Patan Academy of Health Sciences. In addition, Gautam (2016) has demonstrated how crucial soft skills are for urban undergraduate students seeking employment. The author has claimed that youth without soft skills struggle more to get a job than skilled youths.

Moreover, they have emphasized that there is a high chance of unemployment without soft skills. The observation of Flynn et al. (2013), Gautam (2016), Nussipkozhayev et al. (2020), and Douglas et al. (2020) indicate that career preparedness is a research area for many disciplines, including food science and technology. Despite these, no study has been conducted in the Nepalese context in the discipline. Hence, it is a problem for a systematic study.

Objectives of the Study

This study's main objective is to evaluate the career preparedness of food technology students enrolled in third- and fourth year BTech programs at Kathmandu's food technology colleges. The study defines career preparedness and investigates its connection to the learning experience. Furthermore, the study also explores the support and barrier that influence the career preparedness of food students.

Research Questions

The main research question of this study is to examine the career preparedness of food technology students. To support this, the following are the specific research questions for this study:

1. How do food technology students think about their future careers?
2. To what extent do recent food technology students relate their learning experiences with future careers?
3. To what extent supports and barriers affect career preparedness?

Research Hypotheses

The study tests the following three hypotheses:

Hypothesis 1

H_0: There is no significant relationship between career preparedness and future career.

H_1: There is a significant relationship between career preparedness and future career.

Hypothesis 2

H_0: The food students' learning experience is not associated with future jobs.

H_1: Students' learning experience is associated with future jobs.

Hypothesis 3

H_0: Supports and barriers do not differ by gender.

H_1: Supports and barriers differ by gender.

The Rationale of the Study

An academic program of any level has specific objectives. To achieve the objectives, different components play a role and one of them is teaching-learning activity. Students' achievement is the result of the academic program measured by examinations. However, research is a useful mechanism for evaluating graduates' competencies in higher education and the workforce. Their educational experience significantly influences the success of graduates in their employment and personal lives. Career preparedness begins during school and heightens during college education (Gushue & Whitson (2006). It directly affects the career in the future. To succeed in a career, graduates need skills and competencies defined by Bohischeid and Clark (2012) as essential skills, individual-related abilities, subject-related knowledge, personal qualities, enterprise-related skills, and local knowledge. Gushue and Whitson have observed that exposure and role models influence career development. Additionally, Pang et al. (2019) stressed the significance of hard and soft skills and other competencies to thrive in a future job. Authors have defined the five key characteristics required to succeed in a future career: self-control, analytical thinking, capability, enthusiasm, teamwork, and collaboration.

Existing literature specifies that career preparedness plays an important role in getting a job and success in different disciplines, including food science and technology. However, there is no systematic research on the professional preparation of students in the Nepalese context. Therefore, the current study looks into how prepared food technology students are for their future employment and identifies the variables that influence career preparedness.

This study is pertinent to look at how well-prepared food technology students are in this condition. It is also important to examine relationships between demographic variables, learning experience, and career preparation. Furthermore, this study also examines the effects of support and barrier on career preparedness. If this study was not conducted, it would be impossible to learn about the career preparedness level of food students and the factors that affect this process.

Delimitations of the Study

Only BTech students enrolled in the third and fourth years of study may participate in this study. Beyond that, there are other students in the same level of the colleges located beyond Kathmandu and in other food technology levels like diplomas, master's, and PhD. Degrees. They could be the subject of study but have not been because of resource and time limitations. Hence, the study is limited regarding geographical area and population. Moreover, the study is limited in terms of methodology as well. Since it is an observational study, no causal conclusion can be drawn from the result of this study. Similarly, the population of the study is small and specific, and also the sample is small. Hence, the result of the study is generalizable to the specific section of small population only.

Organization of the Study

The dissertation comprises six chapters. Chapter I is an introduction to the study that begins with the introduction of the concepts of the study area, including food technology and career preparedness in Nepal. After introducing the concepts, I discussed the problem statement, the research's goal, the research questions, and the research hypotheses. After that, I have covered the study's justification, limits, and structure of the study in the chapter. Chapter II is on literature review that presents relevant literature on career preparation, current status of career preparedness in food

technology, theoretical foundations, empirical studies, socio-cognitive career theory, conceptual frameworks, and status of career preparedness in Nepal in various fields like engineering, technology, and non-technical subjects.

Chapter III focuses on the methodological procedures adopted for this study. This chapter has discussed research philosophy, design; methods for measuring variables; methods for identifying populations and samples; tools; and strategies for collecting data, data analysis, and interpretation of results. It also covers reliability and validity testing methods and ethical issues relating to this work.

In chapter Chapter IV, I have outlined the data cleaning process and statistical analysis procedure. Following that, the outcomes of statistical evaluations and testing have been reported. Using SPSS, the data are evaluated, taking the research questions into account. Chapter V presents the study's findings where I have discussed the research questions and variable-wise relationships like the relation of career preparedness with different variables like demographic variables, self-efficacy, outcome expectations, and learning experience. The results are analyzed based on the SCCT.

The key findings of this work are summarized in Chapter VI. In addition, this chapter explains the delimitation and implications of my research. In this way, I have organized different chapters of the thesis dissertation as per the practice of KUSOED and the criterion outlined by the American Psychological Association (2020)

CHAPTER II

LITERATURE REVIEW

A literature review was conducted for this study to explore the main research questions, create a theoretical framework, form hypotheses, and determine the applicability of the study. This chapter has synthesized literature on food technology, career preparedness, SCCT and its relevancies to career preparedness, and factors influencing career preparedness. More than 175 literature listed in reference have provided a solid foundation for the study. They were key to the study's theoretical and methodological outlines. The literature is diverse and includes peer-reviewed journal articles, books, book chapters, reports, theses and dissertations, and websites. In terms of structure and writing of the literature review chapter, I have pursued the narrative approach, one of the widely used literature review approaches in academia.

Food Science and Technology

On the one hand, world population and food consumption rates are continuously increasing. On the other hand, different factors are challenging to meet the food demand of the nations' population. Therefore, addressing the need for food is a crucial issue. Godfray et al. (2010) have observed that although food production has increased over the previous 50 years, one in seven people worldwide still suffers from malnutrition. Agricultural productivity is affected by threats such as climate change, land degradation, natural disaster, pandemic, and other stressors. Governments and politicians must take timely adaptation measures to meet these challenges (Salahuddin et al., 2020; Gregorioa & Ancog, 2020; Shi et al., 2021). Likewise, food wastage is another challenge in meeting the food demand. Godfray et al. (2010) have claimed that food waste still occurs in both rich and developing nations at a rate of 30–40%. The reason behind it is lack of infrastructure, lack of investment in storage systems,

and lack of knowledge. Santeramo (2021) has strengthened the authors' observation by stating that approximately 1.3 billion tons of foods are wasted during handling, storage, transportation, processing, and distribution. It could be crucial to stop the massive food wastage and supply the world's growing population.

The food programs aim to provide knowledge to students about food science and its different areas, like the principles underlying food processing, progressive food engineering, industrial management practices, specializations in different food products, and the quality and nutritional aspect of the food products (Students Nepal, n.d.). Conforming to this statement, Pathak has defined food technology as "a branch of food science which majorly deals with the manufacturing, processing, preserving and packaging of food and its articles" (2018, para. 1). Contrastingly, the Australian Institute of Food Science and Technology (n. d.) has emphasized the linkages of different sciences which make food science. The author has emphasized that food technology is a field where engineering, biological, and physical sciences are employed to comprehend foods' nutritional and qualitative elements and the cause behind their deterioration. Moreover, food technology also focuses on extending the life of food commodities, a crucial step in commercializing agricultural products. This way, food programs aim to make students competent technologists after completing the degrees for their future careers.

The food programs focus on three processes of learning: theory, practical and in-plant training. The approach aids students in having classroom and non-classroom learning experiences. Especially, in-plant training helps to understand the environment of the workplace, the expectation of employees, and the challenges and opportunities working as a food technologist. This type of pedagogy aims to prepare students to join jobs immediately after graduation and fulfill the requirement of the

industries in the capacity of competent food technologists equipped with different academic, employment, and technical skills. The foundation of academic knowledge prepares the food students to think courageously for their future careers and further education.

Food technology has a long history in food processing and preservation. Food technology has several benefits in human health, food security, food preservation, nutrition, and value addition of agricultural commodities. Georgala (1985) has underlined the function and advantages of food technology in food preservation and nutrition and talked about the significance of this technology in contemporary shopping baskets. Similarly, the application of technologies such as pasteurization, canning, ultra-high technology sterilization, freezing, dehydration, vacuum packing, etc. are a great achievement of food technology and are needed for safe and quality food. Additionally, according to Floros et al. (2010), food technologists can significantly contribute to the diversity of agricultural products and the reduction of post-harvest loss, which will help close the gap in food security. In summary, food technology is an important discipline of science that contributes to the development of food products, quality control, value addition of commodities, nutrition, and food security. Food technologists are at the center of this phenomenon, backed up by their knowledge acquired during their college and university learning.

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Food Science and Technology in Nepal

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The government of Nepal started doing something while discussing the need for food science and technology education in the country. Gartaula and Adhikari (2014) have discussed this process. Authors have stated that after the implementation of the national education act of Nepal in 1971, a two-year certificate level course in food technology program was introduced in the Institute of Science and Technology

of Tribhuvan University. The course's objective was to produce intermediate-level technologists for the food industry. In 1977, certificate-level programs in food technology and laboratory technology were terminated and a bachelor's degree in food technology was introduced after two years. Later, the three years course was converted into four years, naming the degree Bachelor of Food Technology (BTech). Central Department of Food Technology was established in 2001 and the MTech and were launched in 2002. CCT (n.d.) has stated that it has produced more than 500 qualified graduates of food technology. Now, 13 colleges are running food programs at certificate, bachelor, masters, and PhD levels in different locations of Nepal, affiliated with Tribhuvan University (TU) and Purbanchal University (PU). Food technologists have job opportunities in product development, food safety, quality control, and nutrition. Thousands of food graduates from Nepal are working within the country and abroad.

Although the food industry sector is the main employment sector for food technologists of Nepal, they are not limited to that only. They are also working in government agencies, hospitals (as dieticians), private firms, the marketing sector, and different development organizations. CCT (n.d.) has stated that 25 % of its graduates annually go for further study in foreign countries; 10 % are in government jobs; and the rest are working in food industries. Guragain (2014) has observed that currently, 33% of food graduates of Nepal work in food industries,11 % in the academic field, 10 % in the government sector, 21 % go for further studies or work abroad, 3 % work in the development sector and 2 % are involved in marketing or their enterprises (as cited in Gartaula & Adhikari, 2014). Despite observing various career opportunities for food graduates, the author has concluded that the enhancement of the food career during the four decades of food technology education is slow.

While discussing food-related policies in Nepal, The Constitution of Nepal (2015) and different policies, acts, regulations, and periodic plans and strategies have provisions to increase agriculture productivity and food security. Likewise, Nepal's federal and provincial governments allocate budget yearly in agriculture and food security sectors. The Constitution of Nepal has established food right as a fundamental right. Article 36 of the constitution has stated that every citizen has the right to be protected against food insecurity (cl. 1, 2 &3). The Food Act (1967) and Food Regulations (1970) are landmark legal developments Nepal's food production and protection sector. Food Act has set the minimum quality standard of food and food industries, inspection system, and provision of punishment. Similarly, the National Agricultural Policy 2004, the Agribusiness Promotion Policy 2006, the Agro-biodiversity Policy 2007, the Dairy Development Policy 2007, the Trade Policy 2009, the Right to Food and Food Sovereignty Act 2018, the Agriculture Development Strategy 2015–2035, the Multi–Sector Nutrition Plan 2018–2022, the Nepal Food Security Monitoring System, and the Agriculture and Food Security Project 2013–2018 are aimed boosting agricultural productivity, enhancing nutritional status, and fostering food security (Kaphle et al., 2020). To sum up, food safety and security policies are well-formulated in Nepal; however, implementing those policies has been the subject of question.

Safe and good-quality food is crucial for food security, public health, and economic growth. But different food-related complaints have led to the loss of human life as an immediate impact. According to Prasain (2004), during a raid by the Nepal Police and the Department of Commerce, Supplies, and Consumer Protection, tons of outdated food and other products that had been rebranded with new dates were found. Similarly, The Kathmandu Post has reported that due to poor quality and low-scale

production, foreign countries were barring entry of Nepal's food products into their market (2014). The quantity and caliber of food technologists are closely tied to this kind of quality concern in the food industry. Sharma (2019) has discussed the insufficiency of food technologists in Nepal and has observed that due to insufficient human resources, Food Technology and Quality Control Office, Bhairahawa could not run at its full capacity, and it affected the health of the citizens of 17 districts of Nepal.

The above studies have brought some of Nepal's food technology-related issues to the surface. These are mostly connected with the quality and quantity of food technologists in Nepal. However, the development of the food education system is Nepal and policy provisions have addressed those issues to a great extent. The food sector is not only limited to manufacturing, supplying, and regulating food products, it is an important part of the commercialization of the agriculture sector of Nepal, which has secured the livelihood of the majority population of the country. So, this sector has the dual role of economic development through agriculture development and ensuring safe food and food security for the people of Nepal.

Food Technology Students' Skills and Competencies Transformation

Food science and technology educators claim that their graduates are well prepared for future careers and expect a high employment rate. Bohischeid and Clark (2012) have supported this proposition by presenting that 90% of food science graduates are satisfied with food science education relating to their career choices. Since food science and technology is an applied science focused on commercializing agricultural commodities, there is a wide scope of career development in this sector for food graduates. The food curricula are developed with employment orientation content, including theory classes, practical classes, industrial tours or field visits, in-

plant or industrial training, and a dissertation or thesis as a specific project. To make the food graduates competent in the field, different science disciplines are brought together in their training, like food chemistry, food engineering, food microbiology, biochemistry and technologies related to processing, packaging, and storage. Specialization areas of the food disciplines are fruits and vegetables, dairy, meat, tea and coffee, and beverage technology. Beyond this core knowledge, IFT has also established some food science core competencies of food graduates for standardization. This includes hard and soft skills like applied food science and success skills like organizational, interpersonal, and communication abilities. Although generally, food graduates lack soft skills related to careers, they have hard skills, which are considered a must for the advancement of their career (Hartel, 2002).

To develop hard skills in food graduates, practical classes are in equal emphasis to theory classes in the food education system. Practical classes play a key role in effective learning by helping students understand theory and processes. Such classes build up knowledge and skills in the students about the process of product development, preservation and identifying the reasons for the decay of food products. Practical is the process of learning by doing itself and better prepares the students for the future job. According to Andrei et al. (2012), who assessed the perspectives of food technology students at the University of Agricultural Science and Veterinary Medicine of Cluj-Napoca, practical classes enable students to fill their knowledge gaps. They found that hands-on instruction played a key role in supporting the knowledge and building the confidence to accomplish the food production job. Supporting the authors' observation, Abdullaeva (2018) has emphasized the importance of laboratory work for food technology professionals and stated that practical training helps students deepen and expand their theoretical knowledge.

Besides the practical classes, industrial tours are also helpful to increase the skills and competencies in different food processing departments. The tours are one of the best tools of education that helps to understand the processes easily and gives students the real-life experience of food processing. During such tours, every student tries to understand the real world of food industries and can interact with the local environment, increasing their interest and creating more positive feelings towards the food production process. More (2011) conducted a qualitative study among 11 food technology students to see the effectiveness of industrial tours. The study's results demonstrated that students readily learned about food processing methods and technology after visiting a historical village.

Industrial tours are a mandatory part of the curricula of the food technology courses. The goals of these tours are to introduce participants to the machinery, equipment, and technology utilized in these operations and to give them in-depth practical knowledge of product development, packing, processing, preservation, and storage. In addition, tours provide students with a great opportunity to interact with specialists and be introduced to the industry's working environment. In the context of hotel management courses, Singh and Prakash (2020) emphasized the value of industrial excursions, saying that they enabled students to experience the realities of the workplace and comprehend how hotels function. The authors' conclusion about the importance of industrial tours in a different discipline might also be equally relevant in food education.

In-plant training are more advantageous to food students than industrial tours that offer them to work in industrial settings rather than only observing. During these training, the students work in a similar role to the technologists working in particular food industries and get operational knowledge regarding the product development

processes and working environment of the industries. The duration of the in-plant training is limited to a month or shorter period. During these training, the students improve their entrepreneurial ability, face real problems during work, and find proper solutions to the problems. These training provide industrial exposure to the students, sharpen their knowledge in specific fields, and prepare them for their future careers. Sagen et al. (2000) have observed that internships equivalent to in-plant trainings are keys to success in student career and employment, including involvement in student organizations. The authors' statement is strengthened by the conclusion of Zu-Ling and Ching-Cheng (2012), who have stated that the involvement of students in industries as interns influences a willingness to stay in the same sector after graduation. They want to be specialized in their career. Both studies justify the importance of in-plant training to food students for their career success.

Dissertations or theses are another important part of the food technology course. These works are mandatory to achieve degrees in the field. On the one hand, these works contribute significantly to the students' final grade; on the other hand, these research-based papers boost their confidence for future research projects (Artdaily, 2022). The successful careers of food technologists are significantly influenced by it. Moreover, dissertations or theses help students to identify their interests; enable them to develop new products, and test theories or innovations. In food science and technology, such works are sources of product development, product improvement, and problem-solving. Such academic works, as stated by Vijayakumar and Vijayakumar (2007) lay a foundation of future study in their chosen field students. This way, dissertations are important to the food students in different ways. They are the sources of product development and enhancement, a solid foundation for the future careers of food students.

Only limited studies are available on the topic of food students' skills and
competencies. In the case of Nepal, no studies are available in the field. However,
based on the above-discussed studies elsewhere on skills and competencies, practical
classes, industrial tours, and in-plant training are equally important as theoretical
knowledge. They shape students' future careers and make them sound in applied
knowledge. These techniques or tools can be used to create an overall teaching plan
that develops students' knowledge and comprehension of the subject, the industry, and
technology. Exposure to selected industries can help students to understand the
production process, industry environment, and technology. In addition, such
exposures may increase the immediate chance of employment in the industries.
Theses or dissertations are the opportunity to get specialized knowledge in a particular
field of food processing for food students.

<h3 style="text-align:center">Career Preparedness</h3>

The definition of career preparedness varies in a different context. The skills
and competencies related to career preparedness are also not limited to certain terms.
Clark (2013) has used the term "work-ready" to define career preparedness and has
stated that individuals should have the minimum skills to perform the tasks of a given
job. Conley (2012) has noticed the distinctions between work readiness and career
preparedness and has expressed that vital substance information and mastering
abilities make people confident and prepared for future work. The author has noted
that "a student who is ready for college and career can qualify for and succeed in
entry-level, credit-bearing college courses leading to a baccalaureate or certificate, or
career pathway-oriented training programs without the need for remedial or
developmental coursework" (2012, p. 1). He described the four pillars of
preparedness: intellectual strategies, mandatory knowledge and techniques, essential

content knowledge, and essential transitional information and expertise. Cognitive and non-cognitive skills are the two main categories in which Clark has divided the work-readiness skills. Reading for information, applying math, finding information, problem-solving, and critical thinking are cognitive talents. Personality traits and behavioral abilities fall under non-cognitive or soft skills. To sum up, both authors have emphasized that career preparedness needs a planned set of content and activities for learners that prepare them for a future career with the required skills, knowledge, and abilities.

In recent years, different institutions have been conducting studies to identify the issues of career preparedness among students. Center on Education Policy (2013) surveyed in different states of the USA and has defined career preparedness by various markers like scholarly abilities, employability abilities, and specialized abilities. The author has identified the main skills of career preparedness as time management, problem-solving, self-discipline, prevalence, and technical skills. Likewise, a workforce readiness survey by McGraw-Hill Education in 2016 developed different indicators to measure career preparedness (Hanover Research, 2016). The indicators of the study include internship and professional experience, better access to vocation readiness devices, access to technology that helps to learn efficiently and effectively, networking with alumni and choosing a more relevant major/concentration. Both authors have some different observations to define career preparedness; however, both are technique oriented for effective career preparedness.

Although they sound similar, work readiness can be differentiated from career preparedness. Career preparedness focuses on academic qualifications and competencies generated from it; work readiness focuses on behavioral components of student performance, such as time management, firmness, and interpersonal skills.

According to Kane (n.d.), the following skills are necessary for workers to be prepared for the 21st century: problem-solving/critical thinking, effective communication, collaboration, diversity, use of modern technology, management, innovation, lifetime learning and proficiency, and responsibility towards the community. According to Mason et al. (2009), job preparedness has the talents, information, mindset and business acumen that enable food graduates to make a significant contribution to achieving organizational goals (as cited in Makki et al., 2015, p. 1008).

Both academic and non-academic factors may affect career preparedness and work readiness. Personal development and the formation of critical thinking are the indicators of work readiness (Walker, 2015) that are affected by the quality of the content of learning, teaching methods, and internships. Whether it is career preparedness or work readiness, both are related to the career success of food graduates in the career options of the 21st century. In the present context, the global market is changing in terms of challenges and opportunities and only a competent and skillful workforce can compete in this new development. Hanover Research (2016) has investigated how prepared students feel for their professional careers and how helpful their college education/experience has been in preparing them for a professional career to meet the demand of the current career market. The author has created a variety of indicators to gauge one's level of career preparedness. These indications include networking with alumni, selecting a more applicable major or emphasis, getting more internship and professional experience, and having time to focus on career preparation. Furthermore, Marciniak et al. (2020a) have reviewed several studies on career preparedness and conceptualized the definition as "the construct of career maturity, career readiness, career adaptability and defined as the

attitudes, knowledge, competencies and behaviors necessary to deal with expected and unexpected work- or career-related transitions and changes".

To summarize, career preparedness is a newly introduced construct in the career field that identifies skills needed for the workplace. Despite some differences, scholars use career preparedness and work readiness interchangeably. Reviews of the above literature showed there is no agreed list of career preparedness activities. However, scholars have emphasized quality content of knowledge, practice-oriented learning and other soft skills required to perform best in a work environment. The graduates should be equipped with academic and employability skills and competencies to succeed in the workplace.

Career Preparedness in Nepal

Very few studies of career preparedness have been conducted in Nepal, and none of the studies exist on food science and technology career preparedness. Chauhan (2019) conducted a study with employees of commercial banks in Nepal that focused on employee perceptions of career development. According to the study's findings, banks offer their staff members opportunities for professional growth. According to a study by Ghimire (2016), among agricultural extension specialists in Nepal, eight core competencies are required for agricultural professionals to succeed in their job. The author has defined the competencies as communication skills; program design, execution, and evaluation abilities; personal and professional growth; knowledge of education and information technology; diversity; and technical topic expertise. The author concluded that agricultural extension specialists had average skills.

International Labor Organization conducted a study to define the direction of the future of decent work and observed that the skills and competencies gap is a

challenge to getting employment (2016). In a different study, Gautam ((2016) has identified different soft skills necessary for urban youths of Nepal to get decent jobs. Supporting the author's position, Gartaula and Adhikari (2014) have defined some additional skills and competencies necessary for Nepal food technology students and recommended developing skills in communication, teamwork, flexibility, problem-handling, and critical reasoning during the work.

In Nepal, only some studies have been conducted on the effectiveness of vocational and technical education. Studies in career preparedness are also limited. Based on the literature assessment, it can be argued that career preparedness is an important area of study in the case of Nepal that is not only related to students' growth but alsoto education sector growth. Although limited, different studies have concluded that it directly influences the labor market, decent jobs, and employment. Moreover, it affects the economic output of the country. The study's findings indicate that further research is needed on career preparedness in various fields in Nepal. In case of food sector, it is more important since there is no single study to date.

Role of Universities and Colleges in Career Preparedness

Universities and colleges aim to produce successful and competent human resources to compete in the global market. To meet such an aim, universities and colleges must make strategies and revise curricula and pedagogies. These institutions have tasks to equip skills and competencies to help students succeed in the workplace. British Council conducted a study on four universities and concluded that all university students should be aware of the need to contribute to society (Walker, 2015). According to Bloom (2010), colleges and universities should identify the need of students and prepare for the workforce by enhancing their skills and knowledge.

These institutions play important roles in producing a competent work-ready workforce.

Developing students' skills and competencies are the most important priority for college and universities. According to Cortese (2003), these institutions' roles and duties include enhancing students' knowledge, talents, skills, and values so they can develop, lead, manage, teach, work at, and impact society. Additionally, Akin and Neumann (2014) have argued that collaboration between colleges and community businesses helps bridge the college and workplace transition and helps to understand the work environment. Similarly, a research institute conducted a global survey with students in 14 countries in 2015 to understand their perception of the role of college in career preparedness. It concluded that a college degree is essential for future success for both individuals and communities (Stein & Irvine, 2015). It helps students to build attitudes, abilities, and habits of lifelong learning, which prepare them as a competent workforce.

Colleges and universities are important institutions in the countries and develop human resources as per the market demand. However, there is still some gap in students' skills and competencies to meet job market. Because of this gap, there is a high chance of unemployment. On the other hand, employers are not getting skilled human resource. Hence, the role of colleges and universities is important to meet the current need for career preparedness.

Supports and Barriers in Career Preparedness

Supports and obstacles are crucial factors in professional growth, career preparedness, and career choice. If something contributes to career growth that is considered as support and if something hinders career growth, preparedness is considered a barrier. Ngussa and Charles (2019) have observed that parents' and

teachers' supports play an important role in choosing and shape a career. Gushue and Whitson (2006) stated that occupation choice, confidence, and job performance were all interconnected with parental and educational support. This finding supports the authors' claims. However, they could not discover any connections between self-efficacy, result expectations, or ethnicity in terms of careers. Marciniak et al. (2020a) have observed that social support from the school, family, and friends play an important role in career development and preparedness. In addition, Carla et al. (2020) also highlighted the role of family guidance in career choice and emphasized that family members help shape children's careers and college decisions. According to Siddiky and Akter (2021), several variables, including family preferences, teacher recommendations, and individual interests, impact students' academic success and career development.

Barriers are undesirable forces that hinder several aspects of professional advancement and are associated with career-related behaviors. Barriers can be classified as personal and environmental; the former is associated with gender, religion, ethnicity, age etc., while the latter is related to geographical location, schooling, societal environment etc. Several factors affect career development, and gender is one of those factors. Several researches have shown that females are more sensitive than males in gender issues. A few studies have shown that males do not see gender as an issue for career preparedness or career development; however, females see gender as a problem or barrieto career development. On the contrary, Siddiky and Akter (2021) have concluded that gender and social class do not influence students' job decisions. Ngussa and Charles (2019), who found no evidence of a gender or location effect, came to a similar result. In contrast, Venant et al. (2021) have concluded that female students were better prepared than male students to choose a

job and that parents and teachers' roles significantly impact students' preparedness for careers. This way, gender is considered a barrier to career preparedness; however, findings of different studies do not support the position uniformly.

Empirical Studies on Career Preparedness of Food Science and Technology Students

There is a lack of sufficient research on how well-equipped food graduates are for future careers. Metcalfe et al. (2020) conducted an empirical study in South Africa with employers of food graduates and observed that they were not satisfied with new graduates of food science and technology. The authors also observed that companies might not be entirely aware of food technologists' specified skills and competences. Authors have outlined the essential qualifications for qualified food technologists that include personal attributes, basic knowledge of food, and general and employable skills to meet the expectations of stakeholders and employers. Similarly, communication abilities, product development skills, and knowledge of the food industry were the necessary competencies for European food technologists identified by Flynn et al. (2013). They performed a study with 315 food technology companies from 16 countries.

Additionally, Akin and Neumann (2014) have conducted a study investigating the graduate perception of career preparedness skills and competencies. They have observed computer skills, communication skills, technical skills, social media use, and marketing as desired skills for the workplace. Moreover, a comprehensive competency framework has been suggested by Weston et al. (2017) to assist degree providers, employers, and students. According to the framework, the desired competencies for a food graduate career are behaviors; communication; innovation and new horizon; numbers, data, and IT; problem-solving; working effectively;

worldwide perspective; the business world; technical and workplace; social, political, and environmental appreciation; and working with others (p.110). Moreover, the authors have defined additional competencies to work effectively: planning and organization, working under pressure, self-development, self-awareness, independence, resourcefulness, thoroughness, and attention to detail.

IFT (n.d.) has created a framework for the main skills in food science. The author has observed that a qualified food technologist must have a fundamental understanding of different subjects such as food chemistry, microbiology, food preservation, engineering, and food application. In addition, IFT has identified the success skills for food technologists as communication, problem-resolving, professionalism, collaboration, and information acquirement (Tuskegee University, 2022). Morgan et al. (2006) have observed that 90% of food graduates of Purdue University are employed. They have identified the 46 fundamental abilities of food science students and suggested that not all these skills receive equal weight in the syllabus. Authors have observed that students perceived communication as an important skill needed in the workplace, which helps to reduce conflicts and create a harmonized environment among people from different backgrounds.

The empirical studies have highlighted the significance of learning the skills and abilities required for professional success (see Table 1). Most studies have focused on the core competencies needed in the job place. According to the studies, the following conclusions can be drawn about the fundamental competencies and abilities required for a food technologist: knowledge of food science, leadership, communication, coordination, time management, problem-solving, and critical thinking, among others. No empirical studies were found about career preparedness or skills gaps in Nepal;

however, there are few studies on skills and gaps between school students and
vocational education.

Table 1

Necessary Skills and Competencies for Success in a Future Career

Required Skills and Competencies for a food technologist to succeed in future career reviewed in this study	Reference
Generic and employability skills	Metcalfe et al. (2020)
Communication skills, product development skills, and food sector skills.	Flynn et al. (2013)
Problem-solving, working effectively, planning and organization, working under pressure	Weston et al. (2017)
Subject related: Basic knowledge of food chemistry and analysis; food safety and microbiology; food processing engineering, applied food science Employability skills: communication skills; critical thinking/problem-solving skills; professional skills; interaction skills; information acquisition skills and organizational skills.	IFT (n.d.)
Communication skills and 46 subject and other skills	Magogwe et al. (2014)

Different empirical studies have a relationship between acquired knowledge,
skills, and competencies and future career or job placement after graduation
(Magogwe et al., 2014; Metcalfe et al., 2020; Flynn et al., 2013; Weston et al., 2017).
However, these studies have not outlined a universally accepted competency
framework for food technology students. So, it is not easy to define the exact

competencies needed in food industries or other job placements. IFT is the leading agency that initiated making a framework of skills and competencies that is useful for food technology professionals and employers.

Theoretical Approach

In this section, SCCT, the theoretical approach of the study is discussed. For this purpose, different studies have been reviewed which have discussed SCCT as a theory. Moreover, empirical articles on applying SCCT in career development are reviewed and synthesized.

Social Cognitive Career Theory

A person's career interests, ambitions, level of self-efficacy, anticipated results, and unique learning experiences during the career development process are all described in the SCCT. SCCT was conceptualized initially by Bandura (1987) and later developed by Lent et al. (1994) as a theory. This theory discusses that background factors like self-esteem, result anticipations, and aims can influence how someone develops their occupational curiosity, career selection, and work achievement. Lent et al. (2000) observed that the theory focuses on understanding job and academic gratification. Similarly, the SCCT defines career development and results in specific issues, such as self-esteem and curiosity, goals, environmental impacts such as contextual supports and obstacles, and decision behavior. It helps to understand the diverse population's career development. So, it is labeled as a career theory (Garrett, 2015). Likewise, SCCT is an appropriate tool for understanding academic progress and career development. Three social cognitive factors— self-drive, result orientated, and ambitions—discovered by Smith (2002) help to explain how people behave in their academic and professional life.

To comprehend the career development process and consequences related to careers, there are numerous theories and methods for career development. Trait factors, development, and social cognition are the three main career-related theories. Trait-factor theory, developed by Frank Parsons, focuses on traits like characteristics of an individual such as interest, values, abilities etc. that can be accessed through testing the characteristics required for successful job performance. Developmental self-concept theory, developed by Donald Super, focuses on vocational development and career maturity. This theory assumes that personal growth (personal acquisition, experience and maturity) is a continuous process and outlines five stages of the career development process: growth, exploration, establishment, retention and decline. In contrast, SCCT places a high value on how academic and professional interests are formed, career decisions are made, and those decisions are put into action.

Different scholars have discussed the concept of SCCT and its scope (Lent et al., 1994; Saifuddin, 2015; Mills, 2009; Dickinson, 2007; Parr, 2013; Casas and Blanco-Blanco, 2017). This theory describes the variables like self-efficacy, result expectation, interests and goals, and their interaction with one another, according to Lent et al. and Saifuddin. As stated by Mills, the relationship between a person's confidence and the outcomes or expectations of an action is taken into account by SCCT. In agreement with the author, Dickinson has claimed that SCCT describes individual, contextual, and socio-cognitive elements and their connections to occupational interests, career choice objectives, decision-making processes, and performance outcomes. Similar to this, SCCT's focus on the interaction between environmental and learning elements in careers and efforts to integrate conceptually with pre-existing development theories was noted by Kavas (2011). The triadic model discussed by Bandura (1987) and adopted by Lent et al. comprises different attributes

of a person, external and internal environmental factors, and behaviors of the person that influence each other. According to authors, SCCT aids in understanding the process of career development, including how people form professional interests, select careers, and reach verifiable degrees of career success and stability. SCCT integrates aspects and components of many career theories, including trait factors and work adjustment (Kavas, 2011). Parr (2013) has defined SCCT as a model of intertwining three components of education and career: interest, choice, and achievement. This model focuses on personal confidence and result expectations directly related to academic and work performance. The author has defined self-efficacy as the capacity to succeed in all stages of life. Outcome expectations result from a person's actions while performing a task. According to Casas and Blanco-Blanco (2017), SCCT is a useful theory for comprehending academic and vocational predictors of interests and objectives

Figure 1: SCCT Model of Lent and Brown
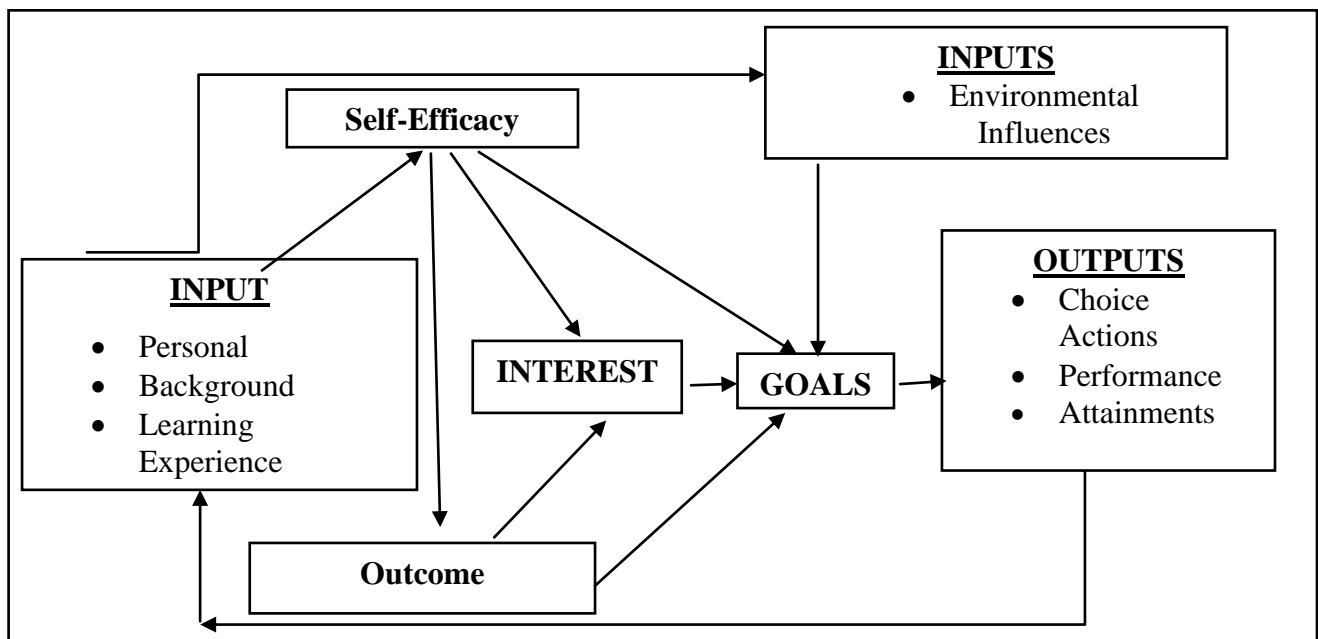
Note. Adopted from Carrico and Tendhar, 2012, Figure 1. Copyright 2012 by American Society for Engineering Education.

Several studies have been conducted using SCCT and student career preparedness. According to Rogers and Creed (2011), the career development process includes career planning and explorations that are connected to a career decision, goal setting, job experience, and career aspirations. They have defined SCCT as a career theory and applied it to investigate career-related problems and opportunities in different faculties. Kaminsky and Behrend (2014) have defined SCCT as a useful theory for understanding career-related ideas and performance.

SCCT helps to investigate the psychological status of the students and the specialized skills necessary for a different occupation succeed in careers. Navarro et al. applied SCCT to track the persistence of educational concernments in the different sectors of science and engineering (2014, as cited in Akman, 2016). Likewise, Byars et al. (2010) employed the theory to investigate the connection between students' goals, academic interests, perceptions of the campus atmosphere, racial characteristics, and social cognitive values in science and math. Similarly, Wang (2012) tested this theory and concluded that high school mathematics grades, participation in mathematics and science courses, and mathematics self-efficacy motivate students to apply to STEM majors. As a conceptual framework to comprehend the choice of STEM in higher education, the author also tested SCCT. Also, Inda et al. (2013) conducted similar research to learn about the perceptions of students on independent learning, expectations for the future, interests, commitments, social support, and obstacles of both male and female engineering students (as cited in Akman, 2016).

Various models of SCCT are used and tested to explore career planning, career readiness, and work readiness. Wendling and Sagas (2020) tested the SCCT's Career Self-Management Model (CSM) to learn about the career development process

for life after the game. They examined the career planning process of 538 athletes using 10 SCCT variables and concluded that the CSM model offered an advantageous theoretical foundation for forecasting career plans. Another scholar Blackman and Maynard (2010) investigated how prepared University of the West Indies students were for their future careers using the Career Decision Self-Efficacy Scale and Career Planning Knowledge. The degree of students' vocational readiness was assessed psychologically and intellectually. They discovered no meaningful differences between males and females in CDSE and CPK. Kusumawati and Wahyuningsih (2020) investigated the impact of SCCT on improving student career decisions. They studied in two groups of 16 students. The first group was the control group; no treatment was applied in this group. The second group was offered group counseling with the SCCT approach pretest and post-test control design. They found an effect of SCCT on increasing career decision-making. They concluded that SCCT is effective in improving students' career decision-making.

After studying several career theories, I concluded that SCCT was the best theoretical foundation for my study. This study aimed to assess how prepared the students were for future careers. Career preparedness refers to a person's ability to succeed in life, whether starting work or attending college for higher education. It can also refer to cognitive skills, knowledge, and abilities. The social cognitive theory's elements, such as self-efficacy, result expectations, goals, and interests, help to find the causes affecting the career preparedness of Nepalese students studying food technology. This study has investigated the variables that affect students' confidence, product prospects, interests, objectives, and preparation for future work. So, SCCT is the best fit for this study's theoretical framework.

Conceptual Framework

The theoretical foundations of SCCT were used to conduct this study. Three interconnected features can be used to summarize the notion of career development as SCCTSCCT presents it presents it: (1) how fundamental interests in educational and occupation development; (2) how academic and career selection are formed; and (3) how future life success is attained. The principle focuses on self-efficacy, input such as background, learning experience, environmental influences, outcome expectation, interest, goals, and outputs such as choice, performance, and achievement. Self-efficacy discusses the individual competencies to accomplish the tasks. Outcome expectations are the result of the accomplishment of the specific activities. Goals are significant variables that are dependent on result expectation and self-efficacy. Students must be self-assured, well-organized, and engaged in specific activities to accomplish the goals. The conceptual framework of this study is developed using SCCT as a lens.

Various elements influence the process of job preparation or career preparedness. Making decisions, looking into jobs, building self-confidence, and developing interests are important aspects of professional readiness. Similarly, the students' background, personal interest, learning experiences, environmental factors, gender, and social support are the influencing factors that significantly affect career preparedness. Input such as gender, background, and social support is associated with interest, goals, and outputs. The study of Xing et al. (2019) has supported this proposition which has concluded that socioeconomic status was significantly related to education and work outcomes.

The learning experience and learning environment are associated with outcome expectations, achievements, and career preparedness. Ireland and Lent

(2018) tested the SCCT and measured the learning experiences, social support, self-efficacy, outcome expectations, and goals. The findings demonstrated that learning experiences helped develop personality, social support helped to develop self-efficacy and job choice, and results anticipations helped in the accomplishment of the objectives. Self-regard, result expectations, and individual goals are interlinked with each other. In addition, Schaub and Tokar (2005) discovered that self-efficacy and interests had direct correlations. They also discovered evidence to support the SCCT's contention that self-efficacy indirectly affects interests through outcome expectations.

Confidence develops when a person accomplishes a task through knowledge, societal influence, and physical and mental conditions. In line with SCCT, learning experiences are the source of confidence linked to objectives and expectations for outcomes. Garriott et al. (2021) have stated that learning experience is the source of self-efficacy. They examined the four sub factors of engineering students' self-efficacy and found that learning experience influences career development. Additionally, Liu et al. (2020) used the SCCT to examine the associations between self-efficacy, headship, case-based learning and employment in Taiwanese college students. They discovered a strong association between these variables.

Previous research has demonstrated that the SCCT is the most effective theoretical framework for understanding career preparation, career advancement, and the supports and obstacle systems that exist throughout the process. The overall concept of career preparedness means preparing the students for future careers and acquiring the needful skills and competencies, educational and practical skills, communication skills, critical thinking, and leadership skills. Similarly, Marciniak et al. (2020a) have stated that career preparedness is an umbrella term that includes

career maturity, career readiness, and career preparedness. This study explores the

career preparedness of the students.

Figure 2: Conceptual Framework
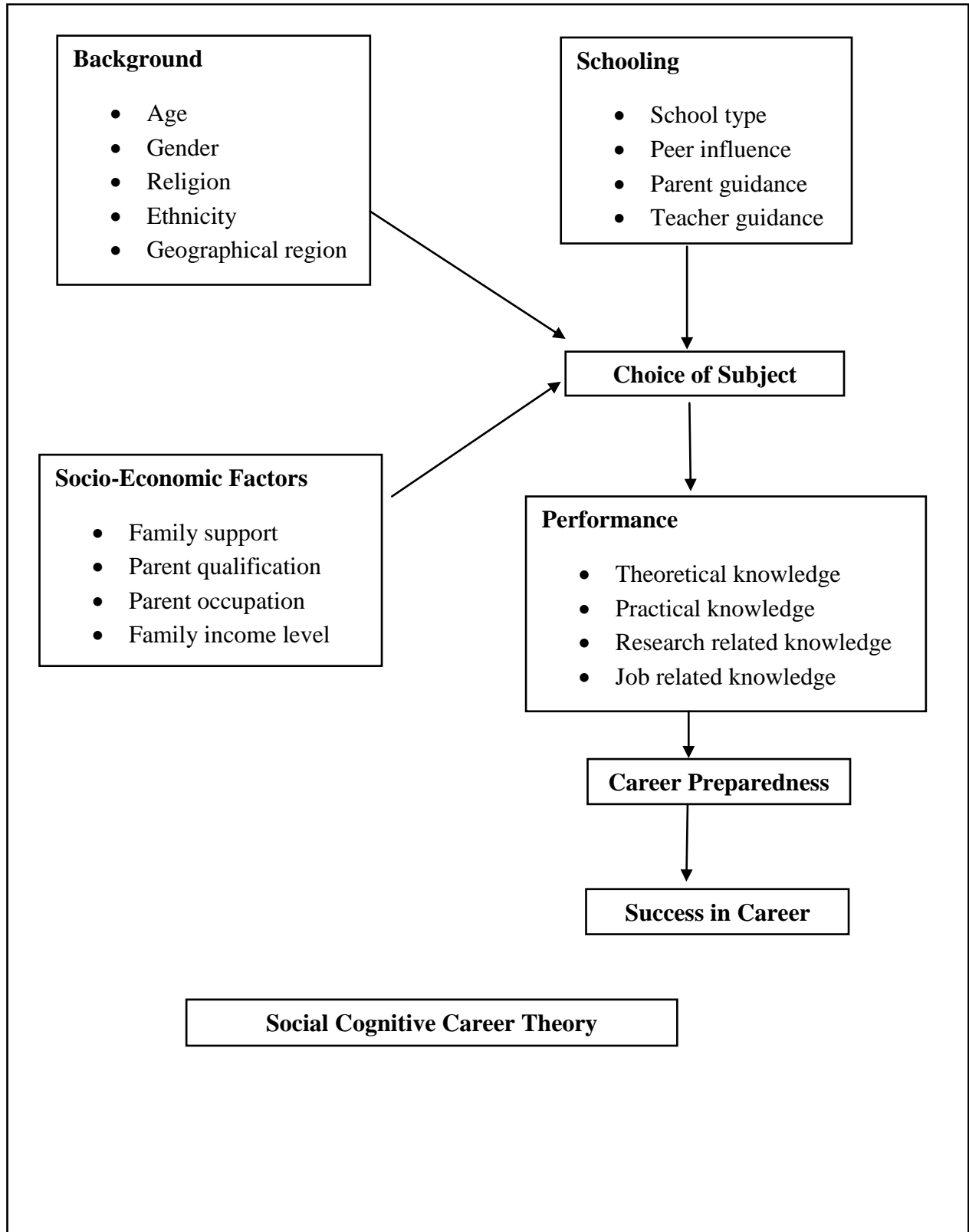
Research Gap

This section highlights the research gaps we found during the literature review. This study presents the career preparedness, learning experience, support, and barriers system to succeed in a future career in the food technology sector. Several studies have been done in this sector. However, I still found some gaps in the literature reviewed for this study. There is no clear definition and understanding of career preparedness. Scholars have defined career preparedness in different ways and there is no clear understanding of career readiness, adaptability, development, and preparedness. Marciniak et al. (2020a) reviewed the related studies on career preparedness and conceptualized a proper definition. Career preparedness is defined as the approaches, information, abilities, and manners required to deal with anticipated and unanticipated changes in the workstation and career.

Regarding the study on career preparedness in Nepal, I didn't find any study on career preparedness of food technology students. Similarly, I also tried to find out the study on career preparedness in other faculties. There is very limited study on career preparedness. Chauhan (2019) explored the perception of commercial bank employees of Nepal on career development. Similarly, Ghimire (2016) examined the skill and competencies of agricultural extension professionals in Nepal. Further, Gautam ((2016) identified necessary soft skills for urban youths to be successful in future careers. Furthermore, Gartaula and Adhikari (2014) have identified the skill and competencies gaps in food technology students. But still, there is a research gap in this sector since the authors mentioned above have not done any study concerning the career preparedness of food technologists of Nepal. Hence, career preparedness studies in food science and technology are necessary. Specific career preparedness studies are useful to students, employers, and the nation's economy.

There are several possibilities of study in the career preparedness sector such as employability of food technology students of Nepal, mandatory skills and competencies of food technology students to be successful in the food technology-related career in Nepal or abroad. Moreover, different food degrees prepare different levels of the workforce. Studying the career preparedness of graduates of each degree is another area of research that has not been done in Nepal and other countries. Though conducting career preparedness studies of different degrees is not a priority of the current study, it might be the case for other researchers. Another research gap exists among authors conducting career preparedness research. Different authors have defined career preparedness in different ways, another area of research. So, through this study, I have tried to develop a career preparedness definition that incorporates the ideas of different authors and redefines them based on evidence.

Similarly, there are several studies completed on the support and barrier system for students worldwide. Ngussa and Charles (2019); Gushue and Whitson (2006) and Marciniak et al. (2020a) have observed parents' and teachers' support. However, I didn't find any study related to support and barrier system that influences the career preparedness of students of Nepal. The term "supports and barriers" was used to describe one of the main research objectives for this study.

Chapter Summary

This chapter summarizes the literature related to this study. I began by introducing the setting of Nepal's food science and technology education. It is an applied science with both theoretical and practical education. In the case of Nepal, it was initiated by the government, and it has the dual role of maintaining quantity and quality in the food sector. While discussing career preparedness, I observed that careful planning leads to a good preparation for a career that might be successful in

the future. However, there is no universally agreed set of activities for this purpose. In the case of Nepal, only limited studies of career preparedness have been conducted in general and no single study of food-related career preparedness is available. Different empirical studies have shown that competencies that come from preparedness are related to a future career.

CHAPTER III

RESEARCH METHODOLOGY

The research approach utilized to perform this study is discussed in this chapter. In the beginning, this study's philosophical position has been discussed, including ontology, epistemology, axiology, and methodology. Then the operational part of the study is discussed concerning different areas such as sample and population, selection of study sites, data collection tools, data analysis, study interpretation methods and procedures. After discussing the study's validity and reliability, the study, the ethical implications of the study are addressed.

Philosophical Understanding

Generally, philosophy has two applications in human life: to broaden knowledge and provide guidance for life. Supporting this statement, Sinclair (2008) has argued that philosophy offers options for answers to thinkers about truth, enlarging the horizon of thinking. Research philosophy has the same application in social science research; philosophy has application in human life. It is the foundation of any social science research, which guides the whole study from beginning to end. For every social science research, a researcher should know any study's research philosophy to operationalize the research with a clear vision, meet the quality standard, and make it acceptable among the scientific community. According to Moon and Blackman (2017), well-defined research philosophy only validates the interpretation of findings in social science research. With this theoretical context, as a researcher, I have clearly defined the philosophical assumption of my study and identified ontological, epistemological, and methodological positions. Defining research philosophy has dramatically helped me in shaping the research design.

One important hint to identify the philosophical position of any social science research is the research paradigm followed by a researcher. According to Zukauskasetal (2018), the research paradigm includes the decision of research strategy, formulation of the issue, data collection, processing, and analysis, including philosophical assumptions such as ontology, epistemology, and methodology, forms the foundation of the study.

Ontology is the belief system about reality and its existence, whereas epistemology is the process of knowledge generation. Similarly, the methodology is the process of data generation based on theory and a set of systematic investigations. In contrast, methods are the data collection and analysis of the data (Rehman & Alharthi, 2016).

A widely accepted definition of ontology is the nature of reality (Creswell, 2009). Ontology can often be classified into two major positions: constructivism and objectivism. However, realism is also considered a different ontological position. Epistemology is defined as the answer to what and how knowledge is generated. Biesta and Burbules (2003) have argued that epistemology answers the question of how our mind can acquire knowledge. Epistemology is about the process of knowledge construction and how to access that knowledge (Musmini et al., 2019). As ontology, epistemology is also defined into two broad categories: positivism mostly associated with Auguste Comte, and interpretivism, mostly associated with Max Weber which corresponds to the ontological position of objectivism and subjectivism, respectively.

The ontological position of this study is objectivism. In this position, data and observation are believed to be independent of the researcher. The ontological assumption of this study is that future career of food students depends on career

preparedness. Similarly, learning experience influences the future career. Furthermore, supports and barriers affect career preparedness. Broadly, this study's ontological assumption is that demographics, learning experience, confidence level, acquired skills and competencies, support and barriers affect the future career independent of researchers who can observe the same reality.

The epistemological position of the study is post-positivism. Hence, data are the source of accessing knowledge. This epistemological assumption is the opposite of interpretivism and does not recognize the role of the mental construction of the researcher as a source of knowledge. It is believed that the data related to self-efficacy, outcome expectation, interest, goals, learning experience, and gender, which influence the students' future career, is the source of knowledge. The collected data for the research and derived results are the knowledge generated for this study, which ultimately leads to understanding reality.

Axiology is another branch of philosophy that Killam (2013) defines as the researchers' values and ethics in research. Hill (1984) has stated that "values are foundational for both knowledge-producing systems and social projects". During this study, I have maintained an objective stance and my primary aim is to understand the relationship between variables that define my axiological philosophical consideration. I have maintained this stance in each step of my research. My research process is based on the deductive principle of the field of study using tools such as a survey. Likewise, I have used SCCT as a basis of my study and tested it with objective data and drawn the result from my study findings. To sum up, my value position or axiology is guided by the objectivist stance which is employed in each stage of this study.

In terms of the research approach, it is mostly deductive. However, as in the case of many other types of research types, the inductive approach is employed in relevant places. In the deductive approach, based on research questions, hypotheses are formulated, and they are tested by verification and falsification criteria. The process is called hypothetico-deductive approach. Based on hypothesis tests, results are interpreted objectively. This approach aims to test theory rather than develop a new theory or invention. Career preparedness of food technology students for a future career was the research problem in this study. It was deduced into specific research questions, which were then further conceptualized into hypothetical statements for testing.

I reviewed different research philosophies, methodologies, and research paradigms to identify the appropriate research philosophy for my study. Studies have shown that the research community has been divided into two streams relating to philosophical positions: positivists, non-positivists or interpretivists. Positivists define the social world as the natural (Rehman & Alharthi, 2016) and believe in a single truth. However, the non-positivists do not believe in the single truth of the observer; they believe in multiple truths (Aliyuet al., 2014). Development in the same stream also creates challenge in defining the definitive philosophical position. For instance, in positivist stream, post-positivists believe in method of knowledge management compared to the positivists who believe in the process of knowledge generation. As stated by Fox (2008), the difference between the two is relatively thin. Despite having such challenges, as argued by Aliyuet al. (2014) and Easterby-Smith et al. (2018), a researcher should understand and define the philosophical assumptions before conducting any social science research, which I have done.

The methodology is the plan and process for conducting research. It is also the process of selecting appropriate methods or techniques for data collection, analysis, and drawing results for the selected research topic and problem (University of Witwatersrand, n.d.). According to Hill (1984), methodologies are technical instructions that guide researchers in actively investigating selected scopes of social actions and experience. Generally, in social science research, the methodology is the systematic way to solve the research problem. Literature reviews of different empirical studies and research articles helped me to select the proper research method and technique considering the research problem. Researchers should not limit their knowledge to only how to perform some tests or analyses. They have to broaden their knowledge of different types of methods and techniques and procedures to accomplish the research. This knowledge helped me to design a scientific study. Interviews, surveys, focus group discussions, case studies, etc., are some popular research methods to conduct a study.

While discussing methodology, a researcher should be very clear on how it differs from methods. Since there are some overlaps between methodology and method, authors like Goundar (2012) and Walter (2013) have focused on differentiating these two terms. In the former's view, research methodology explains methods and research processes. Furthermore, it is a process that describes and predicts a particular phenomenon. In the latter's view, methods are a technique of data collection, and methodology is a lens that helps to understand, design, and conduct any research work. While designing this study, I carefully chose the methodology and methods per their standard definition.

Research Design

Research designs are the strategies and procedures used to carry out the study using specific data collection and analysis techniques. In Creswell's (2012) observation, to select an appropriate research design, researchers must consider the research problem or research topic, personal experience, and research audience. The study's research design uses a cross-sectional non-experimental survey of food technology college students. This study's statistical methodology is both descriptive and inferential. As defined by Creswell (2009), the aim of any research is to disseminate the findings of a sample drawn from a population. This study has not aimed for any causal analysis but only for the correlational analysis, which can be generalized from the sample to the population of the study. The data source for this study was a close-ended questionnaire filled by 147 food technology students.

According to Creswell, quantitative research is a suitable study design for developing and testing hypotheses, measuring the variables, and looking at how the variables are related to one another (2009). The hypotheses and ideas for this study are tested using the defined methodology of quantitative data analysis, as provided by the author. Dependent and independent variables were measured, and their relationship was observed by using the computer-based software SPSS. To ensure accuracy, data collection, data entry, and analysis works were accomplished carefully.

Tools and Instrumentation

Data for this study were collected using the questionnaire (see Annex 1), as described in the previous section. Specifically, I used a customized questionnaire by Carrico and Tendhar (2012) for this work. Conradie (2012) has justified the use of survey questionnaire as an appropriate data collection technique that respondents can answer without any trained interviewer. This makes a survey questionnaire a valid

tool for data collection in case of limited human resources and low-budget research, as in my case. The theory developed by Lent et al. (2002) SCCT and constructs, were used as theoretical frameworks for this investigation. Carrico and Tendhar conducted a similar study in 2012. With their permission, I used a few survey items to gather data for this study. The questionnaire included questions about self-efficacy, outcome expectations, interest, goals, learning experiences, support and barriers, the role of gender in this process, and demographic characteristics associated with career preparedness. The variables of SCCT helped me develop the career preparedness instrument for the study develops the study's career preparedness instrument for the study.

During the process of the questionnaire development, I tried to make it scientific, valid, reliable and easy to understand. There were eight sections in the research questionnaire. Section 1 covered the introductory part and included the research participants' personal information such as name, gender, age, religion, ethnicity, address, the program enrolled, collegiate status, name of the college and affiliated university, parent's or guardian's qualification, and occupation. Section 2 covered the students' self-efficacy and level of confidence. Bandura (1986) has observed that self-efficacy refers to an individual's ability to complete tasks. According to the author, self-efficacy was defined by Segal et al. (2002) as a person's self-belief in their capacity to achieve in a particular sector. Guided by these concepts, self-efficacy in my study was measured by five items. An example item is "I am confident; I can complete my B Tech." The 5-point Likert scale ranged from *no confidence at all* (1) to *perfect confidence* (5) for each statement, giving respondents a choice to select one.

Seven items in Section 3 with ratings from *strongly disagree* (1) to *strongly agree* (5) were used to compute the construct of outcome expectation. In their discussion of SCCT, Carrico and Tendhar (2012) have defined outcome expectation as one's perception of the action and purposes of engaging in a particular behavior. The authors' concept guides the items developed for the section. Likewise, Section 4 of the questionnaire focused on exploring an interest, and nine items measured the students' interest. *Very low interest* (1) to *very high interest* (5) was the scale to know the degree of interest and *never* (1) to *I prefer not to answer* (5) was the scale to find out the degree of like and dislike. The item such as "I have interest to achieve B Tech" to know the interest whereas "I like to attend all the theory classes" helped to know the likes and dislikes of the respondents. Interest refers to likes, dislikes, and activities relevant to the career. Likewise, choosing a career based on well-being leads to immediate and long-term career success (Lent et al., 1994).

In the same approach, in Section 5, goals were measured by five items and one of them was: "To what extent do you agree or disagree with the following statements: I intend to complete my BTech degree". A scale from *strongly disagree* (1) to *strongly agree* (5) was used to gauge participants' goals. Five-point Likert scale was used in Section 6 to examine the connection between gender and career. Section 7 of the questionnaire investigated the learning experience of the respondents, and the last section of the questionnaire explored the support and barriers during the study of the food technology students. Additionally, I included open-ended questions in each section to gather data that closed-ended questions did not capture. The questionnaire developed included different types of questions; among them, most of them were close ended. However, a few questions were open-ended where they justify most. The questionnaire utilized Likert scale ranging from *strongly disagree* (1) to *strongly*

agree (5), *not confident at all* (1) to *complete confidence* (5) *very low interest* (1) to *very high interest* (5), *not at all important* (1) to *very important* (5), and *never* (1) to *I prefer not* to *answer* (5).

This study has followed the established steps and processes of social science research of tools development to measure the students' career preparedness. The study's goals are introduced in the opening paragraph of the questionnaire. I had introduced myself before distributing questionnaires to participants. Then I had briefed about the purpose of the study, ethical practice, risks, benefits, the rights of the participants, and the process of responding questionnaire. Furthermore, I had explained to the participants that their participation was optional, that any data gathered for the study would be kept confidential, and that only final results would be released in papers or other publications. Likewise, I had requested that students return the questionnaire to the researcher whether it was completed, partially completed, or blank.

Study Site, Population, and Sample

Since it is impossible to investigate the entire population in every social science research, researchers must constantly work with a sample that has been taken from the population. The sample must accurately represent the total population. The act of picking a sample from a population is known as sampling. It is a statistical method of selecting a sample from the population (Bhattacherjee, 2012), particularly for quantitative studies. There are various sample phases. The first step in the sampling procedure is to identify the study's population. The population of this study consisted of third- and fourth-year food technology students from colleges in the Kathmandu Valley. Then the second step in sampling is choosing the sample frame. The target population's "sample frame" is an information sheet through which any

member of the population can be accessed, and a sample can be drawn (Bhattacherjee, 2012). In this research, the sample frame is developed from the information provided by food technology colleges about their students. The last sampling stage is selecting the sample from the sampling frame. There are different techniques of sampling for a study of this kind. Simple random sampling was used to choose the sample from the sampling frame in this study.

This study aims to comprehend how prepared food technology students are for their future careers. This study has covered 3rd- and 4th-year food technology students in Kathmandu valley as a population and sample. In Kathmandu, five colleges are offering bachelor-level programs in food technology. At the first stage of sampling, food technology colleges were identified to select the study sample. Thereafter, the exact number of students enrolled in food programs was identified. In every college, there were 24 seats, so the total population for this study was supposed to be 240, including 3rd- and 4th-year students of BTech. However, some colleges had fewer students than available seats due to dropping out or low enrollment from the very beginning. So, this study's actual population size (N) is 214. The total sample (n=145) included 3rd-year students 57.2 % (n=83) and 4th-year students 42.8 % (n= 62).

The determination of sample size is an important part of sampling. Sample size depends on the research approach. Small samples are used in qualitative research. Sample sizes are generally large in quantitative research; however, the study's sample size is not considered as 'large' in most of cross-sectional quantitative surveys. Different methods such as the table provided by statistics book, web estimation, and formula are used to determine the sample size. The names of the colleges were

mentioned as A, B, C, D, and E for ethical reasons. The sample size is determined using Yamane's (1967) sampling formula.

$n = N/(1+N* \alpha^2)$

Where,

n = Sample size

N = Total population

α = Level of significance = 0.05

This formula was applied to identify the sample size.

Table 2

Sample of the Study

	Name of College					
Education Status	A	B	C	D	E	Total (*n*)
3rd year	19	17	16	15	17	84
4th year	8	17	13	17	7	62
	27	34	29	32	24	146

After finalizing the sample size, I visited the field, obtained prior informed consent from each student, and completed the survey. The required numbers of students for each college were selected randomly by lottery method with the help of the program coordinator of respective colleges.

Pilot Study and Data Collection

"A pilot study has several functions; principally, to increase the reliability, validity, and practicability of the questionnaire" (Cohen & Morrison, 2007, p. 341). De Vaus (2002) supposed that "evaluating the questionnaire is called pilot testing or

pretesting (p. 114). Before final administration, each question and questionnaire must be evaluated thoroughly.

I evaluated each question and questionnaire rigorously before administration. Before finalizing the questionnaire, the constructed tools were also reviewed by the faculty members and food technologists. For this study, three stages of the pilot testing were used as suggested by De Vaus (2002): (1) question development; (2) questionnaire development, and (3) polishing pilot testing (Further, in the first stage of question development, I tried to customize each question, evaluated the wording of the question and interpreted the meaning of the question. I revised questions, shortened them as per necessity, and finalized the pattern. In the same way, in the third and final stage of pre-testing, I finalized the layout of the questionnaire. Also, I ensured the clarity of the questionnaire for respondents and the interviewer. De Vaus (2002) has asserted that pilot testing items should, on the other hand, include a minimum of six elements, including discrepancy, sense, redundancy, scalability, non-response, and agreeable. The author has also advised paying close attention to the flow, skipping in the questions, timing, and respondent interest and attention. I kept in mind these points and followed them during pilot testing as suggested by author.

After that, pretesting was conducted considering the participants' final sample, age, educational level, education background, and ethnic background. I selected the interviewee who responded to the survey honestly. Before an interview, the selected respondents were thoroughly briefed about the objectives and how to complete the questionnaire. I also confirmed with them if any questions made them uncomfortable; whether there was any repetition and misinterpretation of questions or not; and was it was readable or understandable. Also, they were encouraged to provide feedback and comment on the open-ended question, if any. Many researchers have found that a

10% sample is appropriate for the pilot test to estimate the reliability and validity of the questionnaire (Connelly, 2008; Lackey & Wingate, 1998; Hertzog, 2008). To conduct a pilot test, I also gathered a 10% sample. The pilot test aided my questionnaire revision process. During the pilot study, some irrelevant questions were observed and removed. From the observation of the pilot study, it was observed that the questionnaire was lengthy and time-consuming. Hence, I trimmed the questionnaire and reworded the questions. This pilot study encouraged me to do the study on the proposed method and research design. Furthermore, I found that the proposed approach was appropriate for this study. Finally, the questionnaire was revised and preceded by the data collection for my study.

I calculated the sample size as per the standard recommended by the experts. I started collecting the data for my study. First, I prepared a list of colleges and 3rd and 4th-year students' food technology and their contact numbers. I contacted the coordinator and asked to manage time for interviews with 3rd-and 4th-year students. The coordinator managed the time and place for the interview. I interviewed at a given time and location. Before conducting the self-administrated questionnaire, I briefed about the purpose and ethics of this study.

Similarly, I briefed the instruction to complete the questionnaire. In each survey, I requested respondents to read carefully and fill up the questionnaire. That helped me to reduce the nonresponse to the questionnaire. I used a printed questionnaire to collect the information.

I visited five colleges in Kathmandu that has been conducting food technology in a given time. As per sample size calculation, I collected data from 139 students. However, I collected data from 148 students. Out of 148 respondents, I could enter the data of 146 questionnaires for analysis because two were uncompleted and during

data cleaning, I removed them. This way, I collected data directly for my study through respondents during my college visits. The survey instruments were based on the SCCT. Self-efficacy, outcome expectations, interest, and goals were the key topics of the questionnaire. Similarly, the questionnaire also explored the relation between career preparedness and gender, learning experience and support, and barriers during the study.

Data Analysis and Procedure

In this section, I've described the data analysis procedure employed in this study. The data analysis process involved several necessary steps: coding, cleaning, preparing data for analysis, presenting, interpreting, and validating. For the statistical analysis, I used the software program SPSS version 25.0. I used SPSS to analyze variance (ANOVA), t-tests, correlation analysis, and hypothesis testing. Firstly, after the collection of data by using a survey questionnaire, the responses were coded numerically. After coding, all the questionnaires were entered into SPSS 25.0 software. Similarly, data cleaning was done after entering all the data in the software. Then, descriptive and inferential statistics were performed according to the research topics.

Through analysis and interpretation, we can transform unstructured data into useful information. Calculations of frequencies, differences in the variables, cross-tabulation, correlation, and hypothesis testing were included in quantitative data analysis. Also, quantitative analysis helps to accept or reject the hypothesis (BRM, 2021). The collected data is given structure, order, and significance through analysis. Different software and statistical tools for data analysis are used in quantitative and qualitative research work. Quantitative data was collected from food technology students and coded and analyzed using SPSS 25 software. Similarly, statistical

analysis was used to define dependent and independent variables of career preparedness that influence the careers of students studying food technology and generalize the study's findings to a larger population. Descriptive statistics including mean, median, range, percentage, variance, and standard deviation were employed to describe the research population's demography.

Descriptive Statistics

After the normality test and data were found to have normal distribution, descriptive statistics were computed. These analyses included gender, age, ethnicity, religion, collegiate status, college name, university-affiliation, parents' qualification, and occupation. They consisted of frequency and percentage calculation and their cross-tabulation. They were presented in the tables and different types of graphs. The various career preparedness variables—including self-efficacy, result expectation, interest, goals, gender and career preparedness, learning experience, and supports and barriers—were also computed using descriptive statistics like means, standard deviations, and variances.

To address the first research question, mean, range, percentage, variance, standard deviation, and correlation were calculated that helped to describe the career preparedness of food technology students. The degree to which students were prepared for their chosen careers were assessed using five-point Likert scales (strongly disagree, disagree, not agree, agree, and highly agree). The correlation between college education and preparedness for a career helped to understand the relationship between skills and competencies achieved during the program.

Similarly, a second research question helped to identify learning experiences of food technology students that were relevant to future jobs. Data analyzed and the mean, median, range, percentage, standard deviation, and variance of the data

calculated helped to know the connection between the learning experience and future jobs of food technology students. Similarly, the objective of the third research question was to explore if supports and barriers affect career preparedness of food technology students or not.

Inferential Statistics

Inferential statistics helps to make interpretations and predictions based on the data. Inferential statistics is valuable for researchers since it helps to test hypothesis for given population based on limited sample. Under inferential statistics, we can do the following tests: correlation analysis, factor analysis, regression and multiple regressions, factor testing, t-tests, and analysis of variance (ANOVA) and more (Cohen et al., 2007). These tests are considered as the foundation of scientific studies to infer about population from sample.

To test the study's hypotheses, inferential statistics was employed. Categorical variables were analyzed to identify career preparedness. The hypotheses were tested using Z-test, t-test, and ANOVA. Relationship between two categorical variables was tested using the chi-square test or X^2. In addition to hypothesis testing, regression analyses were utilized to find the correlation of numerical variables.

Correlation Analysis

Correlation is a tool used in social science to evaluate the link between two variables and illustrate their linear relationship. It is generally demonstrated by scatterplot. When two variables have a significant correlation, it is easier to predict the third variable (Marczyk et al., 2005). According to Huck (2012), the main idea of correlation is to examine the connections between two sets of scores and gauge how strong those connections are. Cross tabulation, the coefficients of Karl Pearson and Charles Spearman are used to find the association in the bivariate relationship.

Bivariate correlation analysis with a Pearson correlation matrix was used in the study to ascertain how the dimensions of various career preparedness variables are associated with each other and to explain the direction and relationship of the values.

A correlation coefficient, denoted by the letter r, is the term for the numerical representation of correlation. Typically, a correlation coefficient lies between -1.00 and +1.00 (Huck, 2012). The value of r reflects how strongly a linear affiliation exists between two variables. The association is strong if it is +1 and weak if it is -1. According to De Vaus's (2002) interpretation, a score of 0 indicates that there is no linear correlation, 0.01-0.09 trivial (linear) connection or almost zero; 0.10-0.29 low to moderate, 0.30-0.49 medium to substantial or medium, 0.50-0.69 considerable to very strong, high, major, 0.70-0.89 extremely strong, and 0.90+ very perfect relationships. Both positive and negative relationships can be interpreted in line with these ideas.

t-Test and ANOVA

The majority of parametric tests are predicated on the assumption of normality and are thought to be normally distributed, including the Z-test, t-test, 2-test, and F-test (Ghasemi and Zahediasl, 2012). Huck, (2012) has stated that "normality and homogeneity of variance of the data were tested using Shapiro–Wilk normality test and Bartlett's test, respectively". Similarly, Marczyk et al. (2005) have emphasized that assumptions of normality and independence are necessary for parametric tests like *t*-tests, ANOVA, and linear regression. If these assumptions are violated, the analysis results may be inaccurate.

All inferential analyses were conducted with a two-tailed test and an alpha level of 0.05. The study's null hypothesis suggested that the variables relating to backgrounds and career preparedness were different. The ANOVA test was utilized to

determine if there were any differences between and within the groups. A follow-up post hoc test was computed when differences were explored to know the significant differences in the particular groups.

Reliability and Validity

To address the error in research work, reliability and validity are necessary. The meaning of reliability differs in quantitative and qualitative research. Reliability is defined as dependability, consistency, and repeatability through time and across groups of respondents (Cohen et al., 2007). Instrument reliability is verified using the test-retest reliability. According to Cohen et al. (2007), internal consistency, equivalence, and stability are the three main characteristics of reliability. Reliability as stability measures consistency over time in a similar sample. A reliable instrument gives similar data from similar respondents. Similarly, reliability as equivalence may be achieved using two data collection instruments. If the result is similar to two types of instruments, then it can be concluded the instruments are reliable or equivalent. The t-test is one of the methods to test reliability in statistics.

Numerous techniques exist for evaluating reliability, such as test-retest, split-half, internal consistency, and inter-rater reliability (Bhattacherjee, 2012). Similarly, Cronbach alpha is an alternative way to measure reliability. It gives the inter-item correlation. To ensure reliability, stability, equivalence, and internal consistency were measured. For this, the same questionnaire for data collection was provided to the respondents. The survey questionnaire included clear instruction to complete the questionnaire in simple language. I used Cronbach's alpha coefficient to assess the consistency of the instrument employed in the study. It is a widely used and popular technique to check reliability. The collected data were analyzed through SPSS. Table 4 shows the Cronbach's alpha (α) values for career preparedness. These

values include self-efficacy, outcome expectation, interest, goals, gender and profession, learning experience, job skills and competencies, and social support and barriers. Table 3 presents the reliability value related to career preparedness.

Cronbach's alpha (α) must theoretically range from 0 to 1; if α is near to 0, it is not reliable, and if near to 1, it indicates very reliable (Leontitsis & Pagge, 2007). According to Gliem & Gliem (2003) >.9 is considered as an outstanding, >.8 good, >.7 acceptable, >.6 doubtful and >. 5 are considered as a bad score. In my study, as the alpha value of all dimensions is more than 0.7, the condition for reliability of the values of the variables is satisfied and acceptable.

Table 3

Cronbach's Alpha Coefficient of Components of Career Preparedness

Components of Career Preparedness	Cronbach's Alpha
Self-efficacy	0.808
Outcome expectation	0.791
Interest	0.784
Like	0.783
Goals	0.756
Gender and Career	0.785
Learning experience	0.783
Skills and Competencies	0.785
Social support and Barrier's	0.734

Validity in social science research is as important as reliability. Validity is a prerequisite for both quantitative and qualitative research and is crucial to producing worthwhile findings. If any portion of the research is false, it has no value (Cohen et

al., 2007). Several types of validity like content, face, construct, internal and external exist in social science research. Content validity concerns instruments' validity, whether the item covers the issue or not. Similarly, construct validity is a theoretical and philosophical concern to confirm construction based on literature and also the counterpart constructed by the researcher. Likewise, external validity concerns issues of generalizing the research findings.

In this study, reliability and validity were examined using the above method. Similarly, suggestions from the guide and a panel of two experts (a food technology scholar and a development research scholar) verified the reliability and validity of the content. The experts had sufficient research work experience and expertise in their field. Before piloting, the survey questionnaire was reviewed by the experts. After receiving the feedback from the panelist, the feedback and suggestions were incorporated. After expert validation, a pilot study was conducted to confirm the instrument's dependability. The pilot study helped to determine the suitability of the instrument and the viability of the investigation. After a pilot survey, the findings were evaluated and made necessary changes.

Ethical Considerations

Ethical Considerations are one of the most important parts of a social science research. A dissertation may be rejected or deemed invalid if the researcher neglects to address the ethical aspects of the study. Ethical considerations during any research include informed consent for unpaid participation, harmless principle, confidentiality, and access to only relevant information. The protection of research subjects' welfare is the main objective of research ethics, according to Blanche et al. (2009). They contend that research ethics encompass issues like scientific fraud and plagiarism in addition to the wellbeing of the informants (cited in Gartoula & Adhikari, 2014).

Similarly, Babbie (2010) has stated that confidentiality in social research is important. A research project commits to non-disclosure when a researcher can identify what a particular person said but agrees not to disclose it in principle. Likewise, according to Polonsky and Waller (2019), the research takes six key ethical issues into account: informed permission, confidentiality, anonymity, possibility of harm, and dissemination of the findings. These domains are interrelated; thus, a researcher must consider them when conducting their research.

I pursued the defined steps to maintain the ethical standard of the study. During data collection, I first contacted the coordinators at each university and asked them to allow students to participate in the research. To maintain the secrecy of the respondents, a researcher should be aware about publishable information of respondents and they should seek a written consent as suggested by Polonsky and Waller who has suggested "The most effective way to address the informed consent issue is through the use of an information sheet, which is provided to all who are invited to participate" (2019). I also obtained the prior informed consent of the study participants, took steps to protect their confidentiality, and gave them the right to opt out if they did not wish to continue.

A researcher may harm participants physically, psychologically, emotionally, and socially during research. Therefore, the researcher should spot potential harms and take preventative action to avoid such harms. In addition to the information sheet, the researcher should ensure respondent signed informed consent form. According to Polonsky and Waller, this proves that people have consented to participate (2019). As suggested by the authors, I asked respondents to sign the consent form. Also, I ensured no harm or exploitation to the participants during the study. While

interpreting and inferring the findings also, appropriate precautions were taken to avoid any harm to the participants.

The study's aims were explained in the introductory section of the questionnaire to inform the participants. I had requested the participants were requested to read and understand it fully before completing the questionnaire. Participants were informed that if they did not want to be involved, they could leave anytime. Participants received a guarantee that the information they provided would only be used for research. The informants were fully informed of the study's objectives during the data collection. Extensive measures have been taken to protect the rights of all respondents to this research. Participants' names and addresses were not published or disclosed in any papers, reports, presentations, or discussions. Participants were taken for the study voluntarily. The participants were asked to tick mark the answers since most of the questions had multiple choices. If necessary, they were asked to write in only open-ended questions on the questionnaire. For data security purposes, I coded and entered the data. No biased claim was made against the response of the participants and findings in this research.

Chapter Summary

The research approach employed in this study is discussed in this chapter. It included the rationale for choosing a quantitative research paradigm and research philosophy. Based on those foundations, the study design was developed and that has also discussed in this chapter. Similarly, study sites, populations, and samples are also defined. Following that, I have discussed pilot studies, tools and equipment, and data collection processes. Moreover, this chapter has outlined the process of data analysis and possible tests. In addition, this chapter addresses the importance of validity and reliability that I have ensured in my research.

CHAPTER IV

DATA PRESENTATION AND ANALYSIS

The study's findings, as determined by statistical analysis of the data gathered, are presented in this chapter. Descriptive and inferential statistics are used to address the study's research questions. On the descriptive side, frequency, percentage, mean and standard deviation are the most commonly used statistics, including others, while correlation and ANOVA tests were run on the inferential sides, and t and F values were utilized to test the hypotheses. Both descriptive and inferential statistics results are displayed and summarized in a table.

Missing Data and Data Cleaning

A total of 148 students were selected for the study and filled up the self-administrative questionnaire. Out of the 148, only 146 respondents completed the entire survey. So, the missing data of two respondents were removed since the questionnaires filled by them were incomplete. The analysis was conducted for only 146 respondents. Hence the final sample size of the study is 146.

Statistical Analysis Procedure

This study used descriptive and inferential statistics to describe demographic variables associated with career preparedness**.** In the beginning, descriptive statistics were used to examine background characteristics such as gender, age, religion, ethnicity, collegiate status, university affiliation, parent's educational background, and parent occupation. Then, descriptive statistics of the career preparedness variables including self-efficacy, result in expectation, interest, like, goals, gender and career, learning experience, and supports and barriers were calculated.

To determine major differences among the mean values of demographic

variables and the career preparedness of food technology students, t-tests and ANOVA were performed and the results are presented in the tables. Two-tailed tests with an alpha level of 0.05 were employed for all inferential analyses. The study comprehended the following null hypotheses.

$H_0 1$: There is no significant relationship between career preparedness and a future career.

$H_0 2$: The food students' learning experience is not associated with a future job.

$H_0 3$: Supports and barriers do not differ by gender.

After synthesizing the literature, I learned that career preparedness depends on many elements such as demographic characteristics, family background, confidence level, personal interest, career-related intervention participation, learning experience, and social support. While addressing research question 1, all the elements mentioned above and their correlation with each other were explored. Section 1 of the questionnaire helped to explore the demographic characteristics and family background. Section 2 explored the confidence level of students. Section 4 of the questionnaire explored the students' interest, Section 7 focused on learning experiences, and Section 8 emphasized social support. Students (male/female) themselves and colleges are responsible for preparing students for high-skill jobs in a future career. Food technology is a technical subject, and students need to be sound in practical and theoretical knowledge. College education, subject knowledge, career exposure, career counseling, etc. help students to be confident in their future career. As a result, understanding the link between the variables is crucial to resolving the study's research issues.

Demographic Data

Every student voluntarily participated in the study, and I had requested them to participate in the study with the permission of the colleges. There was a consent section with a yes/no choice in the questionnaire; hence, students were not asked to fill out a separate consent form. All students who agreed to participate in the study received a questionnaire. The instructions for completing the surveys were given in detail. The objective of the study was explained to the participants, and they were asked for their feedback.

All the raw data of 148 students were transferred and coded into the IBM SPSS, Version 25. In this study, the coded data guaranteed the privacy of all respondents. After coding and removing the missing data, the data were assessed for normal distribution and prepared for final analysis. Most variables were found to have a normal distribution by the analysis. However, some variables were not normally distributed. This preliminary analysis helped to display the normal distribution as kurtosis and skewness value between -1.0 to +1.0.

The participants were students studying BTech in five private colleges of Kathmandu valley affiliated with Tribhuvan University (TU) and Purbanchal University (PU). Four colleges i.e., Padmshree International, Lalitpur Valley College, National Institute of Science and Technology, and Golden Gate International, were affiliated with TU, whereas one college, namely College of Applied Food and Dairy Technology, was affiliated with PU.

Frequency distributions were constructed to understand the sample and its characteristics. Table 4 describes the academic status of the student or sample that consisted 3rd- and 4th-years students of BTech. In the collected sample 57.5% ($N = 84$) were 3rd- year students and 42.5% ($N = 62$) were 4th-year students.

Table 4

Demography of Food Technology Students

Category	Total ($N = 146$)	Percentage
Academic status		
3rd-year	84	57.2
4th-year	62	42.8
Gender		
Male	43	29.5
Female	103	70.5
Religion		
Hindu	129	88.4
Buddhism	6	4.1
Christian	2	1.4
Muslim	2	1.4
Kirat/Prakriti	7	4.8
Ethnicity		
Chhetri/Brahmin	99	67.8
Janjati	40	27.4
Madhesi	7	4.8
University		
TU	121	83.4
PU	24	16.6
Geographic location		
Province 1	27	18.5
Madhesh Province	12	8.2
Bagmati Province	71	48.6
Gandaki Province	13	8.9
Lumbini Province	21	14.4
Karnali Province	1	0.7
Sudurpashchim Province	1	0.7

Table 4 shows the university affiliation status of the students. The study had

conducted in five colleges in Kathmandu. There were four colleges affiliated with TU

and only one college was affiliated with PU. Among total, a high 83.6% of the

students were from TU ($N = 122$) whereas a low 16.4% were from PU ($N = 24$).The

gender dissemination of the study participants is also presented in Table 4 that shows

females outnumbered males in total sample. Out of 146 respondents, 70.5 % were

female ($N = 103$), and 29.5 % were male ($N = 43$). Study participants ranged in age

from 19 to 25 years.

Table 4 describes the frequency distribution of religion of the participants. The

highest 88.4% of the student participants were Hindu ($N = 129$) followed by 4.1%

Buddhist ($N = 6$), 1.4% each Christian and Muslim ($N = 2$), and 4.8% Kirat/Prakriti

($N = 7$). Table 4 describes the frequency distribution of the ethnicity of the

participants. The table shows that most of the student participants were

Chhetri/Brahmin. Among participants, 98 (67.8%) were Chhetri/Brahmin, 40 (27.4%)

Janjati and 7 (4.8%) Madhesi. Similarly, the participants belonged from seven

provinces of Nepal. Table 4 presents the address of the students. According to the new

constitution of Nepal, Nepal has been divided into seven provinces and 77 districts.

The students belonged from provinces were Province 1- 27 (18.5), Madhesh Province

- 12 (8.2%), Bagmati Province- 71 (48.6%), Gandaki Province - 13 (8.9 %), Lumbini

Province - 21(14.4%) and Karnali Province and Sudurpashchim Province consisted

only 1-1 (0.7%) students. The data has shown that a higher percentage of the students

was from Bagmati Province and a low percentage was from Karnali Province and

Sudurpashchim Province.

Family Background

Table 5 explains the education level of the parents. There were 13.7% fathers and 38.4 % mothers below SLC. 21.2 % fathers and 28.8 % mothers studied up to SLC level; 28.8 % fathers and 21.9 % mothers educated up to intermediate level; 22.6 % fathers and 7.5 % mothers educated up to bachelor level; 13 % fathers and 2.7 % mothers educated up to master level and only 0.7 % fathers and mothers educated above the master level. The data have shown that the higher education levels of fathers were intermediate level (29 %) and most mothers were below SLC (37.9%). Table 5 explains the occupation of the parents. Agriculture was the main occupation of 13.0 % of fathers and 23.3 % mothers; education was the main occupation of 13 % fathers and 11.0 % mothers; 4.8 %fathers and 2.7 % mothers were involved in health care sectors; 20.5 % father and 1.4 % mothers belonged from Public administration/government; 7.5 % fathers and 2.7 % mothers were involved in finance, banking, real estate, insurance sector; 4.1 % fathers and 1.4 % mothers were involved in the manufacturing sector; 17.8% fathers and 11.6 % mothers were involved in retail or wholesale trade; 5.5 % fathers and 0 % mothers were involved in Transport, construction and 13.7 % fathers and 45.9 % mother had other occupation than listed here. They shared that another occupation of the father was the army, marketing manager, etc. In contrast, the mother occupation of participants was tailoring and beauty parlor and most of the mothers were homemakers.

Table 5

Parents' Education and Occupation

Category	Father (%)	Mother (%)
Level of education		
Below SLC	13.7	38.4
SLC	21.2	28.8
Intermediate	28.8	21.9
Bachelor's degree	22.6	7.5
Master degree	13	2.7
Above Master's degree (MPhil/PhD)	0.7	0.7
Occupation		
Agriculture	23.3	13
Education	11	13
Health care	2.7	4.8
Public administration/government	1.4	20.5
Finance, banking, real estate, insurance	2.7	7.5
Manufacturing	1.4	4.1
Retail or wholesale trade	11.6	17.8
Transport, construction	0	5.5
Other (please specify)	45.9	13.7

Inferential Statistics

The methods of inferential statistics were applied to test the study's hypotheses. Parametric and non-parametric tests were utilized to determine the study's conclusion. Parametric tests are more effective than non-parametric tests,

according to Cohen et al. (2007), and are designed to represent a large population.

Still, non-parametric tests make little to no assumptions about the population.

Kerlinger and Lee (2000) stated that ANOVA helps measure multivariate

normality, indicating that the sample is normally distributed and drawn from a

population. Gravetter and Wallnau (2007) found that for the ANOVA test, the

sample must be independent, the variance of the population must be equal, and the

drawn sample must be normally distributed (as cited in Hall, 2010).

Shapiro-Wilk Test

They are verifying whether the sample data came from a normal distribution

of the population data or not is a frequent practice and crucial step in data analysis.

Several methods have been used for normality test data (Hernandez, 2021; Kwak &

Park, 2019). There are several tests and methods to test the normality. Kwak and

Park (2019) described many methods of normality tests but couldn't conclude if the

data satisfies the normality requirement or not. To determine the level of normality,

they used IBM SPSS and performed the known normality tests: Kolmogorov-

Smirnov, Shapiro-Wilk, and Anderson-Darling statistical tests. They discovered the

test to help determine normality. (Kwak & Park, 2019; Hanusz & Tarasinska,

2015). "Shapiro-Wilk is easy to calculate and applies for any sample size greater

than 3" (Royston, 1992). I tested the data's normality using the Shapiro-Wilk

statistical test.

The significant values for each career preparedness characteristics are

shown in Table 6. The Shapiro-Wilk normality test or W lies between 0 to1. A

small value of W indicates to reject the normality, whereas the value of W nearby 1

indicates the normal distribution of the data (Razali & Wah, 2011)**.** If the data

distribution in our population is normal, "p" is the probability of finding the

observed or a larger departure from normality in our sample. The findings of the

Shapiro-Wilk normality test indicate that the data for the career preparedness

components are normally distributed. Maximum components' sig levels were 0. So,

it showed a very low chance of normal distribution. Field (2009) and Ghasemi and

Zahediasl (2012) emphasized that normal distribution is rare in social science (as

cited in Poudel, 2019).

Table 6

Shapiro–Wilk Test of Career Preparedness

Dimensions	Shapiro-Wilk		
	Statistics	*Df*	Sig.
Self- Efficacy	0.951	146	0.000
Outcome Expectations	0.942	146	0.000
Interest	0.871	146	0.000
Like	0.916	146	0.000
Goal	0.954	146	0.000
Learning Experience	0.975	146	0.008
Competencies	0.966	146	0.001
Social Support	0.847	146	0.000
Gender Career	0.986	146	0.148

Question One: How do food technology students think about their future careers?

Research question one seeks the answer to the question of how prepared food

technology students feel for a future career. The key goal of this research was to

measure the career preparedness of food technology students. Confident level of food

technology students; expected result after completing the degree; interest and goals

showed their preparedness for a future career. There was a total of 5 items within the instrument utilized in the assessment of food technology students' confidence level; 7 items within outcome expectation or their perceptions on preparedness for a future career; 4 items under interest; 5 items under like, and five items under goals. The confident level was measured with the help of the Likert scale "not confident at all to complete confident".

Similarly, outcome expectation or result of the education or level of preparedness for a future career was measured using the Likert scale "strongly disagree to agree strongly". Similarly, the Likert scale 'very low interest to very high interest' was used to measure interest. In addition, goals were measured with the Likert scale, with responses extending from strongly disagree to strongly agree. The table below lists the minimum, maximum, mean, variance, standard deviation, and total responses for each item related to confidence level; outcome expectation as a career preparedness predictor; and interest; like and goals in different tables.

Correlations between Components of Career Preparedness

Correlations tests are the most basic and useful tools of statistics to measure the relations between two or more variables. It also provides information if it is statistically significant or not. The correlation coefficient (r) provides the positive or negative (-1.0 to +1.0) direction of association of the variables. The value of r is +0.78 means positive or direct direction. However, when the value of r is -0.78, it means the association between two variables is negative and has inverse correlations. The p-value is the most important statistical significance indicator and indicates the probability of error. This means that the study's outcomes may be representative of the population or not. An error has a 5% chance of occurring when the p-value is 0.5.

So, significance levels tell us that the degree of confidence that is 95 % is considered

significant to generalize the results with populations (Marczyk et al., 2005).

The association between self-efficacy, outcome expectations, interest,

likeability, goals, gender and career, learning experience, and supports and barriers is

displayed in Table 7, along with the correlation value. De Vaus (2002) has claimed

that the link's strength varies from practically nil to a trivial (linear) association with a

value of 0.01 to 0.09. Relationship strength ranges from 0.10-0.29 low to modest,

0.30-0.49 intermediate to significant or strong, 0.50-0.69 considerable to very strong,

high, major, and 0.70.

Table 7

Correlations between Components of Career Preparedness

Dimensions of CP	SE	OE	I	L	G	LE	SC	SS	GC
SE	1								
OE	.219**	1							
I	.337**	.258**	1						
L	-0.018	0.016	0.141	1					
G	.446**	.214**	.532**	0.061	1				
LE	0.156	.176*	0.025	-0.037	.322**	1			
SC	-0.026	0.066	.169*	-0.136	.185*	.188*	1		
SE	0.053	0.047	.167*	-.221**	-0.005	-0.047	0.000	1	
GC	0.147	.244**	.346**	0.100	.291**	.224**	0.053	.168*	1

Note. **. Correlation is significant at the 0.01 level (2-tailed).

Table 7 shows that most career preparedness factors have correlation values that are less than +0.5, and De Vaus (2002) interprets these values as follows: 0 means *no linear association*; 0.01–0.09 *trivial (linear) relationship* or practically zero; 0.10–0.29 *low to moderate relationship*; 0.30–0.49 *moderate to substantial or medium relationship*; 0.30–0.49 *moderate to the substantial or medium relationship*. The results indicate that most career preparedness variables are moderately correlated with each other. Self-efficacy and like have an inverse association, as evidenced by their correlation values of -0.018 and -0.026.

Self-Efficacy

To assess the food technology students' confidence level, I used the questionnaire developed by Carrico and Tendhar (2012). Some minor changes were made to the questionnaire for the study. The Likert scale helped to examine the students' self-efficacy. The Likert scale was used to examine the pupils' level of self-efficacy and confidence. The scale consisted of 5 items (e.g., "I can successfully complete my BTech") in which, on a 5-point Likert scale, respondents' levels of confidence ranged from 1 (*not confident at all*) to 5 (*completely confident*).

Table 8 reported the frequency of respondents' agreement with statements and Table 9 reported the minimum and maximum values, means, variance, standard deviations, and the total responses relating to the confidence level of food technology students. The first item, "I can successfully complete my BTech degree," had a mean of 4.37 (*SD* = 0.831) or 25.3% very confident and 56.8 % complete confident to complete the BTech degree on the Likert-type scale. Similarly, the second item, "I can complete the task/assignments in future jobs," had a mean of 4.24 (*SD* = 0.698) or 45.9 % *very confident* and 39.0 *% complete confident* on the Likert-type scale. Likewise, the 3rd item, "I can smoothly handle all the technology in a future job," had

a mean of 3.75 (SD = 0.837) or 40.4 % *very confident* and 19.9 *% complete confident* on the Likert-type scale. Equally, the 4th item of self-efficacy, "I can get food technology-related job," had a mean of 4.06 (SD = 0.803) or 32.2 % *very confident* and 39.0 % complete confident on the Likert-type scale. Also, the last item of self-efficacy, "I can achieve a higher degree in food technology," had a mean of 3.92 (SD = 0.829) or 34.2 % *very confident* and 31.5 % *complete confident* on the Likert-type scale.

Table 8

Frequency of Respondents' Agreement with Statements Describing "I Am Confident" to Assess the Confident Level of the Food Technology Students

	Frequency of agreement with statement (%)				
Statements	Not confid ent at all	Little confid ent	Mode rate confid ent	Very confid ent	Comp lete confid ent
1 I can successfully complete my BTech degree	0.7	0.7	16.4	25.3	56.8
2 I can complete the task/assignments in future jobs	0	0	15.1	45.9	39
3 I can smoothly handle all the technology in my future job	0	5.5	34.2	40.4	19.9
4 I can get a food technology-related job	0	4.1	24.7	32.2	39
5 I can achieve a higher degree in food technology	1.4	2.1	30.8	34.2	31.5

Table 9

Confident Level of the Food Technology Students

	Min	Max	M	SD	s^2	N
I can successfully complete my BTech degree	1	5	4.37	0.831	0.690	146
I can complete the task/assignments in future jobs	3	5	4.24	0.698	0.487	146
I can smoothly handle all the technology in my future job	2	5	3.75	0.837	0.701	146
I can get a food technology-related job	2	5	4.06	0.896	0.803	146
I can achieve a higher degree in food technology	1	5	3.92	0.910	0.829	146

Outcome Expectations

The SCCT also includes outcome expectations, which are individual views about the results of portable responses. Self-efficacy beliefs focus on one's ability to respond, whereas outcome expectations focus on the expected results of engaging in a specific behavior. I used the Likert scale to examine the students' result expectations. The 7-item scale used to measure their perceptions on a scale from 1(*strongly disagree*) to 5 (*strongly agree*), (e.g. "When I complete my bachelor's in food technology, I expect companies will offer me a good job").

Table 10

Frequency of Respondents' Agreement with Statements Describing "When I complete

My Bachelor in Food Technology, I Expect"

SN	Statements	Frequency of agreement with statement (%)				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	companies will offer me a good job	0.7	4.8	37.7	43.8	13
2	get a job in the public and private sectors	0.7	0	26	56.8	16.4
3	earn attractive salary	1.4	3.4	30.8	44.5	19.9
4	spent good lifestyles as I wish	1.4	4.8	26.7	37	30.1
5	get a job where I use my talent and creativity	1.4	0.7	12.3	52.1	33.6
6	earn respect in the society	0.7	2.1	9.6	39	48.6
7	obtain a job that I like	0	5.5	17.8	49.3	27.4

Table 11

Outcome Expectations "When I Complete My Bachelor in Food Technology, I

Expect…" of the Food Technology Students

SN	Statements	Min	Max	M	SD	s^2	N
1	companies will offer me a good job	1	5	3.64	0.796	0.633	146
2	get a job in the public and private sectors	2	5	3.89	0.666	0.443	146

3	earn attractive salary	1	5	3.78	0.851	0.724	146
4	spent a good lifestyle as I wish	1	5	3.90	0.938	0.879	146
5	get a job where I use my talent and creativity	1	5	4.16	0.767	0.589	146
6	earn respect in the society	1	5	4.33	0.789	0.622	146
7	obtain a job that I like	2	5	3.99	0.822	0.676	146

A Likert-type scale was used to calculate the overall outcome expectations for the students. The frequency with which respondents agreed with various statements was shown in Table 11, and the lowest and highest values, means, variance, standard deviations, and the total number of responses were shown in Table 12. These data were related to the respondents' confidence level in the food technology field. The first item, "companies will offer me a good job" had a mean of 3.64 ($SD = 0.796$) or 43.8 % *very agree* and 13 % *strongly agree* with the statements. Similarly, the second item, "get a job in public and private sectors," had a mean of 3.89 ($SD = 0.666$) or 56.8 % *agree* and 16.4 % *strongly agree* with the statement mentioned above on the Likert-type scale. Likewise, the third item, "earn an attractive salary," had a mean of 3.78 ($SD = 0.851$) or 44.5 % *agreed* and 19.9 % *strongly agreed* with the statement. Equally, the fourth item of outcome expectation, "spent good lifestyles as I wish," had a mean of 3.90 (SD = 0.938) or 37 % *agree* and 30.1 % *strongly agree* on the Likert-type scale. Also, the next item of outcome expectation, "get a job where I use my talent and creativity," had a mean of 4.16 (SD = 0.767) or 52.1 % *agree* and 33.6 % *strongly agree* on the Likert-type scale. Similarly, "earn respect in the society" had a mean of 4.33 ($SD = 0.789$) or 39 % *agree* and 48.6 % *strongly agree* on the Likert-

type scale. Alike, "obtain a job that I like" had a mean of 3.09 (SD = 0.872) or 49.3 %
agree and 27.4 % *strongly agree* on the Likert-type scale.

Vocational Skills

Vocational skills are mandatory to perform technical jobs and practical
professions. To succeed in the technical field, a person needs to have a sound and
practical knowledge of the subject. Food technology is one of the technical subjects
and a food technologist needs to have sound theoretical and practical knowledge as
well.

Table 12

*Frequency of Respondents' Agreement with Statements Describing Interest of the
Food Technology Students'*

	Statements	Frequency of agreement with statement (%)				
		Very low Interest	Low Interest	Some Interest	High Interest	Very high Interest
1	To achieve BTech degree	0	0	5.5	31.5	63
2	Having a food technology-related career	0	0.7	7.5	31.5	60.3
3	To learn food technology-related skills	0	0	6.2	31.5	62.5
4	To solve problems during my study	0	0	11.6	43.2	45.2

To explore vocational skills, I used the Likert scale to know the interest and
likes/dislikes of the students. Vocational skills are the backbone of technical

education. The item "interest" has four items measured using the Likert scale (e.g.,

very low interest to *very high interest*) in which respondents indicated their

involvement and like/ dislike of the college activities and their interest.

Table 13

The Interest of the Food Technology Students

SN	Statements	*Min*	*Max*	*M*	*SD*	*S²*	*N*
1	to achieve BTech degree	3	5	4.58	0.597	0.356	146
2	having a food technology-related career	2	5	4.51	0.667	0.445	146
3	to learn food technology-related skills	3	5	4.56	0.610	0.372	146
4	to solve problems during my study	3	5	4.34	0.677	0.459	146

A Likert-type scale was used to determine the student's overall level of

interest. Table 12 reported the frequency of respondents' agreement with statements

and table 13 reported the minimum and maximum values, means, variance, standard

deviations, and the total responses relating to the interest of food technology students.

The statement "I have the interest to achieve a B. Tech. degree" had a mean of 4.58

($SD = 0.597$) or 63% of students showed *very high interest* and 31.5 % showed *high*

interest. Hence, it indicates that they have a very high interest in achieving the degree.

Similarly, the statement "I have interest, having a food technology-related career" had

a mean of 4.51 ($SD = 0.667$), or 31.5% of students showed *high interest* and 60.3 %

showed *very high interest*. Hence, the analysis showed that they are very interested in

making a career in the food technology sector only. Likewise, for the statement "I

have the interest to learn food technology-related skills," a mean of 4.56 (SD = 0.610)

or 31.5% of students showed *high interest* and 62.5 % showed *very high interest*.

Hence, the analysis showed that they are very interested in learning food technology-related skills. Also, for the statement "I have the interest to solve problems during my study," or a mean of 4.34 ($SD = 0.677$), 43.5% of students showed *high interest* and 45.5 % showed *very high interest*. Hence, the analysis showed that they could solve their problems.

Table 14

Frequency of Respondents' Agreement with Statements Describing Like of the Food Technology Students

Statements	Frequency of agreement with statement (%)					
	Never	Rarely	Occasionally	Frequently	I prefer not	to answer
1 I like to attend all the theory classes	0	2.1	8.2	80.1		9.6
2 I like to attend all the practical classes	0	0	2.7	93.2		4.1
3 I like to attend all types of exposure visit	0	3.4	25.3	68.5		2.7
4 I like to attend in-plant training	1.4	3.4	26	64.4		4.8
5 I like using study technology (digital/online programs, audio-video materials, etc.)	0	10.3	39	46.6		4.1

The likes and dislikes of the students were analyzed using Likert scale. Table 14 reported the frequency of respondents' agreement with statements and Table 15 reported the minimum and maximum values, means, variance, standard deviations,

and the total responses relating to the like/dislike of food technology students. The statement "I like to attend all the theory classes" had a mean of 3.97 ($SD = 0.511$) or 80.1% of students liked attending theory classes frequently. Similarly, "I like to attend all the practical classes" had a mean of 4.01 ($SD = 0.262$), or 93.2 % of students liked to attend all the practical classes frequently. Likewise, the statement "I like to attend all types of exposure visits" had a mean of 3.71 ($SD = 0.577$) or 68.5% of students liked all types of exposure visits frequently. Equally, the statement "I like to attend in-plant training" had a mean of 3.68 ($SD = 0.684$) or 64.4 % of students liked attending in-plant training frequently. Alike, the statement "I like to use study technology" had a mean of 3.45 ($SD = 0.734$) or that 46.6 % of students liked to use study technology frequently.

Table 15

Vocational Skills/Interest of the Food Technology Students

SN	Statements	Min	Max	M	SD	s^2	N
1	I like to attend all the theory classes	2	5	3.97	0.511	0.261	146
2	I like to attend all the practical classes	3	5	4.01	0.262	0.069	146
3	I like to attend all types of exposure visit	2	5	3.71	0.577	0.333	146
4	I like to attend in-plant training	1	5	3.68	0.684	0.468	146
5	I like to use study technology	2	5	3.45	0.734	0.538	146

Goals

"A goal may be defined as the determination to engage in a particular activity or affects a particular future outcome" (Lent et al., 1994). Although environment and personal history also influence behavior and goals and have a substantial role in

behavior and personal regulation. Setting goals can help people organize. Goals are also responsible for specific behavior to attain the goals. It is directly connected to self-efficacy and outcome expectations. To achieve a goal, you need to be confident and directed towards the goal. Here, in this study, I measured the perceptions of food technology students on how much and how well they wanted to achieve their goals.

Table 16

Frequency of Respondents' Agreement with Statements "To What Extent Do You Agree or Disagree with Following Statements" Describing Goals of the Food Technology Students

S N	Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
		Frequency of agreement with statement (%)				
1	I intend to complete my BTech degree	0	0.7	2.1	28.1	69.2
2	I have a clear set of goals for my future career	0.7	0	23.3	41.8	34.4
3	I am determined to achieve good marks in all the subjects	0	0.7	16.4	60.3	22.6
4	I have the plan to have a career in food technology after graduation	0	0	12.3	45.2	42.5
5	I have a plan for further studies after completing the BTech	0	0.7	15.1	26	58.2

Table 17

Goals of the Food Technology Students

SN	Statements	Min	Max	M	SD	s^2	N
1	I intend to complete my BTech degree	1	5	4.65	0.594	0.353	146
2	I have a clear set of goals for my future career	1	5	4.09	0.796	0.633	146
3	I am determined to achieve good marks in all the subjects	2	5	4.05	0.647	0.418	146
4	I have the plan to have a career in food technology after graduation	3	5	4.30	0.678	0.460	146
5	I have a plan for further studies after completing the BTech	2	5	4.42	0.768	0.590	146

The goals of the students were calculated by utilizing a 5-point Likert scale. Table 16 reported the frequency of respondents' agreement with statements and table 17 reported the minimum and maximum values, means, variance, standard deviations, and the total responses relating to the goals of food technology students. The first item, "I intend to complete my BTech degree," had a mean of 4.65 ($SD = 0.594$) or 28.1 % agreed and 69.2 % strongly agreed with the statements. Similarly, the second item, "I have a clear set of goals for my future career," had a mean of 4.09 ($SD = 0.796$) or 41.8 % agreed and 34.4 % strongly agreed with the statement mentioned above on the Likert-type scale. Likewise, the third item, "I determine to achieve good marks in all the subjects," had a mean of 4.05 ($SD = 0.647$) or 60.3 % agreed and 22.6 % strongly agreed with the statement. Equally, the fourth item of goals, "I have the plan to have a career in food technology after graduation," had a mean of 4.30 ($SD =$

0.678) or 45.2 % agreed and 42.5 % strongly agreed on the Likert-type scale. Also,

the next item of goals, "I have a plan for further studies after completing the BTech,"

had a mean of 4.42 (SD = 0.768) or 26 % agreed and 58.2 % strongly agreed on the

Likert-type scale.

Learning Experience by Gender and Collegiate Status

To compare how learning took place for male and female, an independent

samples t-test was used. The mean scores for male (M = 3.8, SD = 0.53) and female

(M = 3.78, SD = 0.48) were not significantly different (t =.213; p=.877). The 95

percent confidence interval of the different learning experiences' averages showed

significant differences in magnitude (mean difference -.16092). Hence H_1 was not

supported. So, I accepted the study's null hypothesis (H0): "there is no difference in

the learning experience of food technology students by gender.

Table 18

Results of t-Test Between Groups

Test Variables	Groups	N	M	SD	t	P
Learning Experience	Male	43	3.8	0.53	.213	.877
	Female	103	3.78	0.48		
Collegiate Status	3rd Year	84	3.73	0.50	-1.357	0.670
	4th Year	62	3.85	0.49		

The learning experiences of the third-and fourth-year students were compared

using an independent-samples t-test similarly. The mean score for the third year (M =

3.73, SD = 0.50) was lower than the fourth year (M = 3.73, SD = 0.49), but there was

no statistically significant change (t = -1.357; p=.0.670>0.05) in the scores. The 95

percent confidence interval of the different learning experiences' averages showed

significant differences in magnitude (mean difference -0.278). Hence H_1 was not supported. So, I accepted the study's null hypothesis (H0): "there is no difference in the learning experience of food technology students by collegiate status.

The learning experience differs across different levels of the ethnicity. The hypothesis tests if students' learning experience differs across different groups of ethnicities. Respondents were divided into Chhetri/Brahmin, Janjati, Dalit, Madhesi, and others. The ANOVA results suggest that the learning experience scores of the groups differ significantly (F= 3.508, p=0.033<0.05). Similarly, father's occupation had significant relation to interest of students in learning (F= 2.209, p=0.037<0.05)

Table 19

One Way ANOVA Results

Test Variables	Groups	Mean	SD	Test of homogeneity of variance		ANOVA	
				Levene's Statistic	Sig.	F	Sig.
Ethnicity	Chhetri/Brahmin	3.82	0.462	0.762	0.469	3.508	0.032
	Janjati	3.63	0.563				
	Madhesi	4.08	0.474				
Religion	Hindu	3.79	0.5	0.766	0.548	1.28	0.278
	Buddhism	3.7	0.37				
	Christian	3.4	0.28				
	Muslim	3.4	0.56				
	Kirat/Prakriti	3.6	0.39				

Since Levene's Statistic was significant, the equal variance was not assumed. Dunnett's T3 post-hoc comparisons were chosen to examine the differences between individuals in the groups. This test (mean difference at the 0.05 level) showed that mean scores for Chhetri/Brahmin (M=3.82, SD=0.46) were significantly different from Madhesi (M=4.08, SD=0.47). Janjati (M=3.63, SD=0.56) was significantly different from Madhesi. However, no substantial difference was detected between Chetri/Brahmin and Janjati.

The hypothesis tests if students' learning experience differs across different groups of religions. Respondents were divided into Hindu, Buddhism, Christen, Muslim, and Kirat/Prakriti. The ANOVA results suggest that the learning experience scores of the groups differ significantly ($F_{4141} = 1.28$, $p=0.278 > 0.05$).

Equal variances were assumed because Levene's statistic was not significant. Post-hoc comparisons with Tukey were chosen to test individual differences between groups. Tests showed that the mean for Hindus ($M = 3.79$, $SD = 0.5$) differed significantly from Christians and Muslims. However, there was no major difference between the other groups.

From ANOVA test, significant relation was observed between province as students' address and social support ($F = 2.510$, $p=0.025 > 0.05$).

Research Question Two: To what extent do recent food technology students relate their learning experiences with future career?

Research question two explored the relationship between learning experience of food technology students and their future career.

Table 20

Frequency of Respondents' Agreement with Statements "To What Extent Do You

Agree or Disagree with Following Statements" Describing Learning Experience of

Food Technology Students

		Frequency of agreement with statement (%)				
	Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	Multitask/manage priorities at once	0.7	4.8	43.2	38.4	13
2	Give a presentation	0	1.4	7.5	63.7	27.4
3	Network and/or search for a job or business	0	13	30.8	40.4	15.8
4	Plan personal finance and or manage a budget	0	11.6	32.9	40.4	15.1

Table 21

The Learning Experience of the Food Technology Students

SN	Statements	*Min*	*Max*	*M*	*SD*	s^2	*N*
1	multitask/manage priorities at once	1	5	3.58	0.803	0.645	146
2	give a presentation	2	5	4.17	0.614	0.377	146
3	use technology that is common in most workplaces	2	5	4	0.724	0.524	146
4	network and/or search for a job or business	2	5	3.59	0.907	0.823	146
5	plan personal finance and or manage a budget	2	5	3.59	0.884	0.782	146

Competencies in vocational skills and sound theoretical and practical knowledge are the keys to success in the technical field. For that, students should be equipped with job-related skills such as multimedia, giving a good presentation, networking, and knowledge about future jobs. Research question two explored the level of students' job-related competencies and learning experience that influence the future career of the food technology students.

A summary of student learning regarding how well students were prepared for specific fundamental knowledge or abilities, and their applications, was shown in Table 18. A high percentage of students (43.2%) were rated neutral on the statement "I have learned or am learning to multitask/manage priorities at once," and 38.4 % agreed. Hence, they were not completely confident with handling the multi-task at once. Similarly, 63.7 % of students were confident in giving a presentation and 27.4 % were very confident in giving a presentation. Likewise, 40.4% of students felt prepared for networking and job search and 40.4 % agreed that they could solve financial problems and manage a budget.

Skills and competencies are the keys to success in the future. I made an effort to investigate the essential knowledge and abilities of students studying food technology, and Table 20 and Figure 3 (Annex 2) show their level of proficiency in these areas. The table showed that 83.6 % of students have good individual skills and competencies for a future career.

Table 22

Important Skills/Competencies for Success in a Future Food Technology Career

SN	Statements	*Min*	*Max*	*M*	*SD*	*s²*	*N*
1	Individual skills (like leadership quality, communication, problem-solving, etc.)	3	5	4.83	0.396	0.157	146
2	having a degree with good grades	1	5	3.86	0.811	0.657	146
3	theoretical and practical knowledge of the subject	3	5	4.62	0.502	0.252	146
4	internship/ in-plant training experience	2	5	4.51	0.590	0.348	146
5	your college's name or reputation	1	5	3.19	0.985	0.970	146
6	use of technology in classes or study	3	5	4.40	0.638	0.407	146

While testing one way ANOVA in variables related to research question two, different significant result was observed. The relation between learning experience and goals was significant ($F= 2.46$, $p= 0.006<0.05$). Highly significant relationship was observed between like of learning and outcome expectations of students ($F= 3.913$, $p= 0.000<0.05$). Moreover, interest in learning was also significantly associated with self-efficacy ($F= 4.839$, $p= 0.000<0.05$).

Research Question Three: To what extent support and barriers affects career preparedness?

Social support is a central aspect influencing a scholar's professional preparation. The social surroundings are where teachers, their circle of relatives members, and pals offer emotional aid and guidance. The careers of their children can be knowingly shaped by their parents. They can keenly be interested in child interests,

vocational skills, and abilities. Also, parents can help the child select a future career and give moral and emotional support during a difficult time. Here, in this study, I explored social support and identified the barriers during the students' study. Section 8, 'Support and barriers of the questionnaire,' asked the respondents about the supports and barriers. I used five scales Likert scale "strongly disagrees to strongly agree".

Table 18

Frequency of Respondents' Agreement with Statements "To What Extent Do You Agree or Disagree with Following Statements" Describing Social Supports and Barriers of Food Technology Students

	Frequency of agreement with statement (%)				
Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1 My parents showed an interest in my career and other plans	4.8	4.1	7.5	36.3	47.3
2 My parents/guardians make me feel I can succeed in college and future career	3.4	2.7	4.1	38.4	51.4
3 Most teachers in my college suggest my future career plans	4.1	6.8	27.4	48.6	13.0
4 I have not been under any financial pressure during my studies	2.7	9.6	29.5	40.4	17.8
5 My cast and ethnicity do not affect my career choice and future career	4.8	2.1	7.5	30.8	54.8
6 My friends support me in learning	3.4	2.1	15.1	47.3	32.2

easily

Table 19

Social Supports and Barriers of Food Technology Students

SN	Statements	Min	Max	M	SD	s^2	N
1	My parents showed an interest in my career and other plans	1	5	4.17	1.059	1.122	146
2	My parents/guardians make me feel I can succeed in college and future career	1	5	4.32	0.938	0.879	146
3	Most teachers in my college suggest my future career plans	1	5	3.60	0.944	0.891	146
4	To what extent do you agree or disagree with the following statements: I have not had any financial pressure during my studies	1	5	3.61	0.978	0.957	146
5	My cast and ethnicity do not affect my career choice and future career	1	5	4.29	1.030	1.062	146
6	My friends support me to learn easily	1	5	4.03	0.932	0.868	146

The Likert-type scale was used to find students' social support or difficulties while studying food technology. Table 23 reported the frequency of respondents' agreement with statements and Table 24 reported the minimum and maximum values, means, variance, standard deviations, and the total responses relating to the goals of food technology students. The statement "my parents/guardians make me feel I can

succeed in college and future career" had a mean of 4.17 (SD = 1.059) or 36.4 % of students agreed and 51.4% strongly agreed with the statement. Hence, the analysis showed that the social support system was good, and the parents encouraged their children to study and have good achievements. Similarly, the statement "my parents/guardians make me feel I can succeed in college and future career" had a mean of 4.32 (SD = 0.938), or 38.4 % of students agreed with this statement and 51.4 % strongly agreed with this statement. The outcome so demonstrated that parents/guardians support their children in pursuing successful future jobs.

Likewise, the statement "most teachers in my college suggest about my future career plans" had a mean of 3.60 (SD = 0.978). 48.6% of students agreed this statement, and 13 % strongly agreed. Hence, the result showed that teachers supported future career exploration and guided the students. Also, the statement "I have not any financial pressure during my studies" had a mean of 3.60 (SD = 0.978), or 49.4 % of students agreed with the statement and 17.8 % of students strongly agreed with the statement. Hence, the result showed that they had no financial pressure during their studies. The statement "My cast and ethnicity do not affect my career choice and future career" had a mean of 4.29 (SD = 1.030). 30.8 % of students agreed with the statements and 54.8 % strongly agreed. The statement "My friends support me to learn easily" had a mean of 4.03 (SD = 0.932). 47.3 % of students agreed the statement and 32.2 % strongly agreed. Hence, the result showed that friends were supporting each other to learn easily.

Different studies on gender and career development have explored the barriers for females, equality problems in job opportunities, etc. This study also explored the career preparedness perception of food technology students. Section 6 of the questionnaire helped to explore the gender and career perception of the students

Table 20

Gender and Career Preparedness

SN	Statements	Min	Max	M	SD	s^2	N
1	Females can successfully complete the BTech degree	1	5	4.72	0.619	0.383	146
2	Male and females can equally complete the task/assignments in future jobs	2	5	4.59	0.681	0.464	146
3	Male and female can equally handle all the technology in future job	2	5	4.53	0.696	0.485	146
4	Male and female are equally efficient in getting food technology-related job	2	5	4.50	0.772	0.597	146
5	Male and female will equally earn	1	5	4.22	0.986	0.972	146
6	I think females can be very successful in the food technology sectors	1	5	4.11	0.983	0.967	146
7	Females are not interested in achieving the food technology degree	1	5	1.66	0.817	0.668	146
8	Females are generally less interested in the food technology profession	1	5	1.81	0.889	0.791	146
9	I think a person's gender is important in choosing a profession	1	5	1.73	1.012	1.025	146
10	Females are more intended to achieve the food technology degree	1	5	3.31	0.922	0.849	146
11	A person's gender is important in choosing a profession because of socio-cultural expectations	1	5	2.25	1.236	1.528	146

For the statement "females can complete the BTech degree", 78.8 % of students strongly agreed statement. Hence, it indicated that the students have the confidence to complete the food technology degree.

Similarly, for the statement "male and female can equally complete the task/assignments in future jobs", 68.5 % of respondents strongly agreed with this statement. So, the analysis showed that they were equally competent to complete any assignment of the job.

Likewise, for the statement "male and female can equally handle all the technology in the future job", 64.4 % of students strongly agreed with this statement. Hence, the result showed that males and females could equally handle all the technology in a future job.

Also, for the statement "male and female will equally earn", 52.7 % of students strongly agreed the statement. Hence, the result showed that males and females could equally earn.

For the statement "I think females can be very successful in food technology sectors", 31.5 % of students agreed and 43.8 % strongly agreed. Hence, the result showed that females became successful food technologists.

For the statement "females are not interested in achieving the food technology degree," 39 % of students disagreed with the statement and 50 % of students strongly disagreed with the statement. Hence, the result showed females were interested in achieving a food technology degree.

For the statement "females are generally less interested in food technology profession", 35.6 % of students disagreed with the statement and 44.5 % strongly

disagreed. Hence, the result showed that females were interested in the food technology profession.

For the statement "I think a person's gender is important in choosing a profession", 24 % of students disagreed with the statement and 56.2 % of students strongly disagreed. Hence, the result showed that gender is not necessary in choosing a profession.

For the statement "females are more intended to achieve the food technology degree," 29.5 % of students agreed with the statement and 9.6 % strongly agreed. Hence, the result showed that females were more intended to achieve a food technology degree.

For the statement, "A person's gender is important in choosing a profession because of socio-cultural expectations", 23.5 % of students disagreed with the statement and 37.7 % strongly agreed. Because of socio-cultural assumptions, the outcome demonstrated that gender is not significant when choosing a profession.

Supports and Barriers by Gender

Table 21

Results of t- Table by Gender

Test Variables	Groups	N	M	SD	t- value	p-value
Supports and	Male	43	3.914	0.65	-1.0493	0.295
Barriers	Female	103	4.037	0.63		

T-tests on independent samples were used to compare the support and barriers faced by males and females. Scores were not significantly different (t (144) = -1.049; p = 0.295), mean scores were lower for men (M = 3.914, SD = 0.65) than for women (M = 4.037, SD = 0.63). The mean difference magnitude (mean difference = -0.12,

95% CI: -0.35 to 0.10) was not significant. Therefore, H1 was not supported. Therefore, I accepted the null hypothesis (H0) for this study.

While testing the relationship between support and barrier and future career related variables by ANOVA, some significant relations were observed. Support and barrier was significantly related to goals of students ($F= 1.882$, $p= 0.019<0.05$). Similarly, support and barrier was significantly related to outcome expectation ($F= 2.253$, $p= 0.004<0.05$). Support and barrier also had significant relation to interest ($F= 1.965$, $p= 0.013<0.05$) and like ($F= 2.421$, $p= 0.002<0.05$).

Chapter Summary

This chapter included statistical analysis methods for measuring the career preparedness of food technology students. Career preparedness depends on the student's confidence to accomplish the task and interest in engaging in different activities to achieve the expected results. The results showed the students' levels of self-efficacy, personal and professional interest, and expectations of results. The predictors of career preparedness were found correlated to each other. The outcomes of the analysis specified that learning experience meaningfully influenced the career preparedness of food technology students and gender does not affect career preparedness. Males and females were equally competent to get and perform well in food technology-related jobs.

CHAPTER V

FINDINGS AND DISCUSSIONS

I discuss the findings of this study concerning other studies on career preparedness in this chapter. The discussion considers the literature on career preparedness, theoretical models, and empirical studies. The chapter begins by responding to the research questions and presenting the study's most important findings. After that, I discuss the predictors of career preparedness and the expectations of the outcome of the career preparedness of the food technology students. Then, I discuss my findings compared to other relevant studies and presented my observation.

Findings of the Study

This study aimed to find answers to three research questions. The first research question explored the preparedness for the future career of food technology students. The study identified the seven predictors of preparedness: demographic characteristics, family background, confidence level, personal interest, participation in career-related intervention, learning experience, and social support. Then the correlation between each construct of career preparedness was explored that included self-efficacy, outcome expectation, interest, goals, learning experience, competencies, and social support. The results showed that most career preparedness variables were moderately correlated with each other.

While testing hypotheses by t-Test and ANOVA methods, the results supported the hypotheses. While seeking the answer to the first research question, ANOVA showed that the learning experience of Chhetri/Brahmin students was significantly different than Madhesi. Similarly, Madhesi students' learning experience

was significantly different than Janjati. Moreover, students' location in the province had a significant relation to support and barrier.

The second research question investigated the relationship between food technology students' learning experiences and future careers. In this question also the initial hypotheses were supported since learning experience had a significant relation to career goals, like of learning had a significant relation to outcome expectation, and interest had a significant relation to self-interest.

By examining research question three it is observed that support and barrier had a significant relation to future career-related variables like goals, outcome expectation, interest, and like of learning. Moreover, gender and career were also significantly related to interests and goals.

This way, the findings have supported the concept of the study and might prove important literature for future studies in the area.

Discussion of the Findings

This study and its conceptual framework are guided and conceptualized by SCCT. Various SCCT models discuss the student career development process, self-efficacy, interest development, outcome expectations, learning experience, goal setting, and interrelationships. According to Bandura (1986, 1997), self-efficacy in specific activities or performances is generally formed from four essential sources of individual achievements: social influence, indirect learning from the perception of role models, and physiological, and emotional states and responses. Williams (2010) has observed in social cognitive self-efficacy is the ability to perform activities that influence expected outcomes and affect self-assurance. But a few researchers have challenged SCCT and claimed that outcome expectations could not impact students' confidence.

Furthermore, researchers have also used SCCT to know the career selection and development process. Santos (2020) applied SCCT to understand the career growth process of science teachers in Taiwan. Similarly, Chen et al. (2021) by using the theoretical background of SCCT on career search and decision-making concluded that career interests directly influence career engagement.

Career preparedness includes attitudes, skills and competencies, and behavior that is related to or impacts future careers and is influenced by personal and environmental factors (Steiner et al., 2019). Brown and Lent (2019) have identified five popular models of SCCT: career and academic interest development, choice-making, performance, educational and occupational happiness or well-being, and process of career self-management as the theoretical background for their research. Because of various concepts and their relationships, SCCT is extensive and comprehensive. The hypotheses of career preparedness developed by the theory are both confirmed and disconfirmed by the data of this study.

Career Preparedness: Individual and Circumstantial Predictors

This study revealed seven individual and circumstantial predictors of preparedness: demographic characteristics, family background, confidence level, personal interest, participation in career-related intervention, learning experience, and social support. Demographic characteristics, family background, confidence level, and personal interest are individual predictors, whereas participation in the career-related intervention, learning experiences, and social support are circumstantial predictors. These predictors are defined after analysing the study of Marciniak et al. (2020) including some others. Authors have conceptualized predictors of career preparedness. They have explained that family characteristics, social support, and participation in a career intervention are circumstantial predictors. Individual

predictors include demographic information, educational achievement, individual differences, career-related information, and motives.

Beyond Marciniak et al. (2020), other authors have also defined the factors that predict career preparedness (Rahim et al., 2021; Xing et al., 2019; Migunde et al., 2015; Hajnalka et al., 2021). Rahim et al. have emphasized that professional competencies and career choices determine higher education and career choices and plans and they help students to prepare for a future career. Xing et al. have stated that socioeconomic status is the predictor of post-high school education and work outcomes. Migunde et al. have examined the predictors by gender. Authors have concluded career readiness and vocational identity work as the predictors of career indecision. The result indicated that career counseling helps a student to set a clear career goal. Likewise, Hajnalka et al. have found that socio-demographic background interprets career preparedness.

Relation of Career Preparedness with Demographic Variables

The findings of this study suggested that various career preparation factors, such as student demographics, ethnicity, religion, geographic location or address affect career preparation. Similarly, parental education level, and occupation also play important role to career development. This finding matched the observation of Lent et al. (2002) who has argued that SCCT theory has defined the impact of environmental and personal factors on career growth. Additionally, author has stated that SCCT model has also defined how job interest, career choice, and career success change over time. Numerous studies have demonstrated that demographics are crucial for career growth that provides a foundation for the finding of this study.

The result of the study revealed that the ethnicity of the students influence their career choice. The result has shown that most of the students were

Chhetri/Brahmin and Hindu. Hence, the result indicated less involvement of other ethnic and religious groups in this sector. The observation of this study is supported by Carrico and Tendhar (2012) who has concluded that ethnicity and family background substantially impact one's decision to seek an engineering degree. According to Duffy and Lent (2008), social support and career decision self-efficacy (CDSE) are substantially connected with the religious support of college students who are active in religious organizations. However, this study did not support the thesis that religion is correlated to career preparedness.

The observation of this study contradicted with different studies that tested the relationship between gender and career preparedness. Oliveira et al. (2017) has observed a linear trend in gender, with girls demonstrating more advanced career development than boys. Additionally, Marciniak et al. (2020b) have observed that women engaged in job exploration and profession decisions earlier than men. Similarly, they have stated that adolescents were more interested in future careers and personal income, employment status, and resources significantly influenced career development. Smith (2015) has suggested that female students felt better equipped for their degree programs. Contrastingly, this study did not produce any significant relation of gender to career related variables.

The different lifestyles of different geographical locations, incomes, occupations and employment opportunities contribute to the young student's career preparedness and educational achievement (Oliveira et al., 2017). This study also found that there were fewer students from remote areas: Karnali and Sudurpashchim Province. This study's finding suggested that province of students was significantly related to support and barrier of learning that conforms to Oliveira et al.'s observation.

This study has not explored the reason behind the less participation of students from remote areas. However, UNESCO's (2014) report has shown a very low pass rate in SLC examinations from remote areas. This might be one of the reasons for less participation of the students from remote areas in higher education and technical education like food technology. Author has concluded women from remote areas rarely participate in technical and vocational education and training (TVET) despite receiving scholarships and awards. The report concluded that participation is low due to physical distance to the center, not due to interest in a course or because the offered course is not marketable.

In addition, a person's familial background affects their choice of subject, academic achievement, profession choice, and level of career preparation. Parental qualification, occupation, and household income influence the career choice and preparedness of the students. If parents are educated, they can guide the child in career preparedness. If parents are educated and have sound economic status, students may perform well in their studies and explore and prepare well for their careers. Supporting this thesis Bojuwoye and Mbanjwa (2006) have concluded that career choice is related to financial condition and career information (cited in Amani and Mkumbo, 2018). During the study it is observed that family background plays a vital part in career-broadening because of examining the family background of students.

Most of the students' mothers were SLC graduates, and fathers had intermediate-level degrees. The result of this study has not shown any significant relationship between parents' education and child education achievement. However, several studies have shown parental education has positive influence on child education. The higher education level of parents positively influences their children's educational outcomes (Idris et al., 2020). Household income and parental education in

the family play an important role in developing career preparedness (Marciniak et al., 2020b). A social-cognitive model of career self-management proposed that personal and contextual factors such as family background can predict career preparedness (Marciniak et al., 2020). Similarly, the socioeconomic status of the family helps to develop occupational values.

Parents' involvement in different types of occupation and the children's career choice are related. Atoragbe et al. (2019) found an association between parental occupation and children's educational success**.** The children perform better whose parents have regular earnings and work in the office compared to those whose parents work outside or have no regular income. The result of this study showed father's occupation has significant relation to interest of learning of students. However, mother's occupation was not significantly related to interest. Most of the students' fathers were engaged in the agriculture sector while mothers were involved in public administration. In contrary, Moneva et al. (2019) have concluded that parents' occupations cannot influence the confidence or education achievement of the students.

Skills and Competencies Give Confidence for Future Career

This study's one of the objectives was to measure the degree of confidence that food students had in themselves. Self-efficacy theory, according to SCCT, places a strong emphasis on applying social or vocational learning. Self-efficacy is a term used to define an individual's self-reliance in their ability to perform a particular task or action. Self-efficacy helps us understand how vocational education is learned (Lent, Brown, and Hackett, 1994). This study defined levels of self-confidence, interests, and likes and dislikes that helped to understand students' self-efficacy. This study

assessed self-efficacy related to self-confidence in food technology students at graduation.

The result showed that most students were confident about completing the degree and felt prepared for their future careers. They were getting jobs in the food technology sector. Based on the SCCT theoretical framework, the components of self-efficacy were theorized and tested (Lent et al., 1994). The analysis showed that the students were not always confident about accomplishing the task. However, they were confident in handling the technology. Most of the students were confident in completing food technology; however, they were not very confident in getting the food technology-related work. Self-efficacy develops from personal achievement, social encouragement, and physiological and psychological conditions and it is interlinked with results and objectives (Career Research, 2021).

Skills and competencies are mandatory to get decent work. Youth unemployment is a significant issue for states around the world. In 2008 and 2009, jobless youth increased by 4.5 million. Toward the end of 2010, there were an expected 75.1 million individuals on the planet battling to look for decent jobs. (Sanchez-Castaneda et al., 2012, as cited in Bashir et al. 2018). Furthermore, to acquire and hold a job in this challenging job market, job seekers progressively need professional skills and competencies that can assist them in dealing with their job tasks. This may be the situation for new or junior professionals who have just entered the job market with a high chance of discontinuity and under or unemployment.

To be successful in a job or career, there is a need for basic and employability skills and competencies. Nagele and Stalder (2017) have identified two types of necessary skills for success in the job: transferrable and employability skill. Basic literacy and numeracy abilities, critical thinking abilities, management and leadership

aptitudes, interpersonal aptitudes, information technology aptitudes, systems thinking aptitudes, and work ethic traits are examples of basic or transferrable skills. Employability skills include communication skills, technological competencies, digital competencies, willingness to learn, cultural awareness, and expression.

Two key variables of social cognitive serve as backgrounds of career planning: self-efficacy and goals. The study of Wendling et al. has concluded performance-based learning experiences in food technology showed self-efficacy to succeed in future career (2020). Authors have argued that goals guide and encourage career planning, and help to identify, plan and achieve the goals itself. As per Bandura (1986, 1997), self-efficacy at specific activities or performances is generally formed from four essential sources: individual achievements, social influence, indirect learning from the perception of role models, and physiological and emotional states and responses.

The results of the correlation test showed that H_2 was partially supported because there was very low co-relation and the association between the variables. Following the De Vaus (2002) interpretation of the correlation, self-efficacy had a very weak to moderate link with result expectancies, a reasonable relationship with interest; negative relation with likeability, a modest association with goals, and a low or negative correlation (0.02) with the learning experience. In SCCT, as argued by Williams (2010), self-efficacy is the aptitude to perform activities that affect expected outcomes and influence self-efficacy.

This study showed that interest had significant relation to self-efficacy and like had significant relation to outcome expectation. Similarly, the relation between learning experience and goals was significant. In determining self-efficacy, gender is not statistically significant. Male and female students pursuing degrees in food

technology have comparable levels of confident, result expectancies, interests, and aspirations. In addition, previous research has shown that female students are less likely to participate in science and technology and have lower self-efficacy than male students. This result from earlier studies is supported by the findings that men and women demonstrated equivalent degrees of academic self-efficacy and comparable levels of technical interests and outcome expectancies. Marshman et al. (2018) has concluded that the levels of confident among males and females were equal in physics.

Vocational interests are useful indicators for career development. This study also explored the vocational interest of the food technology students, such as involvement in theory and practical classes, attending exposure visits and in-plant training, using technology, etc. In the interest model developed by SCCT, confident and result expectations are seen as the sources of interest in career-related activities. Interest occurs when people are directly or indirectly exposed to internships or apprenticeships and in public during childhood and adolescence. Continued engagement with activities, practice and feedback develops skills, develops personal standards of performance, develops a sense of effectiveness on specific tasks, and provides specific feedback on the outcomes of engagement with activities. The activities in which a person feels content and anticipates success are the ones in which they are most likely to become interested.

The result regarding the students' interest showed a positive relation between vocational interest and career preparedness. Vocational interest is a positive indicator of food technology students' career choice and selection, which means it helps to set a goal for a career. The study indicated that food technology students showed high levels of interest in attending the theory and practical classes and active participation

in the education-related exposure visits and in-plant training. However, they were not very interested to use any digital technology such as digital/online programs, audio-video materials, etc. Furthermore, the findings revealed that the students were willing to achieve a BTech degree; have a future food technology-related career, and keenly wanted to learn food technology-related skills. However, they were not very interested in solving a problem faced during the study. In the case of a career decision, one's interests influence the future career as well.

Interest helps to increase knowledge and prepare for a future career. This study also tried to explore the vocational interest of the students and the result showed that the vocational interest helped career planning and career preparedness. Oliveira et al. (2017) highlighted that academic success was allied with academic performance and employment. Early childhood learning, behavior and educational success influence dropout rates and long-term unemployment in adulthood. Marciniak et al. (2020b) has emphasized in career preparedness because lack of career preparedness affects career development and may cause vocational problems in a future career. Vocational interests are strong phenomena and vocational interests are very effective in career development (Borgen, 2004).

Regarding outcome expectations, personal ideas about the impact of certain activities on reaching a specific result are known as outcome expectations. The importance of outcome expectations in deciding to modify behavior is widely acknowledged. Positive outcome expectation such as "if I do regular exercise, I will be fit and there is a low chance of heart attack" helps to get a positive result. This study also examined the outcome expectations of the students. The learning experience may lead to the development of result potentials (Lent et al., 1994). Similarly, the SCCT claims that outcome expectations are crucial for professional

advancement and this study assessed such expectations. Every statement of the outcome expectations had high scores, meaning the students have more confidence to get a positive result after completing the study. They were confident that food technology-related jobs enable them to earn a good salary and have a good life after completing their education. Also, they showed confidence in using their creativity and talent in their future career.

Learning Experiences Matter for Future Career

Examining the educational experiences of students studying food technology was one of the objectives of this study. As the theoretical foundation, SCCT was adopted because this theory deals with speculative and professional interests and the process of achieving academic and professional success. The findings showed that students were very interested in accomplishing academic activities. They showed a strong willingness to achieve the BTech degree, learn food technology-related skills and have a food technology-related career in the future.

SCCT also defines how learning experiences shape future career. In other words, the accomplishment of the task and performance make the learning experience. Similarly, Betts et al. (2009) also emphasized the importance of skill and competencies development for career placement. The researchers stressed that it develops during education and training acquired through practical experience and engagement in career development activities. This performance accomplishment can be achieved by doing course-related activities such as attending theoretical and practical classes, participating in exposure visits and in-plant training, etc. Many students showed a strong interest in accomplishing such activities. Academic success is necessary and helps the students to develop skills and competencies for a future

career. Furthermore, the results demonstrated that learning experiences are not gender specific.

The results of this study displayed that there is only a very weak affiliation between students' learning experiences and their outcome expectations. The results do not support the previous research of Lent et al. (1997) and Career Research (2021) that found a strong link between students' learning experiences and outcome expectations. Similarly, confidence and result potentials are affected by learning experiences and depend on one's effort and context (Garriott et al., 2013). Students in this study experienced learning opportunities relevant to careers. However, it was not shown that their expectations for these outcomes had changed. However, several research discovered a connection between the learning process and outcome expectations. Byrne et al. (2002) revealed a favourable correlation between learning experiences and academic success in female students, where male students failed to effectively approach learning.

Different studies have shown that having theoretical and practical knowledge and skills that apply in future careers are important for college graduates to succeed in their future careers. College or higher education institution has been claiming that the college is preparing or equipped with skills and competencies needed in the future career. Students believe that certain abilities and skills are important to succeed in their future occupations and to boost their confidence. It is crucial to know students' impressions about the erudition objectives for career preparation. Organizations also seek workers who have a certain set of skills and qualities.

The study also explored students' pre-existing skills and abilities and tried to relate learning experiences to career preparation. Only a few students reported that they can manage to multitask priorities at once. The study's findings showed that very

few students can multitask at a time. One of the reasons behind it might be that they are junior professionals, and are in their learning period who find hard to manage the different tasks at a time. The employers admire performing multiple tasks since it helps them by controlling cost. At work, home, and school, many people believe being able to multitask is a highly desirable quality.

Regarding the skill of a presentation, the findings indicated that participants valued it and felt that it is an essential skill in future careers to get success. Participants expressed confidence in their leadership, communication, problem-solving, and teamwork skills necessary for the job. It was also important for students to obtain degrees. Students stressed both academic and practical understanding of the subject, suggesting that the food technology major focuses not only on the theoretical aspects of learning but also on the skills required for practical knowledge. Furthermore, students agreed to achieve both theoretical and practical- field-based learning and knowledge.

The importance of extracurricular activities and opportunities for experiential learning was one theme that arose from the study's conclusions. The students were not very satisfied with extracurricular activities and experimental learning opportunities. They demanded more extracurricular activities and experimental-based learning. They found the in-plant training very useful to understand the industry setting and for a future career. In addition, they found that exposure visit is a good means of learning. The exposure visit supports and builds the practical knowledge of the students. Students found extra-curricular activities such as internships, seminars, and workshops important for their career development. The internship program and exposure visit assist students to governing their interests, learning realistic and technical evidence from professionals, shaping relations that enable career prospects,

and helping them reduce the gap between colleges to career transition. According to Bohischeid and Clark (2012), extracurricular activities like an apprenticeship, product innovation competitions, food science clubs, IFT events, etc. were equally crucial for the professional development of food science students.

Learning Experiences Do Not Differ by Gender

Males and females are biologically different and have different learning styles. Different studies have shown that there is a difference in learning by gender. SCCT also highlighted that gender plays an important role in learning. Theorists also tested the theory with different faculties to know if gender influences learning or not. Similarly, scholars also tested the SCCT theory with different faculties. Williams and Linda (2006) tested the SCCT to know the differences in learning by gender. They observed gender differences in the learning experience. Similarly, Wehrwein et al. (2007) found that learning styles differ by gender. Males and females have different learning styles and the teacher's role is important to select the appropriate tools for good learning of the students.

In contrary to the conclusion of different studies, the result of this study showed that gender was not a significant factor for future career. This study aimed to assess gender differences in career preparedness and learning experience. To know whether career preparedness differs by gender or not, 11 items forming five subscales were measured. Beliefs about gender and professional choice, about females' interest in the confidence to handle the technology, and beliefs about male and female's equal earning and the interest and opportunity in the food technology profession were analyzed. This result showed that most students agreed that females could complete the BTech degree. This result was in line with some studies like Oludipe (2012) that claimed no association between gender and academic performance. Moreover,

challenging the existing notion Hamilton et al. (2015) have claimed that women are more likely than men to enroll in STEM programs. A survey conducted by Rai and Dhakal (2017) in four districts of Makwanpur, Chitwan, Gorkha and Dhading in Nepal found no variance in knowledge between male and female students**.**

However, UNESCO has highlighted gender inequality in higher education remains a pervasive problem. Participation of women in the science and technology sector remains low (Michael et al. 2017). Gender inequality in science and technology still exists in EU countries, and technical education is an excellent way to bridge that gap (Niiranen, 2017). In contrast to those studies, I observed that men and women are equally capable of studying and applying technology in their work, as stated by Niiranen. On the other hand, Goswami and Dutta (2016) found that gender plays an important role in technology use. In contrary to Goswami and Dutta, I discovered that most students felt that males and females are equally efficient in getting food technology-related jobs.

Supports and Barriers Matter for Career Preparedness

Social support is an important factor for future career success. Several supportive agents or factors influence the career preparedness of the students. The study examined the social support parents, teachers, peers, and seniors provided. Social environments such as family, teachers, and friends support play a significant role in selecting a career, shaping the career and career preparedness. Family, teachers, seniors, and friends provide career guidance and emotional support. Teachers' counselling helps with career exploration and selecting a career. This study also explored the social support mechanism of food technology students and found that there is good parent and friend support. However, many students felt that the teacher's support was not enough as expected. The results showed that parents have a

remarkable impression on their children's career decisions and development. The professional decision is one factor that fosters pleasure and success in life, which parents want for their children.

The current study followed the SCCT as a theoretical model and explains the career progress process in terms of interest development, choice selection, and the development process of self-efficacy. According to SCCT, repeated activities, comments, and feedback from parents, friends, and others help develop the individual's skills and self-efficacy (Lent et al. 2002). I found that the SCCT is an appropriate theory for my study. Similarly, Park et al. (2018) used SCCT as a theoretical framework. The authors examined the social support relationship with outcome variables. The study's findings demonstrated that social support had a favourable impact on profession choice. Similarly, Wang and Fu (2015) also found that social support improves students' professional adaptability. Likewise, young people's professional development also benefits from social support, and they seek it out while making career selections. Social supports play a significant role in selecting a future career. However, a study by Jemini et al. (2021) discovered an inverse or adverse relationship between social support and profession choice. Results denoted that social support in decision-making was indirectly correlated with career. However, the mediating factor in this context was occupational self-confident.

The findings of this study also demonstrated that students who believed their parents supported and directed them in their academic endeavours and job choices had higher self-confidence. This is important because studies showed that students who get support and guidance from their parents feel competent regarding career decision-making and are prepared and satisfied for a future career. Friends are another important factor in career development and career preparedness. The findings

revealed that friends' supports positively influence academic achievement and increasing the determination toward goals. Marciniak et al. (2020) also found that parents, teachers, friends, and other family members guide and give emotional support and career guidance in career growth. Also, parents help with networking and emotional support during difficult times for their children. Oliveira (2017) stated that identifying and managing the role, creating opportunities, and performing experience in a school setting and social support networks must enhance career preparedness.

Wendling et al. (2020) emphasized that parents, teachers, and friends influence career planning. Social supports positively impact on career goals and plans. Venant et al. (2021) have found teachers positive role in preparing for a future career. They suggested proper roles to teachers and parents to help a child prepare for a future career. In addition, this survey revealed that students felt that guidance and support from teachers regarding career guidance was insufficient. Open-ended questions tried to explore why students did not feel that teachers support future career plans and preparedness. According to students, there is no such type of classes, workshops, or events that let them know about their future career. In conclusion, the results verify that social support helps students to prepare for a future career.

Supports and Barriers Do Not Vary by Gender

SCCT explains how demographics such as gender, ethnicity, religion, geographical location, personality, schooling, and environment influence their career perception, career development, and career preparedness. The SCCT details these individual characteristics along with individual behaviors and external environmental issues that affect the career progress procedure. Similarly, SCCT emphasizes the significance of support and challenges in a person's professional development process. Dahling and Thompson (2010) examined the supports and barriers for student career

growth using SCCT as a theoretical framework. They found that family support, peer support, and financial status affect students' career decisions.

Similarly, Pena et al. (2016) also explored the influence of gender on perceived support. They found that engineering students perceive peer and family support as important. Teaching staffs and financial difficulties are the greatest barriers to career development. Inda et al. (2013) hypothesized based on SCCT that perceived career barriers and career optimism differ by gender. However, they found no difference between men and women in career optimism. Furthermore, authors tested the SCCT in engineering students to find their interests, goals, support, and barriers. Results showed that women were more likely than men to experience family support, particularly from friends and relatives. However, males see obstacles within the family. There are no gender differences for other supports and barriers.

In the context of dubious findings of different studies, this study did not produce significant relation between gender and supports and barrier. Female students do not find many barriers in food technology education and career. This may be the case of attraction of female in food sector particularly in contrast to other STEM sectors. It might also be the case of new development that female students are getting more support from parents and siblings as observed by Mozahem et al. (2019) in recent years.

Chapter Summary

I discussed the conclusions drawn from this chapter's quantitative analysis of the gathered data. In particular, the chapter demonstrated how the career preparedness of the food technology students was contextualized. This chapter also discussed how the demographic variables of students impact on career preparedness of the students. I also discussed the relation of demographic variables and self-efficacy, outcome

expectations, interests and goals. Furthermore, I discussed how the learning

experience influences the students' career preparedness. Also, this chapter included

the supports and barriers that affect food technology students' career preparedness.

CHAPTER VI

SUMMARY, CONCLUSION, AND IMPLICATION

This chapter summarizes the key findings of the study in the context of other components of the study. Similarly, this chapter covers the main conclusion of the study. Implication of this study on future researchers, institutions and policy-makers is another area of discussion of this chapter. The chapter ends with the discussion of delimitation of the study.

Summary

The study is about the career preparedness of food technology and science students studying at BTech level in the colleges of Kathmandu valley. The study has used SCCT as a theory which was tested by using three key research questions. The study's design is cross-sectional survey and both descriptive and inferential statistics are employed to present the results and discussion of the study. The study is new in the food sector in case of Nepal since there was no single study was found conducted before.

Professional skills and competencies may increase the confidence of BTech students in accomplishing career-related activities, necessary skills for future career and market skills, and creating opportunities. Other vocational skills such as headship, communication, and time management skills help students become more competent in future jobs. The findings of this study suggested if future professional development skills integrated within current curricula focusing on communication and transferable skills that makes a candidate more competent for future jobs and careers.

The study found that ethnicity and geographic location influence students' career choices and preparation since there was a significant relation between

ethnicity and learning experience and province of students and supports and barriers of learning**.** It also revealed that learning experience influences career preparedness and skills which students learn during the study. From the study significant relation was observed between learning experience and goals. Similar result was observed between like of learning and outcome expectations and interest in learning and self-efficacy.

Career guidance and counseling received from teachers play an important role in shaping a future career. Seniors and teachers both contribute significantly to students' career progress and profession choice. Furthermore, the study found that friends and other students influence career education or career choice. Friends who study together interact with each other and choose a certain career. For food students, to work in industry, government sector or start own business as a career was guided or suggested by parents, teachers, and friends. From this study, it is concluded that support and barrier has significant relation to interest, goals, and outcome expectation.

I found that gender does not influence career choices in the food technology study. Students of both genders compete for the same jobs. There is no difference between the subjects studied by females and males that lead them to choose different careers. I also observed that male and female role models, parents, and friends influence a student's career selection. Regarding food technology students, females can complete the BTech degree as males and both are equally competent to complete the task or assignment for a future career. Likewise, the study revealed that males and females handle the technology and equipment equally. Additionally, the result showed that females can succeed in food technology sectors and earn equally like males. The study revealed that females were more intended to achieve a food technology degree.

The outcome also showed that choosing a certain job is heavily influenced by socio-cultural factors.

Conclusions

The results of this survey confirmed that students majoring in food technology were happy with their educational experiences and felt well-prepared for their future employment. They were confident in most of the core competencies needed to be a food technologist. They thought they were ready to do any type of food technology job. Also, some students wanted to continue their studies and wish to enroll in higher education like MTech and PhD. Only a few wanted to study further in a different subject like MBA. The students felt competent on most success skills measured in this study; however, they felt they were not very confident in giving a presentation and using the multi-media.

Similarly, men and women have the same level of professional preparation. Their learning experience significantly plays a role in career preparedness. Likewise, social support plays an important role in shaping a career. Parents, friends, and seniors help and guide them to select and shape their careers; however, they felt that the teachers' guidance and support were insufficient. They needed more career counseling from teachers.

This study sought to identify the variables that affect students studying food technology in terms of career preparation and choice. According to the study's findings, instructors, parents, older family members, and friends significantly influence how they learn and prepare for their future employment. Parent support, encouragement, and guidance are very important for students' career choices. The study also concludes that the learning environment, colleges, and universities affect a student's future career. Supervision by teachers, workshops, orientation, and exposure

through field visits and in-plant training were found to influence and support a student's career development and preparation for future careers. Also, the students emphasized the benefit of field/exposure visits and in-plant training in career development and asked about the increased numbers of this type of event.

Likewise, the students perceived that the curricula have to be revised from time to time. It can also be concluded that gender does not influence students' choices of careers, learning experiences, career preparedness, and future career performance. The study's conclusions demonstrated that both male and female students had a similar level of occupational interest and competency in terms of work-related knowledge, theory, and practice. Role models and parents, seniors, and a friend are overriding in students' choosing of careers and career development.

In conclusion, food technology students perceived that a good learning environment and opportunities increase their confidence in accomplishing career preparation activities; allow them to identify individual and transferable skills, sharpen them, and enable them to better market those skills for a future career. These resources available throughout the BTech degree and good learning opportunities may result in improved professional competencies.

Implications of the Research

This study expanded the knowledge on career preparedness in the food technology sector. It has provided some implications for career preparedness. The study focused on the importance of vocational education and interest in succeeding in the career. Similarly, career counseling of teachers, the guidance of parents, and support might also foster positive career development and career preparedness of the students. The study emphasized that analyzing a behavioral component of career preparedness, such as involvement in practical and theory classes, exposure visits, and

in-plant training could shape the career. Future interventions should consider professional development workshops, career counseling, more practical knowledge, and industry exposure. Future studies can assess more transferable skills and career-related exposure and counseling effectiveness. Future interventions should consider professional development workshops, career counseling, practical knowledge, and industry exposure.

The current study on factors influencing the career preparedness of food technology students may be the first to be carried out in Nepal. This study significantly advances our understanding of the variables that affect career preparedness. The results of this study may be useful to instructors, colleges, and universities. From this research, academics can benefit from insights on skills gaps and skills needed for career advancement.

Theoretical Implications

The theoretical approach utilised in this study was based on the social cognitive career theory. SCCT identified the individual needs, support, and barriers to career preparedness. Career preparedness should be improved by identifying the barriers, improving the learning experience and creating a good environment, and developing the skills and competencies that make them confident to work in future jobs. Also, it is important to see through the lens of SCCT, the relation between core skills and competencies, behavior or intention of the student towards learning, interest, and goals.

Practical Implications to Future Researchers

Other researchers may use the study as a baseline in the same field or similar fields for their studies. The study will serve as a resource for prospective future scholars who wish to investigate the career preparedness of various program. This

research was conducted among the food technology students and is open to all the programs/faculty. As this study primarily focuses on self-efficacy, interest, outcome expectations, and learning experience, other researchers may continue this work on other aspects of SCCT in a broader context.

Implications to College and Universities

The government of Nepal and educational institutes and universities may also benefit from the current study when revising the curriculum for food science and technology or technical subjects. The food technology curriculum needs to be reviewed, which helps students update with current development in food technology sectors. Based on the results and the reviewed literature, it is recommended to organize training courses, workshops, seminars and orientation courses to improve or update the knowledge of students and teachers teaching in this field. The results of this study demonstrate the value of field visits for comprehending ideas and theories. Therefore, it is advised that a field trip be a career preparation process that might be regularly included in the curriculum. The results of this study displayed that in-plant training or industrial training is beneficial to understanding the industry's production process and working environment. Therefore, it is recommended that in-plant training is a career preparedness process and is included in the curriculum regularly and in other related technical fields.

Implications to Policy Makers

A technical area that has a significant impact on the economy of the country is food technology. So, it is recommended that concerned authorities work to bring clear policy on developing this sector.

Delimitation of the Study

The present study's findings came from colleges in the Kathmandu valley associated with Tribhuvan University and Purbanchal University. Respondents were taken from the food technology students of Kathmandu. The other types of academic programs such as Agriculture, Medicine, Engineering, Art, and general Science were not taken for this study. For this investigation, the quantitative method was employed as the methodology.

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ANNEXES

Annex 1: Tools for Data Collection

Research Questionnaire for Thesis - 'A study of Career Preparedness of Food Technology Students'

Introduction

Hi, I am Meera Shrestha. I am a student at Kathmandu University. Currently, I am collecting data for my MPhil dissertation at Kathmandu University School of Education (KUSOD). You have been selected as a respondent for my study and I want to interview with you. The interview is focused on your academic area and your future career. The data collected during this interview will be analyzed and included in my thesis dissertation and future days; it may be published in research journals.

Are you willing to participate in the interview?

Yes [_____]   No [_____]

[If yes], Do you have any objection if any part of your response during this interview is published in any academic journal or any other printed material?

Yes [_____]   No [_____]

[If no, continue the interview]; the interview may go for half an hour. Please turn off your mobile phone.

Section 1: Background information

What is your name? (Please mention your full name with surname)……………………………………

Gender Male [____]   Female [____]

What is your year of birth in AD? [_____]

What religion do you belong to?

Hindu [____]   Buddhism [____]   Christian [____]   Muslim [____]

Kirat/Prakriti [____]   Others (please tell me which religion you belong) [_____]

What **ethnicity do you belong to?**

Chhetri /Brahmin ☐   Janjati ☐   Dalit ☐ Madhesi ☐
Others ☐

In which programme are you enrolled?

Food Technology ☐   Dairy Technology ☐   Nutrition and Dietetics ☐

What is your collegiate status? 3rd year ☐ 4th Year ☐

What is your college's name? ....

In which university is your college affiliated?

Tribhuvan University ☐   Purvanchal University ☐

What is your parents' highest level of education (Please √ the appropriate box)?

Level of Education	Father	Mother	Guardian
Below SLC			
SLC			
Intermediate			
Bachelor's degree			
Master's degree			
Above Master's degree (MPhil/ PhD)			

What is the occupation of your parents (Please √ the appropriate box for each parent)?

Occupation	Father	Mother	Guardian
Agriculture			
Education			
Health care			
Public administration/government			
Finance/banking, real estate, insurance			

Manufacturing			
Retail or wholesale trade			
Transport, construction			
Other (please specify)			

Section 2: Self Efficacy

I am confident

	Not confident at all	Little confidence	Moderate confident	Very Confident	Complete confident
I can complete my BTech					
I can complete the task/ assignments in future jobs					
I can smoothly handle all the technology in my future job					
I can get food technology-related job					
I can achieve a higher degree in food technology					

Please specify the things that make you more confident

…………………………………………………………………………………………

…………………………………………………………………………………………

Section 3: Outcome Expectation

When I complete my bachelor in food technology, I expect

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Companies will offer me a good job					
Get job in public and private sectors					
Earn an attractive salary					
Spent a good life style as I wish					
Get a job where I use my talent and creativity					
Earn respect in the society					
Obtain a job that I like					

Please share your future expectation, if any other, after completion of B.Tech.

…………………………………………………………………………………………

…………………………………………………………………………………………

Section 4: Interest

I have interest

	Very low Interest	Low Interest	Some Interest	High Interest	Very High Interest
to achieve BTech degree					
having a food technology-related					

career					
to learn food technology-related skills					
to solve problems during my study					

If any other interests, which are not included here, please specify

………………………………………………………………………………………

………………………………………………………………………………………

I like

	Never	Rarely	Occasionally	Frequently	I prefer not to answer
to attend all the theory classes					
to attend all the practical classes					
to attend all types of exposure visit					
to attend in-plant training					
to use study technology (any digital/online programs, audio-video materials etc.)					

Have you added other activities that influence your learning to pursue your degree?

………………………………………………………………………………………

………………………………………………………………………………………

Section 5: Goals

To what extent do you agree or disagree with the following statements:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I intend to complete my BTech degree					
I have a clear set of goals for my future career					
I am determined to achieve good marks in all the subjects					
I have a plan to have a career in food technology after graduation					
I have a plan for further studies after completing the BTech					

Please share if you have any other goals included here

……………………………………………………………………………………………
……………………………………………………………………………………………

Section 6: Gender and Career

To what extent do you agree or disagree with the following statements:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Females can complete the BTech Degree					
Male and Females can equally complete the task/ assignments in					

future jobs					
Male and female can equally handle all the technology in future job					
Male and female are equally efficient in getting food technology-related job					
Male and female will equally earn					
I think females can be very successful in the food technology sector.					
Females are not interested in achieving the food technology degree					
Females are generally less interested in the food technology profession.					
I think a person's gender is important in choosing a profession.					
Females are more intend to achieve the food technology degree					
Because of socio-cultural expectations, a person's gender is important in choosing a profession.					

Please share your perception on gender and career preparedness

……………………………………………………………………………………
……………………………………………………………………………………

In your view, what factors affect the female enrollments in food technology study?

……………………………………………………………………………………

Section 7: Learning Experience

To what extent do you agree or disagree with the following statements?

I have learnt or am learning to………..

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
multitask/manage multiple priorities at once					
give a presentation					
use technology that is common in most workplaces					
network and/or search for a job or business					
plan personal finances and /or manage a budget					

What do you think is important to be a good job candidate?

	Not at all important	Unimportant	Neither important nor unimportant	Important	Very important
Individual skills (like leadership quality, communication, problem solving, etc.)					
Having a degree with good grades					
Theoretical and practical knowledge of the subject					

Internship/In-plant training experience					
Your college's name or reputation					
Use of technology in classes or study					

Please indicate areas for improvement in the teaching of food technology which helps to easy learning………………………………………………………………………………… …………………………………………………………………………………………

<u>**Section 8: Supports and Barriers**</u>

To what extent do you agree or disagree with the following statements?

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
My parents showed an interest in my career and other future plans					
My parents/guardians make me feel I can succeed in college and future career					
Most teachers in my college suggest my future career plans.					
I have not been under any financial pressure during my studies					
My cast and ethnicity do not affect my career choice and future career					
My friends support me in learning easily					

Please share if any support and barriers you felt during your study

……………………………………………………………………………………………
……………………………………………………………………………………………

Do you want to share any other issues that have not been raised so far?

……………………………………………………………………………………………
……………………………………………………………………………………………

Thank you for your time and help with this survey!

Annex 2: What are important to be a good job candidate?
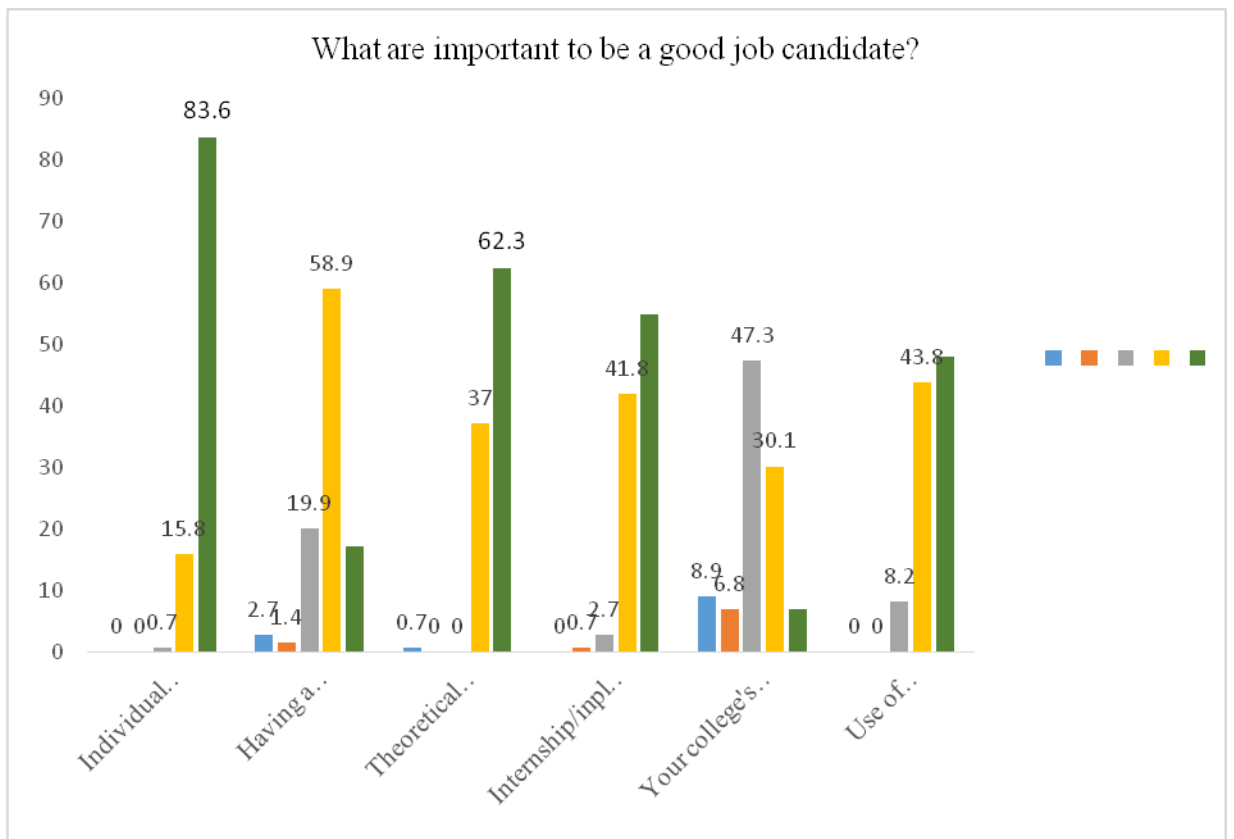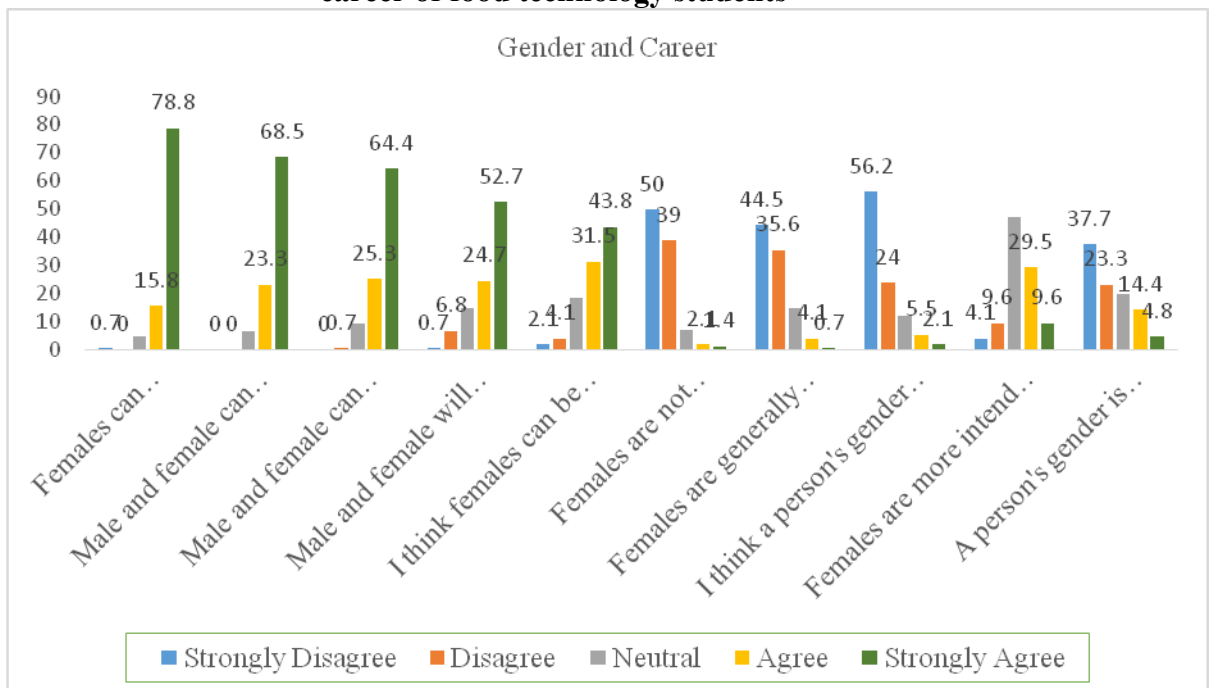

Figure 3: what is important to be a good job candidate?

Annex 3: Frequency of respondents' agreement with statements "To what extent do you agree or disagree with following statements" describing gender and career of food technology students'

Annex 4: Significance of Career Preparedness with Demographic Variable

Table 1: *Ethnicity and Career preparedness components*

Components of Career Preparedness		N	Mean	SD	*F-Value*	*p-Value*
Self-Efficacy	Chhetri/Brahmin	99	4.1535	.60395		
	Janjati	40	3.8750	.64321	2.949	0.056
	Madhesi	7	3.9714	.75214		
Outcome Expectations	Chhetri/Brahmin	99	4.0115	.53673		
	Janjati	40	3.8107	.61244	2.118	0.124
	Madhesi	7	4.1020	.38434		
Interest	Chhetri/Brahmin	99	4.5227	.47527		
	Janjati	40	4.4813	.52620	1.288	0.279
	Madhesi	7	4.2143	.61962		
Like	Chhetri/Brahmin	99	3.7515	.32961		
	Janjati	40	3.7850	.27693	0.218	0.805
	Madhesi	7	3.8000	.16330		
Goal	Chhetri/Brahmin	99	4.3152	.44271		
	Janjati	40	4.2700	.45415	0.147	0.863
	Madhesi	7	4.2857	.55205		
Learning Experience	Chhetri/Brahmin	99	3.8263	.46216		
	Janjati	40	3.6350	.56366	3.508	0.033
	Madhesi	7	4.0857	.47409		
Competencies	Chhetri/Brahmin	99	4.2020	.38412		
	Janjati	40	4.2792	.34876	1.640	0.198
	Madhesi	7	4.4286	.23288		
Social Support	Chhetri/Brahmin	99	4.0101	.66318		
	Janjati	40	3.9542	.61439	0.283	0.754
	Madhesi	7	4.1429	.56461		
Gender and Career	Chhetri/Brahmin	99	3.3756	.28324		
	Janjati	40	3.4864	.35332	2.115	0.124
	Madhesi	7	3.3117	.43868		

Table 2: *Gender and Career preparedness components*

Components of Career Preparedness		N	Mean	SD	t-Value	p-Value
Self-Efficacy	Male	43	4.0512	.62654	-0.214	0.881
	Female	103	4.0757	.63438		
Outcome Expectations	Male	43	3.9169	.65260	-0.614	0.528
	Female	103	3.9792	.51485		
Interest	Male	43	4.3721	.49813	-1.973	0.727
	Female	103	4.5485	.49017		
Like	Male	43	3.7721	.40610	0.229	0.004
	Female	103	3.7592	.26026		
Goal	Male	43	4.2326	.50884	-1.200	0.079
	Female	103	4.3301	.41981		
Learning Experience	Male	43	3.8000	.53452	0.213	0.877
	Female	103	3.7806	.48871		
Competencies	Male	43	4.1977	.38534	-0.763	0.761
	Female	103	4.2492	.36595		
Social Support	Male	43	3.9147	.65503	-1.049	0.603
	Female	103	4.0372	.63783		
Gender and Career	Male	43	3.3298	.39027	-1.831	0.006
	Female	103	3.4334	.27249		

Table 3: *Religion and Career preparedness components*

Components of Career Preparedness		N	Mean	SD	F-Value	p-Value
Self-Efficacy	Hindu	129	4.0775	.61049		
	Buddhism	6	3.7333	.92664		
	Christian	2	4.4000	.56569	0.995	0.413
	Muslim	2	4.6000	.56569		
	Kirat/Prakriti	7	3.9429	.74578		
Outcome Expectations	Hindu	129	3.9723	.53811		
	Buddhism	6	3.8810	.84957		
	Christian	2	4.2143	.10102	0.446	0.775
	Muslim	2	3.5714	1.01015		
	Kirat/Prakriti	7	3.8571	.68014		
Interest	Hindu	129	4.5155	.48387		
	Buddhism	6	4.0833	.73598		
	Christian	2	4.8750	.17678	1.466	0.216
	Muslim	2	4.5000	.35355		
	Kirat/Prakriti	7	4.3929	.51755		

Like	Hindu	129	3.7628	.31895		
	Buddhism	6	3.7667	.23381		
	Christian	2	3.5000	.14142	0.773	0.545
	Muslim	2	3.6000	.00000		
	Kirat/Prakriti	7	3.8857	.19518		
Goal	Hindu	129	4.3023	.43954		
	Buddhism	6	4.1000	.58992		
	Christian	2	4.7000	.14142	1.144	0.338
	Muslim	2	4.7000	.42426		
	Kirat/Prakriti	7	4.2286	.50897		
Learning Experience	Hindu	129	3.7953	.50835		
	Buddhism	6	3.7000	.37417		
	Christian	2	3.4000	.28284	1.287	0.278
	Muslim	2	4.4000	.56569		
	Kirat/Prakriti	7	3.6286	.39036		
Competencies	Hindu	129	4.2377	.36430		
	Buddhism	6	4.0833	.25276		
	Christian	2	4.1667	.23570	0.330	0.857
	Muslim	2	4.3333	.47140		
	Kirat/Prakriti	7	4.2857	.60640		
Social Support	Hindu	129	3.9948	.65648		
	Buddhism	6	4.1389	.24533		
	Christian	2	4.1667	.23570	0.426	0.790
	Muslim	2	4.4167	.11785		
	Kirat/Prakriti	7	3.8333	.78764		
Gender and Career	Hindu	129	3.3855	.30908		
	Buddhism	6	3.3939	.17876		
	Christian	2	3.6364	.25713	2.338	0.058
	Muslim	2	3.2273	.32141		
	Kirat/Prakriti	7	3.7143	.37640		