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INTRODUCTION

Research is defined by the online Oxford dictionary as a methodological analysis, the learning of sources and materials built on evidence and experience that lead to new judgments. Thus, research is the discovery of elements and the creation of authentic concepts whether applied or theoretical. Since economic theory is series of actions of thinking about the economy with regard to cause effects relationships among relevant variables. Concerning the methodology to be used for research in Economics, professional experts should have built various concepts in regard to how many markets operate by using many parts of economic initiatives to get to the national or international economy (Keshab Bhattarai, 2015). Theoretical research for Economics comprises of the sources of the demand, and supply equilibrium conditions through an improved process using equations, diagrams and logical statements. Macro and micro standard's economic prototype or expansion of those in many domains such as trade, finance, public finance, engineering and environment are adapted to study optimisation by the producers and consumers through the determination of prices in goods and services or factors of production markets. Theory supplies systematic framework, like the supply and demand functions, consumption, investment or spending or revenue or export and import functions when abstracting from the duplicity of the real world. The Applied research are focused on testing many assumptions founded on economic theories. Econometric and statistical methods are utilized to estimate the guidelines of a prototype and general equilibrium models to boost the economy and to bring about scenarios using the policy substitutes. Strategic communications among economic actors are systematized using game theoretical models. Moreover, Economic research demonstrates how the economic variables such as public policies on spending, taxes, trade, redistribution, environment, financial market, and labour, affect the distribution of resources both by government and households to maximize the social welfare (Narayan Prasad, 2015).

The general equilibrium models measure the aggregate economy. Intertemporal prototypes demonstrate the process of development, investment and aggregation. Mathematical intervention using cumulative and marginal distributions of populations, sampling a large number are utilized in testing allegations of these concepts. Abstract prototypes necessitate calculus, algebra, econometrics, matrix, stochastic probability or real analysis theory to depict and assess these theoretical concepts. The application of these theories or concepts is needed for the improvement in welfare of human society. This comprises an analytical accumulation of data for theoretical relevant elements. Experimental studies are allegedly done using non- linear and linear functions theories by means of computation and estimation methods. Since, the amount of data has significantly increased so is the need for processing the data. Hence, the applied research is coherent,

consistent and systematic process of information using preliminary techniques. The applied research changes, depending on the nature of the technique used in the assessment. There are four groups of applied research: Economic and statistical analysis, computations and calibration of equations' system, strategic analysis and experimental analysis. The research method is wide discipline and comprises the three important components: i) orientation or theoretical perspectives to guide research and logic of inquiry, ii) Techniques and tools of data collection, iii) methods of data evaluation. Hence, this assignment will be divided in three sections. The first section will deal with theories on research, the second section will provide the guidelines of developing a research design, finally, the third section will explain the task and phases of the research.

SECTION 1: THE THEORIES ON RESEARCH

1. 1. Overview

Research is very important in the human development, and it instils inductive and scientific reasoning and encourages the growth of logical rational and coordination. The main function of research for applied economics developed in the modern age as a support to economic policy by simplifying the complexity of the nature of the operation of the economy. To understand the research method, well will first understand the objectives of the research, the types of the research, and will elaborate on other research theories (Shona McCombes , 2020).

1. 2. Objectives of the Research

The objectives of the research method is to equip the learner with the appropriate skills for research proposal in Economics by means of the utilization and evaluation of the database using statistical techniques and tools with the collaboration of a supervisor that assist the student with the development of the completion of the dissertation and research proposal. These objectives should be specific giving priority to deductive and inductive thinking, in drafting hypothesis and administrating the literature review, selecting methods of evaluation, or in collection of data, present analysis, deducing recommendations and conclusion. Objectives provide the focal point in research by justifying the urgency and relevance of certain topic and advising the contribution to be made to this topic. The objectives of research in Economics should be clear and often vary. In microeconomics, the main objective is the maximization of the firm's profit and the welfare and utility of the households through an effective production of commodities while increasing producer and consumer surplus and remain competitive in the market. for instance, the research might focus on the failure and success in the business by attaining their objectives using the time series or cross section evidences. And macroeconomics major research objectives are connected to the long- term economic development and their sources, the short-term challenges like the changes in employment, in output, price level, wage, interest rate, credit, money, trade, exchange rate between countries. The research could be focus on: how to reduce the unemployment rate and control the inflation rate; how to increase the economic growth rate; How to maintain the total demand and to balance current and capital accounts, and the budget (Narayan Prasad, 2015).

1. 3. Types of Research

There exist various types of research according to their nature and discipline of specialization. And there might be a possible bilateral distinction between analytical and descriptive, applied and theoretical, quantitative and qualitative, empirical and conceptual, experimental and evaluative, exploratory and formalized etc.., it is important to acknowledge that there may be overlayed elements deliver such a categorization is not really adequate at a certain extent. Hence, the

importance of looking at the fundamental elements in identifying the various types of research in their corresponding in their utilization and implication. The research could be qualitative or quantitative. Quantitative research is the analytical and experimental analysis of quantitative features, phantasm, and their relationship. The aims of the quantitative research is to build mathematical prototypes, and to assess the hypotheses established on the epistemological and ontological premises, the quantitative research has the below attributes: the pursuit of identifying international laws, a belief in a common reality, the necessity and possibility of value free research, distinction between the researcher and the researched, and the pursuit of international laws beyond the limit of social context and research. The following are the characteristics of measurement and research design of a quantitative research: a stress on analytical research through falsifiable assumptions, the penchant to work with broad model sample, classical assumptions testing. While qualitative research purposes are connected with the interpretation and meaning. The focus is on the culturally built nature of reality, the confidential relation among the researched, research and situational limitations that structure the enquiry. The main characteristics of qualitative research are: Non-separation of effect and cause, a belief in multiple realities, built reality, and co-existence realities, heavy role of the context in research process, an interdependence between the known and the knower, evaluation of the entire system, the explicit focus on exploratory, inductive research concepts, the impossibility to conclude studies beyond the actual contextualization constraints, the trend to work with selected and limited sample, and impossibility to isolate the researcher from the researched. Additionally, empirical research depends on observation and experience, often uses when verification and validation of a feature is needed and uses a broad pool of data. Meanwhile, conceptual research is connected to abstract theory and ideas, often utilized by theorists to build new approaches or to translate the currents concepts. Moreover, exploratory research focuses on building the assumptions rather than evaluating the pre-meditated assumptions notion or contention. Formalized research aims at authoritative framework with particular tested assumptions. Furthermore, historical research uses current studies to analyse the past events. Whilst, evaluative research is the assessment of the cost efficiency of a program that is useful for policy decision making and experimental research focus at describing the irregular factors using experiments. Finally, action research deals with current world issues seeking realistic answers and solutions by collecting feedback that improve concepts (Narayan Prasad, 2015).

1. 4. Types of Analysis used for Applied Research

Applied research uses different analysis for its findings' evaluation: Statistical analysis, computation and calibration system, experimental analysis, and general Equilibrium, Micro Macro, Mundell-Fleming, Input-output IS-LM, Business Cycle models (The University of Queensland, n.d).

Statistical analysis comprises planning, execution and the gathering of data on economic factors analytically in an impartial way. This consists of demonstrating the distributions characteristics of these factors, gathering the data on the focused tendencies, seeking the pattern and connections of provenance among factors. Econometric evaluation comprises of applications and techniques to process data for assessing many economic concepts based on time series and cross sections data (The University of Queensland, n.d).

Computation and calibration of system of equations consist of resolving N number of equations on the ground of certain hypothesis about their comportment, like input-output analysis or market demand and supply functions, and a general equilibrium system. Non-linear, linear or dynamic program is usually regulating this system. Currently Game theory, the most used tool utilizes to assess inter- dependence among economic actors where the activities are performed using the perception and beliefs of the concerned individuals. These analyses are administered to evaluate the trading results and process, emergency strategic planning, or description of the comportments of economic actors (The University of Queensland, n.d).

Experimental analysis uses control associations for the evaluation of economic concepts, like the effects of certain policy on economic stability, impact of certain drugs, the introduction of the Euro, certain measures of health, educational achievement and productivity. The focus of this analysis is the implementation of analytical and quantitative tools needed to develop student capability to write relevant literatures and present a excellent research proposal. It focuses on delivering fundamental skills needed to implement research programs as an expert in economics while taking into consideration the most important economic theory using accessible primary and secondary information series in to solve economic problems (The University of Queensland, n.d).

Input-output IS-LM, Mundell-Fleming, General Equilibrium, Business Cycle, and Micro Macro models are used in the markets by households, firms and government utilizing various analysis methods such as qualitative method, statistical analysis- inference, econometrics – Time series cross section, experimental techniques to solve the core economic theory of micro, macro, public finance, trade, development, finance, and labour issues. Applied economics research often blends various of these topics using the theoretical review and analysis, econometric and statistical computations practices (The University of Queensland, n.d).

1.5. Game Theory

Game theory is a conceptual structure for creating social circumstances between competing actors. It is defined as the science of strategy, at the ideal decision –making of competing and independent agents in strategic environment. The main founders of the game theory were John Von Neumann a Mathematician and Oscar Morgenstern an Economist in the 1940s while John Nash a Mathematician is considered to be the most significant developer of this concept. Since then, Game Theory research provided to an augmentation of the comprehension of complicatedness of the equilibrium computation in two individuals games to improve the basic theorems. These games can be administered problems in economic locations like internal residential discrimination (Adam Hayes & Brian Barnier, 2020).

Game theory involves interdependent economic activities of regions, nations, governments, producers, and consumers and supplies instruments to study the strategic relationship among these economic actors where decision-making is made by one person relying on activities performed by others, each game has various actors who select series of rules and strategies. The optimal selection accessible to one rely on selections made by others. The results are clearly determined by each player strategy's duo. The game describes the identities, their preferences, the availability of the strategies of the players and how these strategies impact the results relying on the model, the needed hypothesis, and other requisites. The elements of a Game consist of payoff matrix, strategies and rational players. This game can be applied in many disciplines: politics, psychology, war, evolutionary biology, business and economics (MSUNIV, n.d).

1.5.1. The Game Theory Assumptions

The Game Theory is played under the assumptions that:

i) An actor can use various strategies to resolve an issue.
ii) There is accessible pre-defined results.
iii) The total result for all actors would be zero at the end of game.
iv) All the actors in the game know well the rules of the game and the results of other actors.
v) Actors make analytical decision to augment their profitability (Nitisha, n.d).

1.5.2. The Game Theory Structure

The Game Theory is founded on the strategic principles and payments. Strategy involves an activity that an actor gets when disputing to resolve an specific issue. While payment is the results of the applied strategy by the actor. For instance, two people are playing coin flipping game where one actor throws the coin, the other actor calls for tail or head, the caller's prediction about the coin

is accurate, the actor gains the coin. Nevertheless, in the case the actor ‘s prediction is incorrect, then the actor loses the coin and the other actor gains the coin. Thereafter, the actor prediction of tail and head would be considered as the payment and the strategy would be the outcome of coin flipping tat signifies that none of the two actors gains the coin. The payment and the results rely on the actors as the actors predicted the side of coin. Yet, in other game, the payment relies on more than one actor (Nitisha, n.d).

Structure of a Game Theory

Player B

	Player A	
	Strategy 1	Strategy 2
Strategy 1	(R, R)	(S, T)
Strategy 2	(T, S)	(P, P)

R= Reward for common collaboration = Payment

Collaboration against collaboration (Payment for C/C).

S= Sucker’s payment = Payment for Collaboration against Desertion (C/D)

T= Temptation to Desertion = Payment for Desertion against Collaboration (D/C)

P= Punishment for Mutual Desertion = Payment for Desertion against Desertion (D/D).

The general form of Prisoner’s Dilemma conditions: T>R>U>S and R>(S+T)/2.

The structure of conventional prisoner’s impasse concludes from its authentic prisoner context. Assume that the two actors are demonstrated by the colours blue and red, that each actor selects to either collaborate (remain silent) or defect. If both actors collaborate, the both get the reward R for collaborating. If both actors defect, they both get the punishment payment P. If Red collaborates while Blue defects receiving the temptation payment T, while Red gets the ‘’ sucker’s payment, S. Furthermore, If Red defects while Blue collaborates receiving the sucker’s payment S, while Red get the temptation payment T. And a prisoner’s impasse game generally operates under the following conditions: T> R >P >S.

- There exists a payment relationship R > P indicates that mutual collaboration is greater than a mutual defection.
- Whilst the payment relationship T> R and P> S indicates that defection is the dominant strategy for both actors.

1. 5. 3. Game Theory Strategies

The above discussion on the prisoner’s impasse result to one explanation to games, the balance in dominant strategies. There are different resolutions and strategies:

1.5.3.1. Dominant and Dominated Strategies

A dominant strategy often uses for firm (actor) and is not impacted by the strategies of other firms (actors). Suppose firms XYZ or ABC embrace a dominant strategy. As shown in Table-3, when ABC is not making any change in prices, then XYZ has also not changed its prices. This would result as the best strategy of XYZ. However, when ABC has increased its prices, then XYZ would earn profit of Rs. 300 crores by keeping its prices constant. When XYZ increases its prices, it would earn Rs. 500 crores (Nitisha, n.d).

Therefore, it is better for XYZ to make its price constant so that it can earn more. The dominant strategy- for XYZ is to keep the prices of its products constant. On the other hand, the dominant strategy- of ABC would also be to keep the price constant. This is because ABC would incur losses if it increases the prices of its products (Nitisha, n.d).

While analysing games, the player who has adopted the dominant strategy is identified and then the strategies of other players in the game are judged on the basis of the dominant strategy. However, the existence of the dominant strategy in every game is not possible (Nitisha, n.d).

1.5.3.2. Pure and Mixed Strategies

In a pure strategy, players adopt a strategy that provides the best payoffs. In other words, a pure strategy is the one that provides maximum profit or the best outcome to players. Therefore, it is regarded as the best strategy for every player of the game. In the previously cited example (Table-1), the increase in the prices of organizations' products is the best strategy for both of them (Nitisha, n.d).

This is because if both of them increase the prices of their products, they would earn maximum profits. However, if only one of the organizations increases the prices of its products, then it would incur losses. In such a case, an increase in prices is regarded as a pure strategy for organizations ABC and XYZ (Nitisha, n.d).

On the other hand, in a mixed strategy, players adopt different strategies to get the possible outcome. For example, in cricket a bowler cannot throw the same type of ball every time because it makes the batsman aware about the type of ball. In such a case, the batsman may make more runs (Nitisha, n.d).

However, if the bowler throws the ball differently every time, then it may make the batsman puzzled about the type of ball, he would be getting the next time (Nitisha, n.d).

1.5.3.3. Maximin Strategy

As we know, the main aim of every organization is to earn maximum profit. However, in the highly competitive market, such as oligopoly, organizations strive to reduce the risk factor. This is done by adopting the strategy that increases the probability of minimum outcome. Such a strategy is termed as maximin strategy (Nitisha, n.d).

In other words, maximin strategy is the one in which a player or organization maximizes the probability of minimum profit so that the degree of risk can be reduced. Let us understand the maximin strategy with the help of an example. Suppose two organizations, A and B, want to launch a new product in a duopoly market (Nitisha, n.d).

1.5.3. 4. Minimax Strategy

Minimax strategy is the one in which the main objective of a player is to minimize the loss and maximize the profit. It is a type of mixed strategy. Therefore, a player can adopt multiple strategies. It can be applied to complex as well as simple decision-making process. Let us understand the minimax strategy with the help of an example (Nitisha, n.d).

Suppose Mr. Ram wants to manufacture cream biscuits. For this, he selected three flavours, namely strawberry, chocolate, and pineapple, which he denoted with A, B, and C respectively He wants to select one of the flavours to produce cream biscuits and introduce them in the market on the basis of their demand (Nitisha, n.d).

He needs to predict the future events that can occur from the options he has selected. These future events are termed as the states of nature in decision analysis. The states of nature selected by Ram with respect to demand are high demand, medium demand, and low demand (Nitisha, n.d).

SECTION 2: DEVELOPING A RESEARCH DESIGN

2.1. Overview

A research design is an analytical framework of an inquiry, provided that the research theory or question, the kind of confirmation required to answer the theory or question in a convincing way – this consists of the core of the research design since from a clear research design flow the research questions as to provide findings in answering the first research design questions as clearly as possible. Getting relevant findings consist of specifying the kind of evidence required to answer the research question, to evaluate the concept, to assess a program or to define accurately some phenomenon. The sample's problem, the questionnaire's design and the data collection 's method are all part of findings required to gather the answers of the research questions. Hence, the research design deals with analytical issues and unanalytical issues. In addition, the testing and the elimination of alternative explanation of outcomes is an important part of research design. The research design consists of the below mentioned parts:

i) The design of the sampling; the kind of sampling method for example, non-random or random sampling;

ii) The statistical design for instance, the method and size of sample as to choose the sample to be used.

iii) The observational design such as the tool of gathering data;

iv) The operational design for example, the particular details used in the procedure to obtain the mentioned- above three designs (Bergman, 2008).

2.2. Methods of Data Collection

After choosing the methodological approach, you need to find the correct data collection methods. Research methods are categorizing as mono methods and mixed method. Mono methods consist of qualitative (QL) and quantitative (QN) methods. Because the quantitative methods are linked to postpositivist and positivist paradigm, quantitative methods are called QN methods research. And the QL methods are connected to critical theory and interpretivist paradigm. Below are few data collection methods:

2.2.1. Quantitative Methods

Quantitative methods are approaches used to assess concept through empirical observations and establish effect and cause relationship. These methods use structures interviews and questionnaire as instruments for data collection. They stress on measured variables. The analytical, descriptive,

and inferential statistical methods are utilized to evaluate the data. Experimental research design is utilized to design logical structure of the empirical research. The generalization of laws and their duplication are stressed (Bergman, 2008).

2.2.2. Qualitative Methods

Qualitative methods are approaches that begin with observation as tool to generate concepts while focusing on the significance of observations. These methods study the occurrence of events in naturalistic settings while permitting topics emerging during observation, conversation, and interpretation. The qualitative methods used the following as data collection tools: key informants, open-end questionnaire, group discussion, unstructured documents, interviews, and interview transcripts etc. While case study, content analysis, action research participatory method, factor analysis, cluster analysis, context analysis, correspondence analysis is utilized to evaluating qualitative data (Bergman, 2008).

2.2.3. Mixed Methods

Mixed methods are a combination of one quantitative and one qualitative part in relation to the scale measure, data analysis methods or data collection tools in a single research project and study called a mixed methods research. These take the following forms:

- The use of more than two methods of gathering data. For instance, we may use interview, observation, and questionnaire to gather the data.
- The use of one procedures measure of different type of events like different kind of levels of job satisfaction.
- The use of two or more data analysis methods. i.e., factor analysis and content analysis (Bergman, 2008).

In recent years, mixed methods research is mostly used in behavioural, social and related sciences. The logic for mixed method design research is mixed or use one of the best of quantitative (QN) and qualitative (QL) methods. However, many discussions on mixed technique research are founded on the methodological arguments because of the manner QL method is linked to critical theory and interpretative paradigm and QN method is connected to positivist paradigm. The philosophical discussion between QL and QN approaches. Mixed methods research designs are made through the exploitation of the strength of each technique and by blending their strengths within one common research design. The incompatibility argument between two techniques on philosophical term is not valid due to the following reasons:

i) The QN and QL methods are heterogeneous and large clusters of techniques that change within their own cluster to a level where it is harder to identify unique series of attributes or qualities that include the particularities of one cluster of techniques, different from the particularities of another cluster. Most particularities comprise either only a subgroup of a cluster or applicable to other clusters. Thus, it is needed to restructure the division of labour QN and QL techniques in order to comprehend the functions and potentials of techniques to apply and justify mixed method design (Bergman, 2008).

ii) The proposition of one single reality's existence under QN method is not consistent with research applications. The emerging frameworks are founded on co-construction between the researchers' understanding and selection of items in a questionnaire, their interpretation of the statistical output, and the choice of logical strategy, and the other hand, the answers to the survey questions with the provided political, social, economic and historical context. Methodologically, it is not conventional to say that one approach is more or less correct, scientific or valuable. Meanwhile, understanding and analysing data require consistency of the understanding of data in conjunction with a particular research question, logic and the focus, etc. in relation with the particularities of the research aims and delimiting the nature of reality. Hence, the decision of the researcher to deal with one reality, multiple realities, built reality, multiple built realities or co built reality is not related to the patterns in the detection of data through statistical analysis (Bergman, 2008).

iii) Large vs small samples: the sampling size of many QN survey is mostly small while the sample size for many QL survey is large (Bergman, 2008).

iv) In relation to the hypothesis analysis, many researchers are involved in QL research follow conjectures that are found in their research questions, the manner and type they gather their data, the way their evaluate the data and protect from the selective reporting of their findings. Under many types of well-established statistical analysis, the QN techniques such as factor analysis, cluster analysis, multidimensional scaling and correspondence analysis are utilized to explore the data structures (Bergman, 2008).

2.3. Guidelines for Empirical Research

The guidelines for empirical research are:

2.3.1. Building of hypotheses

(a) Defining the equations of a model in terms of economic theory.

i. Macroeconomic model:

A. determinants of growth

B. aggregate factor productivity

C. inequality, growth and environment

D. business cycle or models of fluctuations (interest rate rule)

E. determinants of employment, output, imports, exports, investment and consumption.

F. unemployment and inflation

G. Trade balance, inflation, exchange rate, interest rate.

H. credit, deposit expansion.

ii. **Microeconomics model:**

A. Demand for goods or services (perishable or durable goods; necessities; normal and luxury goods)

B. Cost of production of certain goods and services (machines, electronic goods, computer, TV, car, plane).

Market price for certain goods and services (livestock products such as meat, maize, millet, rice and wheat).

C. Products, revenue of certain industry or organization (British Airways, Barclays, BT, Train/bus, Low-cost airlines)

D. Salary of executives, wage rates, and rental rate of capital (Job performance and satisfaction)

Structure of markets (monopolistic competition or oligopoly, competition and monopoly)

F. Foreign direct investment (licensing, franchising and joint ventures)

G. Acquisition and merger; economies of scale (concentration ratios)

H. Development and research; business models; new management practices.

I. Welfare and efficiency.

iii. Prices, Wages and Trade

iv. Public Finance

A. Determinants of expenditures and revenue

B. Public debt and budget deficit

v. Environment

A. Determinants of pollution

B. Global warming

vi. Labour Markets and Employment

A. Demand and supply of labour

B. Labour force / employment

C. inflation and unemployment

D. population, labor force and migration

vii. Finance

A. Return on financial assets, optimal allocation and risk-free return

B. Prices of bonds and stocks.

C. Foreign commodity markets and exchange market.

viii. Economic Development

A. Growth and investment

B. Productivity and human capital

C. Structural transformation

D. Estimation transformation

E. Gini Coefficient

Theoretical derivation needs the utilization of the first and second order conditions, the experimental studies and the solving system of equation of a model.

2.3.2. Data Preparation

After constructing the hypotheses need data are collected through the primary survey or downloaded from standardized secondary data:

(a) Economic and social data (ESDS) www.esds.ac.uk/international

(b) http://libguides.hull.ac.uk/skillsguides

(c) Data stream: http://banker.thomsonib.com/ta/?ExpressCode=Hull

(d) Eurostat : http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/themes

(e) BHPS : http://www.esds.ac.uk/government/; http://www.esds.ac.uk/government/surveys/

(f) http://www.data-archive.ac.uk/ÖndingData/bhpsTitles.asp

(g) http://www.statistics.gov.uk

(h) http://www.economicsnetwork.ac.uk/links/data_free#uk

(i) http://www2.hull.ac.uk/acs/ict/software/software_sales.aspx

(j) http://www2.hull.ac.uk/student/studyadvice.aspx

(k) http://www2.hull.ac.uk/student/studyadvice/mathematicsresources.aspx

2.3. 3. Data Files

(a CSV format for PcGive or Excel; Eviews.

(b) Large scale data are available on SPSS or

(c) STATA format (*.dat).

If you are not precise with your assumptions, we might get lost in this phase. Please focus solely on the needed data and ask for assistance when confused.

2.3.4. Forecasting and Interpretation of Outcomes

(a) Determine conditions as per the assumption set in stage 1

(b) Infer conditions for the OLS assessors

(c) Look at the properties of those assessors - do they have anticipated signs; would they say they are relevant? What is their meaning?

(d) Anticipated qualities and difference of those assessors; confidence and dependability span for assessed parameters.

e) Gauge parameters utilizing the information gathered previously.

2.3. 5. Evaluate the change by R^2, $t^{2,}$ F^2 and X^2 tests appropriately

(a) Compose insightful structures for t^2, F^2 and X^2 tests

(b) Decide the levels of opportunity and basic qualities from the hypothetical tables.

(c) Contrast observational outcomes and those hypothetical qualities and determine their meanings.

(d) Take a choice with respect to significance of the model or coefficient dependent on these tests

(e) Consider improving the model dependent on tests.

2. 3. 6. Evaluation of Multicollinearity

(a) Note assessors at least with two informative factors

(b) Demonstrate how the assessor divides with good multicollinearity

(c) Determine factors that are related to one another dependent on examination of connection among logical factors

(d) Determine the inflation fluctuation's factor

(e) Eliminate correlated factors and re-gauge the model until getting the reasonable outcomes.

2.3. 7. Constraint and Dummy Factors

(a) Think about hypothetically fitting constraint in the model.

(b) Note logical types of F-test that can be utilized to test constraints.

(c) Determine the legitimacy of constraints.

(d) propose the dummy factors that catch primary changes in time arrangement or individual effects in the cross-segment examination.

2.3. 8. Heteroscedasticity

(a) Note the logical type of the heteroscedasticity issue.

(b) Demonstrate how the qualities of the OLS assessors are influenced by presence of heteroscedasticity

(c) Note statistics evaluation to identify heteroscedasticity

(d) Change the model to eliminate heteroscedasticity

(e) Build a cross segment information suitable for heteroscedasticity investigation

(f) Explained importance of the heteroscedasticity consistent standard errors.

2.3. 9. Autocorrelation

(a) Discover causes why there is autocorrelation and outcomes of it

(b) Note logical type of the Durbin-Watson statistics

(c) Demonstrate how the qualities of the OLS assessors are influenced by presence of autocorrelation

(d) Gauge the model with AR

(e) Change the model to eliminate autocorrelation utilizing iterative technique.

2.3. 10. Stationarity

(a) Clarify when a variable is non- stationary and stationary.

(b) Demonstrate the effect of non-stationarity in the fluctuation of the variable in an AR(1) model

(c) What is Dickey-Fuller test and Increased Dickey-Fuller test? Phillip-Perron evaluation.

(d) Determine if your arrangement is stationary dependent on DF and ADF insights.

2.3. 11. Cointegration and Causality

(a) Demonstrate the strategy for Granger causality test.

(b) What is structure of reconciliation and what is cointegration?

(c) Demonstrate logical structures to test cointegration

(d) Determine cointegration in a solitary condition model.

2.3.12. Outcome of the Analysis

It should be considered that the measurable strategies for information examination are utilized in basically all regions of human action. They are utilized at whatever point important to acquire and legitimize any decisions about a set (of articles or subjects) with some inward heterogeneity.

It is practical to recognize three sorts of logical and applied exercises in the field of factual

techniques for information investigation (by the level of particularity of the strategies including a particular retention in the issue):

a) The expansion and investigation of broadly useful strategies without thinking about particularity of uses;

b) The advancement and examination of measurable techniques and models of genuine marvels and cycles as per the necessities of a specific territory of movement;

c) The use of factual strategies and models in the measurable examination of explicit information.

We will quickly look at the three recently recognized kinds of logical and applied exercises. As it goes from a) to c) the extent of a specific factual technique application limits, however this expands its incentive for a specific circumstance examination.

In the event that the logical outcomes, the importance of which is assessed by the overall logical measures, relate to crafted by type a), at that point for crafted by type c) the fundamental assignment is the fruitful arrangement of explicit issues of a specific field of utilization (designing and innovation, financial matters, human science, medication, and so on)

Works of type b) possess a transitional position, on the grounds that from one viewpoint, a hypothetical investigation of the properties and factual techniques and models created for explicit applications can be very perplexing and mathematicised, and then again, the outcomes are not of general revenue and could be significant just for a group of field-arranged trained professionals. We can say that sort of work b) is pointed toward addressing regular errands of explicit application.

It should be noticed that strategies for engaging insights are principally delegated type a), techniques for logical measurements are alluded to as types b) - c) correspondingly.

Here is an overall calculation for factual strategies application in logical examination:

1) to detail a speculation based on the issue of logical examination;

2) to decide the quantity of boundaries needed for study (the idea of the tried measurement quality, information type, the sort of dispersion);

3) to characterize factual goals of the examination;

4) to apply factual techniques to the chose boundaries, considering the measurable targets of the investigation;

5) first reach a measurable determination and afterward mention the test objective facts.

The fundamental factual goals of the examination (stage 3) are:

a) recognizable proof of contrasts in the degree of the considered measurement highlight;

b) ID of the hugeness and course of the move in the degree of the contemplated highlight;

c) recognizable proof of contrasts in the dispersion of the factual element;

d) ID of the lucidness between changes of measurable highlights;

e) recognizable proof of a measurable trademark changes affected by controlled conditions (factors);

f) appropriation of the objects of universe overall public into a moderately homogeneous gathering;

g) examination of endurance information.

The choice on the decision of measurable strategy for research results preparing at the stage when the information have been gotten (stage 4) can be made as follows: 1) to decide the kind of factual issue (a) ÷ x)) comparing to a specific examination field; 2) to apply the calculation for picking the measurable technique.

At first, we organize measurable undertakings and factual techniques applied to them.

For that reason, we present elite of images:

F – Fisher difference proportion;

G – sign test;

H – Kruskal-Wallis test;

L – Page¥'s pattern test;

Q – Rosenbaum's q-test;

S – Jonckheere¥'s pattern test;

T – Wilcoxon T test;

t – Understudy's t-test;

U – Mann – Whitney U-test;

χ2 – chi-square test;

χ2r – Friedman test;

λ – Kolmogorov–Smirnov test;

φ* – Fisher's rakish change

rxy – Pearson relationship coefficient;

rs – Spearman¥'s rank relationship coefficient;

R – biserial relationship test;

τ – Kendall tau rank connection coefficient;

φ – Pearson coefficient.

In light of the investigation of the writing we set up the accompanying connection between the factual issues handled in the examination, conditions and measurable techniques applied to explore results.

Table 1. Connection Between Factual Assignments tended to in Exploration, Conditions and Measurable Techniques Applied to Them

Tasks	Conditions		Methods
a) identifying differences in the level of the studied statistical feature	Two sampling populations	feature is distributed normally	Tests: t, F
feature distribution is different from normal		Tests: McNemar, m, Q, U, χ2, φ*	
Three and more sampling populations		Tests: χ2, S, H	
b) identification of the significance and direction of the shift in the level of the studied feature	two measurements on one and the same sample population	feature is distributed normally	Tests: t, F
feature distribution is different from normal		Tests: T, G, φ*	
3 and more measurement (treatment methods etc.	feature is distributed normally		repeated measures analysis of variance
one and the same sample population	feature distribution is different from normal		Tests: χ2r, L
c) identification of differences in the distribution of the statistical feature	when comparing the empirical distribution with the theoretical one		Tests: χ2, λ
when comparing two empirical distributions		Tests: χ2, λ, φ*	
d) identification of the coherence between changes of statistical features	two features		correlation analysis (*r_x_y_*, *τ*, *r_s_*, *R_*, *φ*), paired regression analysis
three and more features		correlation analysis (*r_x_y_*, *r_s_*, multiple and partial correlation), multiple regression analysis, factor analysis and cluster analysis	
e) identification of a statistical	under the influence of one factor		(*S_*, *L_*, *H*),

characteristic changes under the influence of controlled conditions (factors)		
under the influence of two factors simultaneously	two-factor variance analysis	
under the influence of three and more factors (search for hidden causes)	factor analysis	
f) distribution of the studies objects into a relatively homogeneous group	Groups are predefined	discriminant analysis
Groups are not predefined	cluster analysis	
g) analysis of survival data (comparative analysis of efficiency)	Two sampling populations, one feature	Tests: Gehan's, Logrank test
Two sampling populations, two features	Cox's proportional hazards model, regression analysis	

To appropriately deal with the consequences of the investigation, the analyst should begin one's examination by setting a measurable undertaking, while completely characterizing the conditions wherein the exploration is done (number and limit of the example populaces, their reliance or autonomy, and the typical dissemination and so on), and afterward dependent on the above calculation scientist should choose the factual rule.

Factual techniques are utilized to quantify, depict, break down, decipher and model considering the restricted measure of information to tackle explicit logical undertakings (Shilova 2014). The interest for factual strategies applications is directed by the inconstancy of the conduct and result of for all intents and purposes all cycles, much under states of clear strength.

Allow us to consider a particular illustration of the factual strategies application for taking care of useful issues. The following is the quantity of cases took a stab at by the adjudicators of the intervention court of the Kirov area of the fifth legal get together, January 2015 (Rezeda M. Khusainova et al., 2016).

SECTION 3: TASKS AND PHASES OF RESEARCH

3.1. Overview

The research methods consist of research methods and instruments. Research methods comprise the realistic elements of gathering information and the manner the data or information are acquired, collected, organized and analyzed. Instruments are tools, which are utilized for collection and analysis of data. It comprises schedules or dairies, questionnaires, check lists, photos, maps and drawings and son on. Survey methods and census are generally utilized to obtain quantitative information. For qualitative research, information is obtained with the aid of participant observation, semi framed interviews, real life stories, pilot studies, experiments, scenarios etc.… Information analysis includes a fixed of statistical strategies utilized in organizing connections between the one-of-a-kind variables and in contrasting the accuracy of the results. Hence, methodology, methods, tools and techniques are three different factors of the research procedure. These elements work in synchronization. For example, no records can be analytically made without an acceptable understanding of methods of records collection. Correspondingly, data are not defined without understanding the perspective and philosophy behind the qualities underlying the variables to which the data are related. A sound understanding of statistical methods is also necessary to evaluate the data effectiveness. This section will deal with the tasks and phases of research.

3.2. Tasks and Phases in Research Process

The research process comprises the steps or guidelines from the collection of the data as to the writing of the thesis or presentation of a project. This process consists of identifying, selecting, testing and evaluating the data in relation to your research topic, finally expanding and noting your ideas. The research process is similar for composing a proposal, report or preparing a presentation (Karel Zeman, 2013).

3.2.1. Formulating the Research Topic or Problem

There are two mains of research issues, those which connected to states of nature and those which connected to relationships between variables. In an academic institution, the researcher can look for assistance from a supervisor to help them when having problem with he or her research. Often, the manual outlining general problem is provided in widespread phrases and it is the responsibility of the researcher to slim it down and paraphrase it. In governmental organizations and private business units, the issue can be given by the administrative agencies with whom researcher can the sources, the conditions and possible solutions to this problems.

3.2.2. Extensive Literature Survey

Once the issue is formulated, a brief summary of should be written down. At this stage, the researcher should undertake an extensive literature survey related with the hassle. For this purpose, the abstracting and indexing journals and posted or unpublished bibliographies are the primary location to go. Academic journals, convention court cases, government reports, books, and so on., ought to be tapped relying on the character of the issue. In this method, it has to be remembered that one source will lead to another. A true library will be an exquisite assist to the researcher at this stage (Dr. Kamiljon T. Akramov, 2016).

3.2.3. Development of Working Hypotheses

Working Assumptions is a tentative assertion made that allows you to conclude and evaluate its empirical or logical effects. As such the way wherein research assumptions or hypotheses are constructed, is especially crucial in view that they provide the focal point of research. They also impact the way wherein evaluations should be done within the data assessment and indirectly the data quality needed for the analysis. The construction of the current hypothesis has a crucial role in maximizing the research. Hypothesis should be very precise and constrained to the topic of the research because it will be analysed. The role of the hypothesis is to direct the researcher by removing the areas of research and to maintain the researcher on the right track. It also shows the sort of information required and the form of techniques of information analysis to be utilized.

3.2.4. Preparing the Research Design

The main issues with research have mostly been the formulation of clean reduced sentences and the research layout. The academic research design suitable for the selected studies involves the attention to the following: The correct approach of obtaining information; the capability and availability of the researcher and its workforce; the rationalization of the manner, for instance the manner the selected information was acquired and organized; The timeframe for the research; and the values of the research components such as the following: construct of interest (achievement); construct of disinterest (motivation, ability and anxiety); and random errors (grading mistakes and recording mistakes).

The empirical research evaluation design includes: the construct of interest or validity showing the degree at which the construct of interest is operational and successful internally (the impact of independent variable on the dependent variable) and externally (the setting of the populations and

those specific to the research hypothesis); the construct of disinterest; and random errors (Dr. Kamiljon T. Akramov, 2016).

3. 2.5. Research Proposal

The proposal is the starting point of every project, it should describe the topic of the paper and it shouldn't be longer than 500 words. The purpose of the research proposal is to persuade the supervisor, the educational institution or funding entity to approve the project as being relevant, genuine and important. The proposal also is aimed to show that you are knowledgeable in that specific field and current affairs of the researched topic and you are capable of using the correct methodology and tools to handle the research. Additionally, the proposal is aimed to confirm the feasibility of the project (Karel Zeman, 2013). The thesis proposal includes the following elements:

1. Title page
2. Abstract
3. Table of content
4. Introduction
5. Thesis statement
6. Approach/methods
7. Preliminary results and discussion
8. Work plan including time table
9. Implications of research
10. List of references

3. 2. 6. Collection of the Data

Data collection may be a methodical process of gathering and analysing specific information to proffer solutions to relevant questions and evaluate the results. It focuses on checking out all there's to a specific material. Data is collected to be further subjected to hypothesis testing which seeks to elucidate a phenomenon. Hypothesis testing eliminates assumptions while making a proposition from the idea of reason.

For collectors of data, there's a variety of outcomes from the collected information. However, as much data is collected to give a researcher the advantages to predict future probabilities and trends. The main types of data to be collected are primary and secondary data. Meanwhile, the previous is gathered by a researcher through first-hand sources, the latter is gathered by a

private aside from the user.

3.2.6. 1. Importance of Data Collection

There are many underlying reasons for collecting data, especially for a researcher. The following are a couple of reasons;

A) Integrity of The Research

A key reason for collecting data, be it through quantitative or qualitative methods is to make sure that the integrity of the research question is indeed maintained.

B) Reduce the likelihood of errors

The correct use of appropriate data collection of methods reduces the likelihood of errors according to the results.

C) Decision Making

To minimize the danger of errors in deciding, it's important that accurate data is collected in order that the researcher doesn't make uninformed decisions.

D) Save Cost and Time

Data collection saves the researcher time and funds that might rather be misspent without a deeper understanding of the subject or material.

E) To support a requirement for a replacement idea, change and/or innovation

To prove the necessity for a change within the norm or the introduction of latest information which will be widely accepted, it's important to gather data as evidence to support these claims.

3.2.6.2. Types of Data Collection

Before broaching the topic of the varied sorts of data collection. it's pertinent to notice that data collection in itself falls under two broad categories; Primary data collection and secondary data collection.

3.2.6.2.1. Primary Data Collection

Primary data collection by definition is that the collection of data gathered at the source. It's a process of collecting the first data gathered by a researcher for a selected research purpose. It might be further analysed into two segments; qualitative research and quantitative data collection methods.

A) Qualitative Research Method

The qualitative research methods of knowledge collection don't involve the gathering of knowledge that involves numbers or a requirement to be deduced through a mathematical calculation, rather it's supported the non-quantifiable elements just like the feeling or emotion of the researcher. An example of such a way is an open-ended questionnaire.

B) Quantitative Research Method

Quantitative methods are presented in numbers and need a mathematical calculation to deduce. An example would be the utilization of a questionnaire with close-ended inquiries to reach figures to be calculated Mathematically. Also, methods of correlation and regression, mean, mode and median.

3.2.6.2.2. Secondary Data Collection

Secondary data collection, on the opposite hand, is mentioned because the gathering of second-hand data collected by a private who isn't the first user. it's the method of collecting data that's already existing, be it already published books, journals and/or online portals. In terms of ease, it's much less costly and easier to gather. Your choice between Primary data collection and secondary data collection depend upon the character , scope and area of your research also as its aims and objectives.

3.2.6.3. Data Collection Methods and Tools

Below are often used seven data collection methods whether for academic or product research or project or opinion-based research:

3.2.6.3.1. Interview

Interview is a one-on-one communication between two people with the aim of gathering relevant information to satisfy a specific research or survey. Interview are advantageous because they

provide in-depth information, accurate statistics and freedom of pliability. However, they are also time consuming and expensive. Interviews are of different types such as: Structured, semi-structured and unstructured with each having a mild version from the other.

A) Structured Interviews

The interviews are simple and mostly consists of verbal questionnaire. And they are done in a short period of time but they lack depth.

B) Semi-established Interviews

In this method, there are numerous main questions that cover the scope of the domains or fields to explore. It permits extra leeway for the researcher to investigate the topic.

C) Unstructured Interviews

It is an in-intensity interview that permits the researcher to gather a wide variety of information with one objective. A benefit of this approach is the freedom it gives a researcher to mix structure with flexibility even if it is more time-consuming.

What are the fine Data Collection Tools for Interviews?

For gathering facts through interviews, here are some tools you can use to without difficulty gather data: Audio recorder, digital camera and camcorder.

3.2.6.3.2. Questionnaires

This is the process of collecting records using a tool consisting of a sequence of questions and prompts to get hold of a reaction from individuals. Questionnaires are designed to acquire information from a set. To clarify, a questionnaire isn't always a survey, alternatively it bureaucracy part of it. A survey is a procedure of facts collecting related to a selection of statistics collection methods, such as a questionnaire. There are 3 varieties of questions used: Fixed-opportunity, scale, and open-ended. With each of the questions tailored to the nature and scope of the research. Their advantages are they can fill by a large number of people and are price effective; it may be utilized to compare and contrast previous research to degree of change; easy to analyse and visualize; questionnaires provide actionable statistics; respondent identity is secured; questionnaire cowl most of topic; and is relatively less expensive. However, the questionnaires can have their constraints such as: The respondents might cheat or be untruthful; they might provide qualitative information; they might be left unanswered; not all the questions are easy to analyse and respondents might refuse to fill the questionnaires.

3.2.6.3.3. Reporting

Reporting is the manner of gathering and filing facts to be further subjected to analysis. The main component of facts reporting is reporting correct data because of faulty information reporting results in uninformed decision making. Reporting assist by providing information for the decision making and make every easily reachable. But they can be self-stated solutions and exaggerated, they might be bias and the respondent might leave some information and they could provide inaccurate information leading to uniformed choices.

What are the pleasant Data Collection Tools for Reporting?

Reporting tools allow you to extract and gift information in charts, tables, and other visualizations so customers can discover useful records. You may want to source statistics for reporting from newspapers, Non-Governmental Organizations (NGO) reviews, clinic facts, and internet site articles.

3.2.6.3.4. Existing Data

This is the re-introduction of recent investigative questions similarly to/apart from the ones at the start used while the data turned into initially collected. It includes adding size to a observe or research. An instance might be sourcing records from an archive. They are recommendable for their excessive accuracy and easily availability. However, they have problems with assessment and the difficulty in information.

What are the Best Data Collection Tools for Existing Data?

The idea of existing information method that facts is gathered from present sources to investigate studies questions apart from the ones for which the information has been at first amassed. Tools to acquire current data include: Research journals (newspapers and magazines) and surveys.

3.2.6.3.4. Observation

This is a data collection approach by which information on a phenomenon is collected through statement. The nature of the remark may be carried out either as a whole observer, an observer as a participant, a player as an observer or as a entire participant. This approach is a key base of formulating a speculation. It often performed because it is easily managed, more accurate, universally practice, and appropriate for positive situations. Nonetheless, observation isn't always reliable, might be bias or inaccurate and highly priced.

What are the nice Data Collection Tools for Observation?

Observation entails the active acquisition of records from a number one source. Observation also can involve the belief and recording of information through using clinical devices. The high-quality equipment for Observation is: Checklist and direct statement.

3.2.6.3.5. Focus Groups

The contrary of quantitative studies which includes numerical based totally data, this statistics collection method focuses more on qualitative research. It falls below the primary class for statistics based on the feelings and critiques of the respondents. This research includes asking open-ended inquiries to a group of people usually ranging from 6-10 people, to provide comments. They are often used because they provided designated information; they are cost- effective in comparison to one- on- one conversation; and It reflects pace and efficiency in the supply of consequences. Notwithstanding, they lack depth in covering the nitty-gritty pf a topic count; they are bias; they require interviewer education; the researcher has little or no manage over the outcome; a few vocal voices can drown out the rest; and difficulty in assembling an all-inclusive organization.

What are the first-class Data Collection Tools for Focus Groups?

A recognition group is a records series technique that is tightly facilitated and dependent round a fixed of questions. The reason of the meeting is to extract from the participants' detailed responses to these questions. The satisfactory tools for tackling Focus groups are: Two-Way - One group watches every other institution solution the questions posed through the moderator; Duelling-Moderator - There are two moderators who play the Satan’s propose.

3.2.6.3.6. Combination Research

This approach of data collection encompasses the use of innovative methods to enhance participation to each people and corporations. Also, beneath the primary category, it's miles a aggregate of Interviews and Focus Groups whilst collecting qualitative information. This approach is fundamental when addressing touchy subjects. It is advantageous because: it encourages contributors to give responses; it stimulates a deeper connection among individuals; the relative anonymity of respondents increases participation; and it improves the richness of the statistics accrued. Nonetheless, it charges the most out of all of the pinnacle 7 and It is very time-consuming.

What are the excellent Data Collection Tools for Combination Research?

The Combination Research technique includes two or more facts collection techniques, as an instance, interviews as well as questionnaires or a combination of semi-structured smartphone

interviews and recognition companies. The nice equipment for mixture studies is: Online survey and dual-moderator.

3.2.7. Execution of the Project

The researcher has to execute the research in a scientific manner and on time. If the survey is to be done by means of questionnaires, the information can be quite simply device- processed. The survey could be statistically control as to accumulate data according to the pre –defined standard of accuracy. If some of the participants do not cooperate, a few suitable methods must be designed to solve this problem.

3.2.8. The Data Analysis

After the data collection, the researcher study and challenge them. The statistical analysis needs some carefully related operations along with the pre-defined order of categories, the utility of those classes to raw records through coding, the tabulation, after which stretching statistical interferences to use computer systems. Computers are no the most effective time consuming, however, it is viable to use a large sample of variable that affect the problem simultaneously. The researcher can evaluate the collected data with the assistance of numerous statistical measures (Harun Ar Rashid, 2020).

3.2.9. The Hypothesis – Trying Out

The Hypothesis may be tested or assessed using one or greater of assessors relying upon the character and object of the research inquiry. Hypothesis- trying out will outcome in both accepting the hypothesis or rejecting it.

3.2.10. Generalizations and Interpretation

If a hypothesis is assessed and upheld several times, it may be feasible for the researcher to reach the generalization, the actual fee of studies lies in its potential to reach the sure generalizations. If the researcher had no speculation to begin with, he would possibly search for an explanation for his findings of the same concept. It is known as interpretation. The method of interpretation may also often cause off new questions which in turn may result in additional researches.

3.2.11. Preparation of the Report

The final step of the research is the preparation of the project, where the researcher put together the report that has been collected and analysed. Composing the report should be accomplished

with excellent care and the layout of the report should be as follows:

(i) Preliminary pages the report have to deliver name and date accompanied by acknowledgments and foreword. Then there need to be a table of contents accompanied via a listing of tables and list of graphs and charts, if any, given inside the report.

(ii) The principal textual content of the report needs to have the subsequent parts:

(a) Introduction: It must comprise a clear declaration of the goal of the studies and an explanation of the method adopted in accomplishing the studies. The scope of the observe in conjunction with numerous obstacles must as properly be stated on this component.

(b) Summary of findings: After the introduction, there should be an announcement of findings and pointers in non-technical language. If the findings are huge, they should be summarized.

(c) Main report: The important frame of the document has to be supplied in a logical collection and damaged-down into simply identifiable sections.

(d) Conclusion: Towards the end of the principal text, the researcher needs to again put down the results of his research genuinely and precisely. In fact, it is the final summing up. At the end of the document, appendices must be enlisted in recognize of all technical data. Bibliography, i.e., list of books, journals, reviews, and many others., consulted, should also receive in the end. Index need to also take delivery of specifically in a published research file.• Report ought to be written in a concise and objective fashion in easy language fending off indistinct expressions inclusive of ‘it seems,’ ‘there can be’, and so forth.• Charts and illustrations in the principal report should be used most effective in the event that they gift the facts more really and forcibly.• Calculated ‘self-belief limits’ need to be stated and the diverse constraints skilled in accomplishing studies operations can also as well be stated. It is apparent that the studies manner consists of numerous steps which assist to finish a studies monograph or thesis paper in a convenient way. So, we need to comply with the stairs worried in the studies procedure when we are going to do a study undertaking (Harun Ar Rashid, 2020).

3.2.12. Formal Structure of the Thesis

At AIU, students are expected to handle in assignments, which are pristine views, opinions, analysis, discussion and conclusions of the student about the elected subject. It is not convenient to facsimile text from the Internet that are not pertinent and/or of fortification for your assignment.

It is vigorously recommended that students support their assignments predicated on graphics, statistics, photos, etc. to be included in their work.

The following is a guide of the number of pages that must be submitted for each assignment, as recommended by AIU:

• Essay on a Multidisciplinary book “Seminar”: 3-10 pages
• Developed major course in phase II: 15-25 pages
• Thesis proposal: 3-10 pages
• Final Thesis: 50-100 pages

It is equally essential that the student felicitously cites their references utilized in-text and bibliography for development of their work. AIU encourages students to check their work via Turnitin through their student section afore submitting it for evaluation at AIU. This is an implement to visually perceive the authentication of your assignments.

Please note the universally accepted standard in college and university papers is 12pt Font either Arial or Times Incipient Roman.

Final Thesis Outline

1. Table of Contents (all designations of this outline / plan)
2. Acknowledgements (to people who availed you out)
3. Abstract (a concise summary of your thesis) [one page]
4. Chapter 1: General Exordium

   Contextual Data
   Background Information
5. Chapter 2: Definition of the Investigation (or Issue)

   Verbal expression of the Issue

   Description of the Issue
6. Chapter 3: Dynamics of the Anticipated Solution

   Goal(s) and Objective(s) of the Investigation

   Methodology
7. Chapter 4: Overall Outcomes

   Strategy and Techniques

   Results

8. Chapter 5: Analysis

   Interpretation of Results

   Questions about alternatives

9. Chapter 6: Conclusion

   General Discussions

   Recommendations

   References

   Appendices

CONCLUSION

There are four groups of applied research: Economic and statistical analysis, computations and calibration of equations' system, strategic analysis and experimental analysis. The research method is wide discipline and comprises the three important components: i) orientation or theoretical perspectives to guide research and logic of enquiry, ii) Techniques and tools of data collection, iii) methods of data evaluation. Hence, this paper was divided in three sections. The first section dealt with the theories on research, the second section provided the guidelines of developing a research design. Finally, the third section explained the task and phases of the research. To conclude the formal structure of a thesis should include: A title page, affidavit, acknowledgements, a signed thesis assignment, abstract, table of contents, text of the thesis, list of abbreviations (if applicable), list of tables and charts, list of references (literature) and other sources, and the annexes.

BIBLIOGRAPHY

Adam Hayes & Brian Barnier. Game Theory. July 1, 2020.
Retrieved from: https://www.investopedia.com/terms/g/gametheory.asp

Agustin Parise. Researching & Writing a Scholarly Paper for Law Library Guide: 13 steps to successful academic research – UCT libraries.2010.
Retrieved from: https://libguides.lib.uct.ac.za/c.php?g=677045&p=4771272

Anton Kühberger & Michael Schulte-Mecklenbeck. Theories of Economic Decision-Making: Value, Risk and Affect. June 2017.
Retrieved from: file:///Users/macuser/Downloads/Kuehberger2017.pdf

Bellal Ahmed Bhuiyan. An Overview of Game Theory and Some Applications. 2016.
Retrieved from: file:///Users/macuser/Downloads/36683-Article%20Text-129683-2-10-20180808.pdf

Cano-Berlanga, S. et al. Enjoying cooperative games: The R package GameTheory.n.d.
Retrieved from: https://cran.r-project.org/web/packages/GameTheory/vignettes/GameTheory.pdf

Chris Georges. Game Theory: Some Notation and Definitions. N.d.
Retrieved from: https://academics.hamilton.edu/economics/cgeorges/game-theory-files/Notation-Definitions.pdf

Dr. Kamiljon T. Akramov. Introduction to Applied Research in Economics. November 14, 2016
Retrieved from: https://www.resakss-asia.org/files/2016/12/Presentation1_Dushanbe2016.pdf

Eliana Jimenez Soto et al., An economic evaluation of data collection methods for vital statistics. June 2013.
Retrieved from: https://crvsgateway.info/file/16920/96

Erich Prisner. Game Theory Through Examples. 2014.
Retrieved from: https://www.maa.org/sites/default/files/pdf/ebooks/GTE_sample.pdf

Formplus Blog. 7 Data Collection Methods & Tools For Research. (2004, December).
Retrieved from: https://www.formpl.us/blog/data-collection-method

Giacomo Bonanno. Game Theory. 2015.
Retrieved from: https://arxiv.org/pdf/1512.06808.pdf

Harun Ar Rashid. Steps Invoved in Research Process. (2020, July 6)
Retrieved from: https://limbd.org/steps-involved-in-research-process/

How to Write a Thesis Proposal. N.d.
Retrieved from: https://www.ldeo.columbia.edu/~martins/sen_res/how_to_thesis_proposal.html

IeduNote. Research Process: 8 Steps in Research Process. N.d.
Retrieved from: https://www.iedunote.com/research-process

Karel Zeman. Methodology for Writing Bachelor's and Master's Theses at the Faculty of Economics of the University of Economics in Prague. 2013.
Retrieved from: https://econ.vse.cz/wp-content/uploads/page/87/Metodika-pro-psanA%CC%83_-BP-a-DP-23-10-2014-1.pdf

Keshab Bhattarai. Research Methods for Economics. February 2015.
Retrieved from: file:///Users/macuser/Downloads/ResearchMethods_2015.pdf

MSUNIV. Research Methodology and Statistical Techniques. n.d.
Retrieved from: https://www.msuniv.ac.in/images/academic/PhD/Economics.pdf

Narayan Prasad. MEC-109 Research Methods in Economics. October, 2015.
Retrieved from: http://ignou.ac.in/userfiles/MEC_109%20Research%20Methods%20in%20Economics%20PDF.pdf

Nitisha. 4 Strategies of the Game Theory. n.d.
Retrieved from:https://www.economicsdiscussion.net/game-theory/4-strategies-of-the-game-theory-explaine

d/3825

Nitisha.Game Theory: Assumptions and Structure of Game Theory. N.d. Retrieved from: https://www.economicsdiscussion.net/game-theory/game-theory-assumptions-and-structure-of-game-theory/3797

Osvaldo Ricardo Chamorro Altahona. Use of Quantitative Statistical Tools for Economic Analysis of Demand and Supply. 2018.
from: http://www.m-hikari.com/ces/ces2018/ces61-64-2018/p/hernandezCES61-64-2018-1.pdf

Oxford Languages. Research. n.d.
Retrieved from: https://languages.oup.com/google-dictionary-en/

Parise, Agustin. "The 13 Steps of Successful Academic Legal Research," *International Journal of Leg Information*: Vol. 38: Iss 1, Article 4. 2010.
Retrieved
from: http://heinonline.org/HOL/Page?handle=hein.journals/ijli38&g_sent=1&collection=journals&id=5

Rezeda M. Khusainova et al. Selection of Appropriate Statistical Methods for Research Results Processing. (2016).
Retrieved from: https://www.iejme.com/download/selection-of-appropriate-statistical-methods-for-research-results-processing.pdf

Richard Hindls & Stanislava Hronová. Economic Statistics or Statistical Methods in Economics? 2014.
Retrieved from: https://www.czso.cz/documents/10180/25609550/32019714q4067.pdf/1508a283-be63-40e2-bcf2-d3c4338563f5?version=1.0

Sam Goundar. Chapter 3 - Research Methodology and Research Method. March 2012.
Retrieved from: file:///Users/macuser/Downloads/3.ResearchMethodologyandResearchMethod.pdf

Shona McCombes. How to write a Research Methodology. October 13, 2020. Retrieved from: https://www.scribbr.com/dissertation/methodology/

Steve Tadelis. Solution Manual Game Theory: An Introduction. January 31, 2013 Retrieved from: https://assets.press.princeton.edu/chapters/sm10001.pdfhttps://assets.press.princeton.edu/chapters/sm10001.pdf

The University of Queensland. Applied and Theoretical Economics Research Strengths. n.d. Retrieved from: https://research.uq.edu.au/about/research-strengths/applied-and-theoretical-economics-research-strengths

Zulfiqar Ali, S Bala Bhaskar. Basic statistical tools in research and data analysis. 2016. Retrieved from: file:///Users/macuser/Downloads/Basic_statistical_tools_in_research_and_data_analy.pdf

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- ✓ I included a table of contents with a corresponding page number for each item.
- ✓ I included an abstract of the document (only for the thesis).
- ✓ I followed the outline proposed on pages 7 & 13 of the Supplement with all or most sub -titles.
- ✓ The length of my introduction and my conclusion is commensurate with the size of my document.
- ✓ I used references throughout the document as suggested on page 8 of the Supplement.
- ✓ My references are listed in alphabetical order at the end as suggested on page 8 of the Supplement.
- ✓ Every title mentioned in the text appears in my list of references or vice-versa.
- ✓ I have a detailed illustration of the point of view I am trying to defend.
- ✓ I used a set of appendices at the end with graphics or other types of supporting documents.
- ✓ I used graphs, charts, and/or statistics to further scientifically clarify my ideas.
- ✓ I have at least 50 pages of text (15 minimum if not a thesis) except if advised otherwise.
- ✓ I have at least 70 pages of text (20 minimum if not a thesis) for a terminal degree.
- ✓ Every section of my document followed a logical sequence (1, 2, 3…)
- ✓ I included a section consisting of *unbiased* recommendations and/or suggestions about the topic.
- ✓ I have avoided all fancy fonts, drawings, or decorations.
- ✓ I have used a simple, clear, and easy syntax that is accessible to all.
- ✓ I had a Spell-checker such as Microsoft Word (or other) review my text for spelling mistakes.
- ✓ I had a Spell-checker such as Microsoft Word (or other) review my text for grammatical mistakes.
- ✓ I have not infringed copyright laws by using material from other individuals or institutions.
- ✓ I hereby attest that the work I am submitting is totally my own to the best of my knowledge.

Christelle Katumba Shimbi 06 January 2020

Student Signature **Date**