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Factors Affecting the Competitiveness

Exploring Factors Influencing Female

Job Satisfaction in Trinidad and Tobago

Discovering Thoughts, Inventing Future

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Reconceptualizing Job Satisfaction in Trinidad and Tobago

By Andrew Christopher Young
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Abstract- The current research explores the latent drivers of job satisfaction in Trinidad and Tobago. The aim is to determine the construct validity of the Hackman Oldham (1975) Job Characteristics Model (JCM) to measure job satisfaction. Data was collected from employees using the cross-sectional research method and conveniently sampled from twelve (12) service institutions. The twelve (12) service institutions span three sectors: information and communications technology (ICT), tertiary education, and public utilities. These three (3) sectors were chosen because they represent the three most significant sectors in the Trinidad and Tobago economy and three (3) different levels of industry. Using three (3) different sectors in research enhances generalizability by providing a more diverse sample, reducing the risk of bias, and increasing the likelihood that findings can be applied to a broader range of contexts or populations. The service institutions include TSTT, FLOW, and DIGICEL (Information and Communications Technology). UTT, UWI, SBCS, ALJ-GSB, SAMS-TT, and CTS-CBS (Leaders in Tertiary Education). WASA, T&TEC, and PTSC (Public Utilities).

Keywords: *hackman oldham's (1975) job characteristics model (JCM), construct validation, factor analysis, job satisfaction, trinidad and tobago.*

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Reconceptualizing Job Satisfaction in Trinidad and Tobago

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Abstract- The current research explores the latent drivers of job satisfaction in Trinidad and Tobago. The aim is to determine the construct validity of the Hackman Oldham (1975) Job Characteristics Model (JCM) to measure job satisfaction. Data was collected from employees using the cross-sectional research method and conveniently sampled from twelve (12) service institutions. The twelve (12) service institutions span three sectors: information and communications technology (ICT), tertiary education, and public utilities. These three (3) sectors were chosen because they represent the three most significant sectors in the Trinidad and Tobago economy and three (3) different levels of industry. Using three (3) different sectors in research enhances generalizability by providing a more diverse sample, reducing the risk of bias, and increasing the likelihood that findings can be applied to a broader range of contexts or populations. The service institutions include TSTT, FLOW, and DIGICEL (Information and Communications Technology). UTT, UWI, SBCS, ALJ-GSB, SAMS-TT, and CTS-CBS (Leaders in Tertiary Education). WASA, T&TEC, and PTSC (Public Utilities). These service institutions were purposely chosen because they represent the top-performing companies in their respective industries. A structural questionnaire was designed for the reliability and validity of the data. This questionnaire extended Hackman-Oldham's (1975) Job Characteristics Model (JCM) into Entrepreneurship and Commercialization Studies. The original Hackman-Oldham (1975) job characteristics model used an ordinal Likert scale. Ordinal scales produce ordinal data. Factor analysis requires interval or ratio data that must be continuous. It is essential to ensure that the data meets the assumptions of the chosen factor analysis method, and that the nature of the variables aligns with its requirements. Principal Components Analysis (PCA) revealed the latent factors and varimax rotation was applied to produce five (5) orthogonal factors. The PCA method was chosen over Principal Axis Factoring (PAF) because the primary goal of the research was dimensionality reduction and capturing maximum variance. The research findings suggest an urgent need to reconceptualize job satisfaction, and a strong, positive correlation (94.7%) was found between the five (5) latent job characteristics and job satisfaction. The five latent factors were the significance of job tasks (36.3%), autonomy in decision-making and work methods (28.0%), empowerment (14.6%), delegation (10.7%), and autonomy in scheduling (5.1%).

Keywords: hackman oldham's (1975) job characteristics model (JCM), construct validation, factor analysis, job satisfaction, trinidad and tobago.

I. Introduction

The evolving nature of work and organizational structures underscores the imperative to reconceptualize job satisfaction (Elsamani, Mejia, & Kajikawa (2023); Jones, 2006). Traditional frameworks may not fully capture the nuances of contemporary work environments, necessitating a reevaluation of the factors influencing employee contentment (Cattaneo & Chapman, 2010). Research suggests that incorporating elements such as remote work dynamics and a focus on work-life balance could enhance the accuracy and relevance of job satisfaction measures (Drescher, 2017). As organizations adapt, it becomes crucial to reassess and refine our understanding of job satisfaction in light of these changing dynamics."

II. Problem Statement

"The increasing significance of employee satisfaction in organizational performance underscores the need for accurate measurement tools. However, the construct validity of existing job satisfaction instruments remains a critical concern. Onegoal of this research is to explore the correlation between the Job Characteristics Questionnaire developed by Hackman-Oldham in 1975 and cognitive job satisfaction. The main objective of this research is to ensure that the measurement instrument truly captures the complex nuances of employee contentment. This research is vital for organizations seeking reliable insights into employee satisfaction to foster a positive work environment and enhance overall productivity."

The factors influencing manifest and latent job satisfaction are innumerable (Liere-Nether, Vogelsang, Hoppe, & Steinhuser, 2017). The number and names of the factors that drive job satisfaction vary according to population (Johari, Mit, & Yahya, 2010). It is thus necessary to test the factorial validity of a given job satisfaction scale in each new population. The research problem seeks to answer three specific research questions detailed below.

Research Questions:

RQ1: DoesHackman-Oldham's (1975) five (5) manifest Job Characteristics of Skill Variety, Task Identity, Task

Significance, Autonomy, and Feedback impact Job Satisfaction in the three (3) service sectors of ICT, Tertiary Education, and Public Utilities in Trinidad and Tobago?

RQ2: What are the latent drivers of Job Satisfaction in the three (3) service sectors of ICT, Tertiary Education and Public Utilities in Trinidad and Tobago?

RQ3: Does Hackman–Oldham's (1975) Job Characteristic Instrument validly measure Job Satisfaction in the three (3) service sectors of ICT, Tertiary Education, and Public Utilities in Trinidad and Tobago?

These three critical research questions give rise to three complementary research objectives, which will now be outlined below.

Research Objectives (RO):

RO1: To determine if Hackman-Oldham's (1975) five (5) manifest Job Characteristics of Skill Variety, Task Identity, Task Significance, Autonomy, and Feedback impact job satisfaction in the three (3) service sectors of ICT, Tertiary Education, and Public Utilities in Trinidad and Tobago.

RO2: To determine the latent drivers of Job Satisfaction in the three (3) service sectors of ICT, Tertiary Education, and Public Utilities in Trinidad and Tobago.

RO3: To determine the construct validity of Hackman-Oldham's (1975) Job Characteristic Instrument in the three (3) service sectors of ICT, Tertiary Education, and Public Utilities in Trinidad and Tobago.

The paper emphasizes a multidimensional approach to job satisfaction, recognizing that many factors beyond mere financial compensation influence it. It considers individual-level factors, such as personal values, work-life balance, career development opportunities, organizational factors, leadership, workplace culture (Young, 2023), employee benefits (Kaur & Sharma, 2016), and organizational support systems. Additionally, it recognizes the influence of outside elements such associetal and technological changes on Job Satisfaction. Liere-Nether, Vogelsang, Hoppe, and Steinhuser (2017) showed how technology characteristics such as usability, data quality, and service quality impact job satisfaction.

By reconceptualizing job satisfaction in this manner, organizations can better understand how job characteristics interact with each other and their impact on job satisfaction. This enhanced perspective allows for the development of more effective strategies to foster job satisfaction and promote a positive work environment. It also recognizes that job satisfaction is a dynamic construct that evolves and requires ongoing attention and adaptation.

The proposed methodology provides a basis for future research and practical applications in human resources management (Van Saane, Sluiter, & Verbeek, 2003). Integrating traditional and emerging dimensions of job satisfaction enables organizations to align their practices and policies with employees' evolving needs and expectations. This comprehensive approach to job satisfaction can enhance organizational performance in changing work dynamics (Ali, Said, Yunus, Latif, & Munap, 2013).

The next section is the Literature Review, which delves into the definitions of job satisfaction, measuring job satisfaction and job characteristics.

III. Literature Review

a) Definitions of Job Satisfaction

Job satisfaction can be defined in a few different ways. Numerous academics have presented their understandings; however, Locke's definition of job satisfaction, which characterizes it as a positive emotional condition resulting from one's work encounters, is widely acknowledged. On the other hand, Zahoor's definition is broader, including a combination of psychological, physiological, and environmental factors that make an individual feel genuinely satisfied with their job. These competing definitions underscore the multidimensional nature of job satisfaction, encompassing both emotional and broader contextual factors (Locke, 1976; Zahoor, 2015). One popular definition of job satisfaction refers to the degree of contentment that workers experience in their jobs, encompassing their overall liking for the job itself and specific elements or components, such as the nature of the work or the quality of supervision (Rahman, Samah, Rasdi, & Sabri, 2019).

The literature review will now turn to measuring Job Satisfaction.

b) Measuring Job Satisfaction

Spector (1997) defines job satisfaction as having cognitive, affective, and behavioral components. Researchers have also observed that job satisfaction measures differ in their ability to measure either feelings about the job (affective job satisfaction) or cognitions about the job (cognitive job satisfaction) (Locke, 1976). It is evaluated at two levels: global (if the individual is content with the job overall) and facet (whether the individual is satisfied with particular parts of the job).

c) Job Satisfaction Instruments

Many job satisfaction measures rely on self-reports through multi-item scales, varying in conceptualization (affective or cognitive) and psychometric validation rigor. The BIAJS is a measure that focuses on emotions and job satisfaction, and consists of four items. It has been thoroughly tested for reliability, validity, and cross-population consistency by Thompson and Phua in 2012. The Job Descriptive Index (JDI) takes a cognitive approach, assessing satisfaction in five facets: pay, promotions, coworkers, supervision, and the work itself (Smith, Kendall, & Hulin, 1969). The Job

Satisfaction Survey (JSS) covers nine facets. At the same time, the Short Index of Job Satisfaction (SIJS), a condensed version, exhibits strong validity in structure and relation to other variables across diverse samples (Van Saane, Sluiter, & Verbeek, 2003).

The discussion will now focus on the Job Characteristics Model (JCM).

d) Job Characteristics Model

The Job Characteristics Model (JCM) consists of five core job characteristics that affect three Critical Psychological States (CPS) of an employee that, in turn, affect the cognitive, affective (e.g., satisfaction and motivation), and behavioral (e.g., performance quality, absenteeism) responses of employees to their work (Hackman & Oldham, 1975). The JCM is founded on the principle that the inherent characteristics of the TASKS play a central role in motivating employees. The five core job characteristics postulated by the original model are Skill Variety, Task Identity, Task Significance, Autonomy, and Feedback.

It is important to note that these five core job characteristics interact with each other to influence the three critical psychological states. For example, a job with high skill variety and task identity is more meaningful than a job with low levels of both.

1. *Skill Variety:* The capaciousness to which a job requires various skills and abilities. Behson et al. (2000) suggest high skill variety leads to experienced meaningfulness. Employees see their work as challenging and valuable.
2. *Task Identity:* The capacity to which a job involves completing a whole and identifiable work. High-task identity is linked to experienced meaningfulness and experienced responsibility for outcomes, as employees feel ownership and pride in their work (Jones, 2018).
3. *Task Significance:* The scope to which a job substantially impacts other people or critical organizational goals. High task significance contributes to experienced meaningfulness and knowledge of results, as employees understand the importance of their work and can see its direct effects (Jones, 2006).
4. *Autonomy:* The amplitude to which a job gives employees freedom, independence, and decision-making authority. Behson et al. (2000) highlight that high autonomy fosters experienced responsibility for outcomes and knowledge of results, as employees are accountable for their decisions and work outcomes.
5. *Feedback:* The degree to which employees receive direct and transparent information about how well they perform their jobs. High levels of feedback contribute to knowledge of results, allowing employees to learn and improve their performance (Jones, 2009).

Moreover, the relationship between Hackman Oldham's (19750) core job characteristics and workplace outcomes is moderated by the variable of Growth Need Strength (employee's desire for growth). Initially, Hackman and Oldham presented a three-stage model. They also empirically tested it, but later on, most researchers excluded the mediating variable- Critical Psychological States (CPS), and moderating variable - Growth Need Strength (GNS), and tested the two-stage model, determining the direct relation of Job Characteristics with Outcomes.

e) Moderation and Mediation Effects

Moderation and mediation are concepts in statistical analysis that describe different types of relationships within a model (Hayes, 2018).

1. Moderation

According to Hayes' definition given in 2018, the relationship between two variables (independent and dependent) can be influenced by a third variable known as a moderator. If the impact of job satisfaction on performance varies based on the level of leadership support, leadership support acts as a moderator in this relationship. Baron and Kenny (1986) introduced the concept of moderation, highlighting situations where the strength or direction of a relationship is contingent upon the level of a third variable.

2. Mediation

According to Hayes (2018), mediation occurs when a mediator, or third variable, clarifies the relationship between an independent variable and a dependent variable. For example, if an increase in employee knowledge explains the influence of training on job performance, then employee knowledge acts as a mediator in this relationship. Baron and Kenny introduced the idea of mediation in 1986. One way to understand the connection between two variables is by introducing a third variable that can help clarify their relationship.

Key findings of Behson, S. J., Eddy, E. R., and Lorenzet, S. J. (2000): Meta-Analysis:

Behson et al. (2000) conducted a meta-analysis of thirteen (13) studies to check the fit of the three-stage and two-stage models. They found that the customarily tested two-stage model in the literature may better fit the data than the three-stage original model. The research findings of Behson et al.'s (2000) meta-analysis of job characteristics are significant and offer valuable insights into the Job Characteristics Model (JCM) developed by Hackman and Oldham (1975). Here are some key findings:

1. *Support for the JCM*

The analysis showed that the main ideas of the JCM are valid. It found that the five essential job characteristics (skill variety and autonomy) are positively related to three crucial psychological states (such as

feeling a sense of responsibility and knowing the results of one's work).The research findings have verified that certain psychological conditions significantly affect an individual's work-related outcomes, such as job satisfaction, personal growth, motivation, and reduced absenteeism.

2. *Importance of the Critical Psychological States*

Interestingly, the findings revealed that including the critical psychological states as mediating variables provided a better fit to the data than the simplified two-stage model without them. This highlights the importance of considering these states as a vital link between job characteristics and work outcomes. The study also showed that different job characteristics contribute differently to the three critical psychological states. For example, skill variety and task identity were found to have the strongest effect on experienced meaningfulness, while autonomy had the strongest influence on experienced responsibility and knowledge of results.

3. *Limitations and Future Directions*

The study acknowledged limitations such as potential publication bias and the need for further research to examine various moderators and boundary conditions of the JCM. It also emphasized the importance of investigating individual differences in how people respond to different job characteristics.

4. *Overall Significance*

Behson et al.'s (2000) meta-analysis is a crucial piece of research in the work design and motivation fields. It strengthens the theoretical foundation of the JCM and provides empirical evidence for its practical application in enhancing employee job satisfaction and performance.

f) Previous Research on Job Characteristics Linked to Job Satisfaction

Turner and Lawrence introduced operational measures for job characteristics in 1965. They developed six task attributes positively related to workers' satisfaction and attendance. The results revealed a close relationship among variables, and on the basis of the results, they developed the required task attribute index. This summary index determined the relationship between task attributes, job satisfaction, and attendance. The results need to be fully supported.

In 1971, Hackman and Lawler conducted a study to explore how job characteristics and individual differences in need strength relate to employee outcomes, including motivation, satisfaction, absenteeism, and productivity. Their findings showed a clear and positive correlation between job charcteristics dimensions and dependent measures, including motivation, satisfaction, turnover, and attendance.

Table 1: Summary of the Evolution of the JCM from 1986 - 2023

Theorist	Year	Contribution
James & Tetrick	1986	Established temporal relationship for job characteristics and satisfaction
Fried & Ferris	1987	Stronger relationship between Job characteristics and psychological outcomes than behavioral outcomes (meta-analysis)
Behson, Eddy, Lorenzet	2000	Two-stage model of Job Characteristics without psychological states result in a better fit than the three-stage model (SEM)
Humphrey, Nahrgang, & Morgeson	2007	Proposed expanded JCM
Schjoedt	2009	Expanded JCM into the field of Entrepreneurship
Batchelor, Abston, Lawlor, & Burch	2014	Extended JCM to Entrepreneurial Motivation
Liere-Nether et al (2017)	2017	Extended JCM to measure Job Satisfaction for Enterprise Resource Planning (ERP) based workplaces

Source: Adapted from Batchelor et al. (2014)

Batchelor, Abston, Lawlor, and Burch (2014) enhanced our understanding of how JCM motivates entrepreneurs. The discipline of Entrepreneurship is a new field. Schjoedt (2009) was one of the few researchers using JCM to understand entrepreneurs' job characteristics. His analysis focused on job satisfaction as the outcome measure. Table 1 above shows the contribution of researchers to the evolution of the Job Characteristic Model (JCM).

Liere-Nether, Vogelsang, Hoppe, and Steinhuser (2017) hypothesized that job satisfaction partly results from the employee's emotional state. This idea was initially introduced by Hackman and Oldham (1976). The "perceived usefulness" variable from that research is considered part of the affective domain. Liere-Nether et al. (2017) modeled task and technology characteristics as being mediated by critical psychological (CPS) and perceived usefulness, ultimately impacting job satisfaction.

This research extends JCM into the discipline of entrepreneurship and commercialization studies. It seeks to reveal the latent drivers of job satisfaction in three specific service sectors: ICT, tertiary education, and public utilities in Trinidad and Tobago.

g) Critique of Hackman and Oldham (1975) Job Characteristics Model

Despite its widespread use and influence, the JCM has attracted several critiques. Here are some of the main areas of criticism:

1. *Limited Scope*

- The model primarily focuses on individual characteristics and ignores the broader organizational context (e.g., leadership, culture, social support) that can significantly influence job satisfaction (Parker & Wall, 1998).
- It overlooks factors like personality traits and individual differences that can moderate the relationship between job characteristics and psychological states (Warr, 1999).

2. *Oversimplification of Job Characteristics*

- The five core job characteristics are viewed as independent and additive, which may not be realistic in actual job settings. Job characteristics often interact and influence each other in complex ways (Grant & Parker, 2009).
- The model fails to account for the dynamic nature of jobs, where tasks and responsibilities can change over time (Humphrey, 2002).

3. *Measurement Issues*

- The measurement of job characteristics and psychological states can be subjective and prone to biases, leading to inaccurate results (Judge & Klinger, 2007).
- Operationalizing the core job characteristics can be challenging, especially in complex and dynamic jobs (Van der Velden et al., 2001).

4. *Limited Empirical Support*

- While the JCM has been widely tested, the findings are not always consistent and tend to show weaker relationships than initially proposed (Judge & Klinger, 2007).
- The model may not be universally applicable across different job types, industries, sectors and cultures (Morgeson & Humphrey, 2006).

5. *Emphasis on Job Design*

- The JCM primarily focuses on job design as a means to improve job satisfaction. This can neglect other factors like work-life balance, compensation, and social relationships that can also be important for employee well-being (Arthur, 1994).
- The model takes a top-down perspective, assuming that managers can effectively redesign jobs to enhance employee motivation and satisfaction. This can overlook the importance of employee involvement and empowerment in job design (Hackman, 2009).

These critiques highlight the limitations of the JCM and emphasize the need for further research to refine and expand the model. Future research should consider the broader context of work, individual differences, and dynamic nature of jobs. Additionally, it is crucial to develop more robust and objective measures for job characteristics and psychological states. Finally, future models should move beyond focusing solely on job design and consider other factors that contribute to job satisfaction.

h) Significance of this Research

Even after four decades (1975) of continuous research on job characteristics and satisfaction, scholarship in Trinidad and Tobago (T&T) has been a minor feature on these subjects. Furthermore, there has yet to be significant amounts of research in general within the Caribbean region on these critical psychological constructs. According to Mijts, Arens, and Buys (2019), Small Island Developing States have seen insufficient research capacity; thus, a limited amount of research endeavors emanated from SIDS. This current research seeks to determine the relationship between job characteristics and job satisfaction in three service sectors of T&T. The services sector is a crucial driver of national performance (Hall & Jones, 1999). Measuring the quality of service outcomes in ICT, public utilities, and education sector services is a crucial measure of national development for developing countries like Ghana, Kenya, Jamaica, and Trinidad and Tobago (Barro, 2001). These three (3) sectors were purposefully chosen because they represent the three (3) largest service sectors in Trinidad and Tobago (S & P Global Ratings, 2001). Additionally, each sector reflects a different industry level: public utilities are secondary, tertiary education is considered tertiary, and information and communications technology (ICT) is categorized as quaternary according to S & P Global Ratings (2001).

This concludes the literature review section, and the methodology will now be outlined.

IV. Methodology

This segment of the paper outlines the conceptual framework, the measurement variables, sample size determination, research questions, objectives, hypotheses, and methods.

a) Research Methodology

An exploratory quantitative methodology was selected because quantitative and mixed methods are relevant for quantifying causal relationships and analyzing numbers (Yin, 1989). The literature review is exploratory and explanatory, consistent with a unified approach to this research study. In line with Allwood's

(2012) assertion, the study adopted a positivist research paradigm philosophy since empirical evidence is used to derive conclusions about the research questions. The study used one multidimensional survey instrument to collect the required data. This study utilized Exploratory Factor Analysis (EFA) via PCA to reveal the latent factors because the measurement model was formative (Bollen & Lennox, 1991). Hackman Oldham's (1975) Job Characteristics questionnaire was adapted with a ratio scale to collect information on the factors influencing job satisfaction and the extent of their influence.

b) Conceptual Framework

This research seeks to determine the relationship between Job Characteristics and Job Satisfaction. The dependent variable in this research is Job Satisfaction, and the independent variable is Job Characteristics. The theoretical framework for this research is shown in figure 1 below. The job satisfaction questionnaire used in this study consisted of 24 items and was adapted from Hackman and Oldham's (1975) Job Diagnostic Survey (JDS). However, a ratio scale was employed instead of the original ordinal Likert scale, thereby modifying the instrument. This decision was made because many statisticians consider Likert scales to be ordinal, resulting in data scores with a lower level of measurement (LOM) (Newman, 1994). On the other hand, a ratio scale produces ratio data, which can be utilized in Factor Analysis. Factor Analysis assumes that the data is ratio and continuous, making ratio data the highest level of measurement (Tukey, 1977). Therefore, a ratio scale was adopted for this study.

Figure 1 Conceptual Framework illustrates the relationship between Hackman Oldham's (1975) five core job characteristics and job satisfaction.

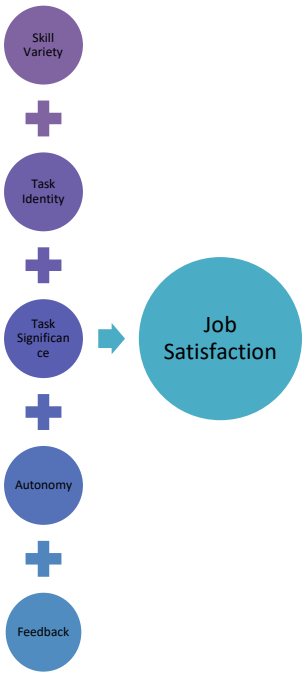

Figure 1: Conceptual Framework - The Relationship between Hackman Oldham's (1975) Five Corejob Characteristics Factors and Job Satisfaction

c) Dependent Variable- Job Satisfaction

This study focused on a specific facet of cognitive job satisfaction as the chosen dependent variable. This selection was based on the widespread utilization of this domain in research related to the Job Characteristics Model. Cognitive job satisfaction is a comprehensive gauge, capturing the overall level of contentment and happiness that employees derive from their jobs (Hackman & Oldham, 1975).

d) Independent Measures – Five Core Job Characteristics of Hackman Oldham's (1975) Model

This research has used five independent variables collectively known as the Job Characteristics. These are described in detailed below:

i. *Skill Variety*

Skill variety refers to the extent to which a job requires various activities in carrying out the work, which involves using several different skills and talents of the person (Hackman & Oldham, 1975).

ii. *Task Identity*

This refers to the extent to which the job requires completing a whole and identifiable piece of work that is doing a job from beginning to end with a visible outcome (Hackman & Oldham, 1975).

iii. *Task Significance*

Task significance refers to the capacity to which the job substantially impacts the lives or work of other

people, whether in the immediate organization or the external environment (Hackman & Oldham, 1975).

iv. *Autonomy*

Task autonomy can be defined as an individual's level of independence and discretion in scheduling their work and deciding how to complete the tasks assigned to them. This definition was put forward by Hackman and Oldham in 1975

v. *Feedback*

Feedback refers to an individual's ability to obtain precise information about the effectiveness of his or her performance by carrying out the job-required work activities. (Hackman & Oldham, 1975).

The Research Questions (RQ), Objectives (RO) and Hypothesis (RH) will now be detailed.

Research Questions (RQ), Objectives (RO) and Hypothesis (RH)

Research Questions

RQ1: Does Hackman-Oldham's (1975) five (5) manifest Job Characteristics of Skill Variety, Task Identity, Task Significance, Autonomy, and Feedback impact Job Satisfaction in the three (3) service sectors of ICT, Tertiary Education, and Public Utilities in Trinidad and Tobago?

RQ2: What are the latent drivers of Job Satisfaction in the three (3) service sectors of ICT, Tertiary Education and Public Utilities in Trinidad and Tobago?

RQ3: Does Hackman–Oldham's (1975) Job Characteristic Instrument validly measure Job Satisfaction in the three (3) service sectors of ICT, Tertiary Education, and Public Utilities in Trinidad and Tobago?

These three critical research questions give rise to three complementary research objectives, which will now be outlined below.

Research Objectives (RO)

RO1: To determine if Hackman-Oldham's (1975) five (5) manifest Job Characteristics of Skill Variety, Task Identity, Task Significance, Autonomy, and Feedback impact job satisfaction in the three (3) service sectors of ICT, Tertiary Education, and Public Utilities in Trinidad and Tobago.

RO2: To determine the latent drivers of Job Satisfaction in the three (3) service sectors of ICT, Tertiary Education, and Public Utilities in Trinidad and Tobago.

RO3: To determine the construct validity of Hackman-Oldham's (1975) Job Characteristic Instrument in the three (3) service sectors of ICT, Tertiary Education, and Public Utilities in Trinidad and Tobago.

Research Hypotheses (RH)

To answer Research Objective 1(RO: 1), two research hypotheses (RH) were formulated based on previous research findings.

Past investigations into the correlation between Job Characteristics and Personal Outcomes have consistently revealed a significant and positive association (Schjoedt, 2009; Hunter et al., 2006; Hackman & Oldham, 1976; Loher et al., 1985; Behson et al., 2000; Scott et al., 2005; Lin et al., 2007; Brass et al., 1981; Becherer et al., 1982; Champoux, J. E., 1991; Ross et al., 2005). These conclusive findings establish a robust groundwork for the subsequent hypotheses:

H 1: There is NO relationship between the five core Job Characteristics of Hackman Oldham's (1975) model (Skill Variety, Task Identity, Task Significance, Autonomy, and Feedback) and Job Satisfaction.

H 2: There is a relationship between the five core Job Characteristics of Hackman Oldham's (1975) model (Skill Variety, Task Identity, Task Significance, Autonomy, and Feedback) and Job Satisfaction.

Table 2: Showing the relationship between Research Questions, Research Objectives and Statistical Analysis Methods

Research Question	Research Objective	Statistical Analysis Method
RQ1: Does Hackman-Oldham's (1975) five (5) manifest Job Characteristics of Skill Variety, Task Identity, Task Significance, Autonomy, and Feedback impact Job Satisfaction in the three (3) service sectors of ICT, Tertiary Education, and Public Utilities in Trinidad and Tobago?	**RO1** – To determine if Hackman-Oldham's (1975) five (5) manifest Job Characteristics of Skill Variety, Task Identity, Task Significance, Autonomy, and Feedback impact job satisfaction in the three (3) service sectors of ICT, Tertiary Education, and Public Utilities in Trinidad and Tobago.	• Regression (ANOVA) • Correlational Analysis
RQ2: What are the latent drivers of Job Satisfaction in the three (3) service sectors of ICT, Tertiary Education and Public Utilities in Trinidad and Tobago?	**RO2** – To determine the latent drivers of Job Satisfaction in the three (3) service sectors of ICT, Tertiary Education, and Public Utilities in Trinidad and Tobago.	Exploratory Factor Analysis (EFA) using PCA and Varimax rotation.
RQ3: Does Hackman–Oldham's (1975) Job Characteristic Instrument validly measure Job Satisfaction in the three (3) service sectors of ICT, Tertiary Education, and Public Utilities in Trinidad and Tobago?	**RO3** – To determine the construct validity of Hackman-Oldham's (1975) Job Characteristic Instrument in the three (3) service sectors of ICT, Tertiary Education, and Public Utilities in Trinidad and Tobago.	• Criterion Validity • Discriminant Validity

e) Sample

Data was collected from two hundred and ninety (290) employees using the cross-sectional research method and conveniently sampled from twelve (12) Service Institutions, spanning three (3) Sectors of Information and Communications Technology, Tertiary Education, and Public Utilities. These three (3) sectors were chosen because they represent the three (3) largest sectors in the Trinidad and Tobago economy, according to the World Bank (2020). They also individually represent three (3) different levels of industry: Public Utilities is considered secondary; Tertiary Education is categorized as Tertiary, and ICT quaternary (S & P Global Ratings 2001). These Institutions include TSTT, FLOW, and DIGICEL (Information and Communications Technology). UTT, UWI, SBCS, ALJ-GSB, SAMS-TT, CTS-CBS (Leaders in Tertiary Education). WASA, T&TEC, and PTSC (Public Utilities). A survey was designed to ensure the accuracy and credibility of the information collected. Three hundred forty-seven (347) responses were obtained, but two hundred and ninety (290) questionnaires were selected for detailed analysis. The response rate was 100 percent, of which the useable questionnaire response rate was around 83.6 percent.

f) Procedure

The primary data was collected through the questionnaire adopted from the job diagnostic survey questionnaire (Hackman & Oldham, 1975) for all the independent measures but for only one dependent measure. The job diagnostic survey questionnaire is the most reliable measurement scale for measuring the job characteristics' model variables. However, it has a flaw! It does not have a 0 and is measured on a Likert scale (Newman, 1994). This research introduced a scale that will help clarify this area by correcting that caveat. A new scale, Young's ratio scale, measures job satisfaction on a multi-item ratio scale. All the items given in the questionnaire are developed on a six-point Young's ratio scale ranging from a score of 0 for minimum satisfaction to a score of 5 for maximum satisfaction. The data was collected in Trinidad and Tobago between October and December 2019.

g) Methods

Other methods have been used to develop satisfaction scores, but the factor analysis method was chosen because it validates the job satisfaction scale in the Trinidad and Tobago population.

How were the Job Satisfaction Scores Derived?

- A measure of job satisfaction (internal organizational performance) was computed for each organization through the development of scale scores (Del Castillo & Benitez, 2012)
- Scale scores were computed using the following method:
  - Exploratory Factor Analysis (EFA) was carried out on all interval scales using principal component extraction and varimax rotation to produce orthogonal factors(DiStefano, Zhu, & Minidrila, 2009)
  - The names given to the Factors are based on subjective factors and correspond to the scale statements that have a strong positive correlation (>0.50) with that particular Factor (Watkins, 2018).

The Factor solutions are used to get scale scores for each respondent using weighted averages of the Factor regression scores. The % variance explained by each Factor is used as its weight in the average (Chyung, Winiecki, Hunt, & Sevier, 2017). Other methods have been used to develop satisfaction scores, but factor analysis was chosen because it validates the job satisfaction scale in the specific population.

V. Analysis Techniques

IBM SPSS V23 was used to process the data. The data was critically analyzed in three stages.

Stage – I: Examined the demographic characteristics of the respondents, mean, standard deviation, and reliability (Cronbach's Alphas) of all the variables used in the study.

Stage - II: Pearson correlations and regressions were run to examine the relationships among the variables as hypothesized. Before running the regressions, the assumptions of multiple regressions were also tested for the dependent variable (Job Satisfaction) regressed on independent variables. The analysis of the data was carried out on IBM SPSS version 23.0 for Windows. *Stage – III:* Exploratory Factor Analysis (EFA) was conducted to summarize the main characteristics of the data through visualization and summary statistics and to gain insight into its structure, patterns, and potential issues (Tukey, 1977). Exploratory factor analysis is a powerful tool and widely utilized approach within data science.

a) Exploratory Factor Analysis

When the objective of the research is to develop a measurement tool that represents an underlying latent dimension(s) or formative construct (s) depicted in the observed variables, exploratory factor analysis (EFA) can be an appropriate method (Fabrigar & Wegener 2012).

The developed scale will contribute to the overall study and the understanding of job satisfaction in Trinidad and Tobago because it measures the psychometric quality aspects of the Hackman Oldham (1975) job characteristics instrument (Van Saane, Sluiter, & Verbeek, 2003). Watkins's (2018) methodology influenced the researcher's decision to use EFA

because it is the only statistically robust process to reveal the underlying structure and relationship between job satisfaction and job characteristics. In such a context, researchers want to identify groups of variables with high correlations with only one factor and then interpret and label each factor (Warner, 2008). EFA was conducted to develop a scale that measures job satisfaction perceptions. The researcher was curious whether the finalized scale was unidimensional or multidimensional. If multidimensional, how many factors (dimensions) did the new instrument include, and which items were grouped as factors? The five observed job characteristics factors (24 items) were treated as one block for factor analysis because it is hypothesized that all the job characteristics items measure a singular construct of job satisfaction. The main objective of this research is to determine the validity of the job satisfaction instrument. What construct validity is will now be outlined below.

b) Construct Validity

Construct Validity assesses whether an instrument measures the intended theoretical construct (Johari, Mit, & Yahya, 2010). It involves examining the relationship between the instrument and other variables to ensure it accurately captures the desired concept.

Methods to Determine Construct Validity:

- *Convergent Validity:* Correlate the scale with other established measures of job satisfaction or related constructs like work engagement or organizational commitment. High correlations support the scale's validity (Cronbach & Meehl, 1955).
- *Discriminant Validity:* Correlate the scale with measures of unrelated constructs like personality traits. Low correlations suggest the scale measures job satisfaction specifically, not personal characteristics (Campbell & Fiske, 1959).
- *Factor Analysis:* Analyze the scale items to see if they group into distinct sub-factors representing different aspects of job satisfaction, as expected (Hair et al., 2019).

c) Data Screening

i. *Unengaged Responses*

We examined response patterns and employed attention-checking questions strategically placed within surveys to check unengaged responses during data screening. Attention checks assess whether participants are paying attention and responding thoughtfully. Response time analysis and identifying inconsistent or patterned responses also helped flag unengaged participants.

ii. *Normality*

To assess normality, the researchers used methods including visual inspection of histograms, Q-Q plots, and the Shapiro-Wilk statistical test. We checked for data normality and removed items with high levels of skewness and kurtosis ($> |1.0|$).

iii. *Missing Data*

Then, we checked for missing values. Missing data analysis was performed and found to be Missing Completely At Random (MCAR) (Tabachnick & Fidell, 2014). Missing Completely at Random (MCAR) occurs when the probability of missingness is unrelated to observed and unobserved data (Golden, Henley, White, & Kashner, 2019). It was handled by complete-case analysis. Another method used to evaluate MCAR was Little's MCAR statistical test (Enders, 2010).

By default, SPSS excludes cases with missing values from most analyses. This means that if any variable has a missing value for a particular case, that entire case is excluded from the analysis. This exclusion is based on listwise deletion, and it is a common practice when dealing with missing data in SPSS. While listwise deletion is straightforward, it may reduce sample size and potentially bias the results if the missing data is not completely random. Careful consideration was given to the missing data mechanism and alternative methods like imputation would have been explored if exclusion may introduce bias (Rubin, 1987). These practices contribute to ensuring data quality and the validity of statistical analyses.

d) Factorability Check

i. *Job Satisfaction Instrument*

The factorability of the 290 responses in the job satisfaction data set was first checked. The Correlation Matrix was not positive definite. – No K.M.O., A.I.C., or Bartlett's test since there is no Correlation Matrix. These results indicated that the data set was inappropriate for factor analysis (Tabachnick & Fidell, 2014).

In light of this discovery, the researchers proceeded cautiously with the factor analysis, taking into consideration the non-positive definite correlation matrix. We conducted a thorough investigation into the root cause of this issue and identified the sample size as a contributing factor. In small sample sizes, the estimated correlation matrix may not exhibit positive definiteness due to random variability, as Cochran (1963) suggested. To address this issue, the researchers employed statistical methods, including bootstrapping, to evaluate the variability of the estimates and establish confidence levels. This approach was instrumental in quantifying the uncertainty associated with the survey results, as highlighted by Belsley, Kuh, and Welsch (1980).

ii. *Research Population and Sampling Design*

In research studies, a sample refers to a subset of the population being studied that is representative of the population as a whole. This definition comes from the works of Bryman and Bell (2007) and Sekaran (2000). Terre Blanche et al. (2006) state that the sample consists of the elements or people included in the

research selected from the population. The sample in this study consists of 12 purposively selected service organizations from a total population of 20 companies, accounting for approximately 20,000 employees.

In positivistic paradigms, large samples are commonly used for statistical analysis, as Collis and Hussey (2013) noted. A larger sample increases the likelihood of the results applying to the entire population. This research used convenience sampling to identify the sample (Terre Blanche, Durrheim, & Painter, 2006). Convenience sampling involves selecting readily available sample elements that can provide the required information, and it is a form of non-probability sampling (Hair, Money, Samouel, & Page, 2007; Leedy & Ormrod, 2018). Non-probability sampling is when elements are not randomly selected using statistical interpretation (Terre Blanche et al., 2006).

The general population in this study consists of service organizations in the ICT, tertiary education, and public utilities sectors. The sample includes 12 service sector organizations, with the first sample comprising employees from these organizations in Trinidad and Tobago- the job characteristics questionnaire aimed to extract perceptions of job satisfaction dimensions.

To conduct the research, 12 service organizations were purposefully selected from the three sectors: TSTT, FLOW, and DIGICEL from Information and Communications Technology; UTT, UWI, SBCS, ALJ-GSB, SAMS-TT, and CTS-CBS from Tertiary Education; and WASA, T&TEC, and PTSC from Public Utilities. These 12 companies represent 60% of the target population of companies (20) in the three sectors. Surveys were conducted among employees of the same 12 companies to obtain data. The number of employees was determined through interviews with company representatives.

e) POWER and Sample Size

The sample size in research significantly impacts statistical power, which refers to the probability of detecting an actual difference (Singh & Masuku, 2014). This concept is akin to the sensitivity of a diagnostic test (Browner & Newman, 1987). Applied research often utilizes frequency measures like rates, ratios, and proportions (Fleiss, 2003). Sampling techniques are commonly employed to estimate population characteristics more efficiently and accurately (Rao, 1985). Insufficient sample sizes can lead to a failure to detect significant effects or associations and imprecise estimates (Gupta & Kapoor, 1970).

Conversely, an appropriate sample size can contribute to more accurate study results, although it is essential to consider the associated costs (Kish, 1965). Collaboration with a statistical expert is necessary to determine the appropriate sample size (Sathian, 2010). Methods for estimating sample size and conducting power analysis depend on the study's design and primary measure, with different approaches available for statistical inference based on confidence intervals and significance tests (Kish, 1965; Gupta & Kapoor, 1970).

Several criteria must be considered in determining the appropriate sample size, including precision, confidence level, and variability (Miaoulis & Michener, 1976; Cochran, 1963). Different methods can be employed, such as referencing published tables that provide sample sizes based on specific criteria (Israel, 1992). However, it is essential to note that these sample sizes pertain to the responses obtained rather than the number of surveys or interviews planned. Convenience sampling, although quick and cost-effective, may raise concerns about generalizability (Sathian, 2010). For populations larger than 100,000, a sample size of 400 is suggested for a precision level of 0.05, a confidence level of 95%, and a probability of 0.05 to ensure representativeness (Israel, 1992).

In applied statistics research, selecting appropriate sampling methods and determining the sample size are crucial for drawing valid conclusions (Rao, 1985). Inadequate sample sizes can compromise the ability to detect significant effects or associations and result in imprecise estimates (Gupta & Kapoor, 1970). Conversely, an appropriate sample size enhances the reliability and validity of study findings (Kish, 1965). However, it is crucial to establish an equilibrium between sample size and associated costs. Different methods are available for calculating sample size and conducting power analysis based on the study design and outcome measures (Kish, 1965; Gupta & Kapoor, 1970).

f) Sample Size Determination

The population in this study was the residential customers and employees from 12 service organizations in Trinidad and Tobago. Sampling was carried out with consideration of the limitations that do not allow the entire population to be studied see Table 3. To determine the sample size required the following formula was utilized in accordance with (Israel, 1992):

$$\textbf{Sample size } n = N * [Z2 * p * (1 - p)/e2] / [N - 1 + (Z2 * p * (1 - p)/e2]$$

N = Size of population

Z = Standard Distribution's Threshold Value at a 95% Confidence Level = 1.96

Mo (e)= Margin of error set at 5 % or 0.05.

P = Proportion of the population (conversion rate) of 5% or 0.05

n = sample size

Table 3: Sample Size Determination

Population	Target Group	Sample	Suggested Sample Size (Israel,1992)
Employees from 12 Service Sector Organizations in Trinidad and Tobago	20,000	290 – Job Satisfaction	100

g) Sampling Methods used in this Study

Non-probability sampling techniques are commonly employed in exploratory quantitative research, where the focus is on developing initial insights about a specific, less-studied population rather than testing broad hypotheses (Israel, 1992). A method of purposeful sampling was employed in the present research to poll service organizations, with convenience samples taken within each selected organization (Cochran, 1963). Purposive sampling, also known as judgment sampling, allows the researcher to selectively choose a sample based on their expertise to gain in-depth knowledge about a particular phenomenon, often without concluding statistics or in cases where the number of people is restricted and focused (Davis & Cosenza, 1993). The researcher selected multiple organizations with different demographic characteristics to gather diverse data on their satisfaction levels. The convenience sampling method was chosen for its ease, speed, and cost-effectiveness, although the generalizability of findings may be limited (Israel, 1992).

h) Administration of the Surveys

A pilot study was conducted in August 2019 to validate the survey instrument. The job satisfaction questionnaire was tested to check time constraints and familiarize the researcher with the different demands of the instruments. Both online (internet) and face-to-face methods were used to administer the questionnaires. Google Forms was used to distribute the job satisfaction questionnaires. The survey was supported by face-to-face administration on site of all the service companies mentioned. Data collection in this study followed an exploratory sequential approach, whereas data analysis was conducted in three phases. Equal importance was given to each type of data, leading to the classification of this study as a descriptive design, according to Creswell (2009). The study took place in Trinidad and Tobago and the information was gathered during the period from September 2019 to December 2019.

We now move on to the Results section of the paper.

VI. Results

The results were analyzed in three stages to answer the three main research questions and fulfill the research objectives.

Stage I: Analysis of demographic characteristics and scale reliability.

Stage II: Correlational and regression analysis.

Stage III: Exploratory Factor Analysis and scale validity analysis.

Research Questions (RQ), Objectives (RO)

Research Questions:

RQ1: Does Hackman-Oldham's (1975) five (5) manifest Job Characteristics of Skill Variety, Task Identity, Task Significance, Autonomy, and Feedback impact Job Satisfaction in the three (3) service sectors of ICT, Tertiary Education, and Public Utilities in Trinidad and Tobago?

RQ2: What are the latent drivers of Job Satisfaction in the three (3) service sectors of ICT, Tertiary Education and Public Utilities in Trinidad and Tobago?

RQ3: Does Hackman–Oldham's (1975) Job Characteristic Instrument validly measure Job Satisfaction in the three (3) service sectors of ICT, Tertiary Education, and Public Utilities in Trinidad and Tobago?

These three critical research questions give rise to three complementary research objectives, which will now be outlined below.

Research Objectives (RO):

RO1: To determine if Hackman-Oldham's (1975) five (5) manifest Job Characteristics of Skill Variety, Task Identity, Task Significance, Autonomy, and Feedback impact job satisfaction in the three (3) service sectors of ICT, Tertiary Education, and Public Utilities in Trinidad and Tobago.

RO2: To determine the latent drivers of Job Satisfaction in the three (3) service sectors of ICT, Tertiary Education, and Public Utilities in Trinidad and Tobago.

RO3: To determine the construct validity of Hackman-Oldham's (1975) Job Characteristic Instrument in the three (3) service sectors of ICT, Tertiary Education, and Public Utilities in Trinidad and Tobago.

The Stage – I: Analysis of demographic information results showed that the SEX of the respondents comprised of 58.5 percent female and 41.5 percent male. *(Table 4)*

Table 4: SEX

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	144	41.5	41.5	41.5
	Female	203	58.5	58.5	100.0
	Total	347	100.0	100.0	

The maximum number of respondents fell in the AGE group of "41-50" years and minimum number of respondents fell in the age group of "61 and above" years. In terms of percent 22.5 percent of the employees were of the age of 18 to 30 years, 20.7 percent employees were of the AGE of 31 to 40 years, percent of the employees were of the age of 40 to 49 years, and 33.8 percent of the employees were of the age 41 to 50, 17.3 percent were of the age 51 to 60 and 1.2 percent were above 61 years. *(Table 5)*

Table 5: AGE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18 - 30 yrs	78	22.5	22.5	22.5
	31 - 40 yrs	72	20.7	20.7	43.2
	41 - 50 yrs	133	38.3	38.3	81.6
	51 - 60 yrs	60	17.3	17.3	98.8
	61 & Above yrs	4	1.2	1.2	100.0
	Total	347	100.0	100.0	

Regarding EDUCATION, 35.2 percent were Secondary O-levels, 39.2 percent were Secondary A – A-levels, 17.6 percent were Undergraduate Degree holders, 7.8 percent were Master' Degree holders, and .3 percent were holders of Doctoral Degrees. Thus, most of the employees held Secondary A-level certificates. Insert (Table 6)

Table 6: Highest Level of Education Completed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Secondary O - Levels	122	35.2	35.2	35.2
	Secondary A - Levels	136	39.2	39.2	74.4
	Undergraduate Degree	61	17.6	17.6	91.9
	Masters Degree	27	7.8	7.8	99.7
	Doctorate Degree	1	.3	.3	100.0
	Total	347	100.0	100.0	

In terms of EXPERIENCE (Number of years in the organization), employees having at least one year of experience were selected in the sample. In terms of experience, 32 percent of the employees had the experience of 1 to 5 years, 18.2 percent of the employees had the experience of 6 to less than ten years, 33.7 percent of the employees had experience of 11-15 years, 11.0 percent had the experience of 16 – 20 years, 4.9 percent had the experience of 21 – 30 years, and .3 percent has 31 and over years of experience. (Table 7)

Table 7: Experience (Number of years in Current Organization)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 to 5 yrs	111	32.0	32.0	32.0
	6 to 10 yrs	63	18.2	18.2	50.1
	11 to 15 yrs	117	33.7	33.7	83.9
	16 to 20 yrs	38	11.0	11.0	94.8
	21 to 30 yrs	17	4.9	4.9	99.7
	31 & Above yrs	1	.3	.3	100.0
	Total	347	100.0	100.0	

Table 8: Comparison of Job Satisfaction Scores Per Company and Per Sector

Sector	Company	Job Satisfaction Mean
Public Utilities	WASA	2.44
Education	ALJGSB	2.22
Education	UWI	2.16
ICT	FLOW	2.36
Public Utilities	PTSC	2.33
Education	SAM	2.04
Public Utilities	T & TEC	2.26
Education	UTT	2.47
ICT	TSTT	2.40
Education	SBCS	2.37
ICT	DIGICEL	2.40
Education	CTSCBS	2.08

The job satisfaction mean scores for the 12 service sector companies range from a low of 2.04 for SAM to a high of 2.47 for UTT, two education sector companies. This indicates low to below-average performance (2.50) on a satisfaction scale of 0 to 5, where 5 is maximum and 0 is minimum as shown in table 8 above.

ICT Sectorjob satisfaction mean scores range from a low 2.36 for FLOW to 2.40 for both DIGICEL and TSTT. Tertiary Education Sectorjob satisfaction mean scores range from a low of 2.04 for SAM to a high of 2.47 for UTT. Public Utilities job satisfaction mean scoresrange from 2.26 for T & TEC to 2.44 for WASA.

Job Satisfaction mean scores were relatively higher in the Tertiary Education Sector (2.47 for UTT) when compared to the ICT Sector (2.40 for both DIGICEL and TSTT) and the Public Utilities Sector (2.44 for WASA). One possible explanation for this pattern could be job satisfaction may be higher due to intrinsic rewards associated with academia, such as the fulfilment of contributing to education and research.

Conversely, the ICT and Public Utilities Sectors may face higher stress levels, faster-paced environments, and stringent regulations potentially impacting employee satisfaction. All three sectors scored below average (2.5) job satisfaction mean scores, suggesting poor sector-wide performance.

Interestingly job satisfaction mean scores in Trinidad and Tobago were significantly lower than those observed in a study conducted by Al Shehhi et al. (2021) in the UAE. The mean job satisfaction scores in that study were (3.30) in the public sector and (3.48) in the private sector. These results support the notion that the conceptualization of job satisfaction varies with sector and population (Gilbert & Von Glinow, 2015).

Mean, standard deviation, Cronbach alpha, were used to measure the internal consistency reliability of the items see Table9 below. Cronbach alpha was used because of the type of data, which was ratio and perceptual.

a) *Reliability of Job Satisfaction Questionnaire*

Table 9: Mean, Standard Deviation, and Cronbach A of Scales of Job Satisfaction Questionnaire.

Job characteristics	Mean	SD	# of Items	Cronbach's α
Skill Variety	2.24	.49	4	.85
Task Identity	2.94	.36	4	.70
Task Significance	3.00	.65	4	.88
Autonomy	1.64	.78	9	.91
Feedback	2.82	.49	3	.73
Personal outcomes:				
Job Satisfaction	2.53	.50	24	.95

Table 5 shows the descriptive value of the variables under investigation. Items for each factor were measured using a 6-point satisfaction ratio scale that ranged from 0 to 5, with 0 indicating not satisfied and five indicating satisfied. The results indicate that all five job characteristics are lowly scored.

The minimum mean score is 1.64 for autonomy, suggesting a relatively low level of independence or

freedom in decision-making, while the maximum mean score is 3.00 for task significance, indicating a high perceived importance of tasks.

The standard deviation score ranges from .36 for task identity to .78 for autonomy, which indicates moderate variability in these dimensions. This suggests that perceptions regarding task identity and autonomy are somewhat dispersed among respondents, showing a degree of diversity in their views on these aspects.

The Cronbach alpha values range from .70 for task identity to .91 for autonomy, suggesting acceptable to high internal consistency reliability. The overall internal consistency for the 24-item job satisfaction scale is .95, well above the acceptable level of .70, as recommended by Cronbach, L. J. (1951). This indicates that all 24 items strongly correlate with each other, implying a reliable measurement of the Job Satisfaction construct.

Stage – II: Represents the results of correlations and regressions.

There is no multicollinearity problem in our measures. The results are given in *Table10 – Collinearity Diagnostics.*

Table 10: Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions					
				(Constant)	Autonomy Mean	Skill Variety Mean	Task Significance Mean	Task Identity Mean	Feedback From Job Mean
1	1	5.856	1.000	.00	.00	.00	.00	.00	.00
	2	.116	7.099	.02	.28	.00	.00	.00	.00
	3	.015	20.060	.37	.34	.03	.19	.00	.01
	4	.006	30.944	.14	.04	.20	.68	.00	.19
	5	.005	32.641	.04	.07	.67	.00	.00	.35
	6	.002	59.436	.43	.27	.10	.12	.99	.44

a. Dependent Variable: Job Satisfaction Mean

The correlations showed the relationship among the variables. The problem of multicollinearity was also checked through the correlation matrix. The correlation results between the independent variables are well below .9, as shown in *Table 10 above.*

The correlation results ranged from a minimum of .56 between Task Identity and Autonomy to a maximum of .95 between Job Satisfaction and Skill Variety. The varying correlation results suggest that different factors influence the relationships between job satisfaction and specific job characteristics. A correlation of 0.56 between task identity and autonomy indicates a moderate positive relationship, while a correlation of 0.95 between job satisfaction and Skill Variety suggests a strong positive association. These differences could be attributed to the unique impact each job characteristic has on an individual's overall job satisfaction, with some factors playing a more significant role than others. Overall, Job Characteristics were found to be positively related to Job Satisfaction. The results are given in *Table 11.*

Table 11: Correlations

	Job Satisfaction Mean	Mean of Autonomy	Skill Variety Mean	Task Significance Mean	Task Identity Mean	Feedback From Job Mean
Job Satisfaction Mean	1.000					
Mean of Autonomy	.881**	1.000				
Skill Variety Mean	.947**	.819**	1.000			
Task Significance Mean	.933**	.737**	.855**	1.000		
Task Identity Mean	.854**	.557**	.800**	.827**	1.000	
Feedback from Job Mean	.917**	.718**	.834**	.825**	.866**	1.000

*****Correlations are significant at 0.01 level** (2 tailed)*

Job Satisfaction

Job Satisfaction and Autonomy (r=.881)

Job Satisfaction and Skill Variety (r = .947)

Job Satisfaction and Task Significance (r = .933)

Job Satisfaction and Task Identity (r = .854)

Job Satisfaction and Feedback (r = .917)

Autonomy

Autonomy and Skill Variety (r = .819)

Autonomy and Task Significance (r = .737)

Autonomy and Task Identity (r = .557)

Autonomy and Feedback (r = .718)

Skill Variety

Skill Variety and Task Significance (r = .855)

Skill Variety and Task Identity (r = .800)

Skill Variety and Feedback (r = .834)

Task Significance

Task Significance and Task Identity (r = .827)

Task Significance and Feedback (r = .825)

Task Identity

Task Identity and Feedback (r = .866)

After testing the regression assumption, the regression results explained the amount of variance explained by the independent variable in the dependent variable. The problem of multicollinearity was also checked while running regressions. SPSS determines multicollinearity while running regressions under the table heading coefficients *Table 12*. If tolerance level is insignificant or near to zero than there is problem of multicollinearity but in our results, tolerance level is not near to zero. It means there is no problem of multicollinearity.

Regression results for Job Characteristics and Job Satisfaction is described below.

Table 12: Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
(Constant)	4.224E-15	.000		.000	1.000	.000	.000					
Mean Of Autonomy	.200	.000	.312	8.418 E7	.000	.200	.200	.881	1.000	.154	.244	4.094
Task Variety Mean	.200	.000	.193	4.058 E7	.000	.200	.200	.947	1.000	.074	.148	6.767
Task Significance Mean	.200	.000	.260	6.233 E7	.000	.200	.200	.933	1.000	.114	.192	5.203
Task Identity Mean	.200	.000	.141	3.067 E7	.000	.200	.200	.854	1.000	.056	.158	6.346
Feedback From Job Mean	.200	.000	.195	4.350 E7	.000	.200	.200	.917	1.000	.080	.167	5.976

a. Dependent Variable: Job Satisfaction Mear

b) Effect of Job Characteristics on Job Satisfaction

The Standardized Beta coefficient of the Job Characteristics revealed that Skill Variety explained 19 percent ($\beta=0.19$; $\rho<0.001$), Task Identity explained 14 percent ($\beta=0.14$; $\rho<0.001$), Task Significance explained 26 percent ($\beta=0.26$; $\rho<0.001$), Autonomy explained 31 percent ($\beta=0.31$; $\rho<0.001$), and Feedback explained 20 percent ($\beta=0.20$; $\rho<0.001$) variance in Job satisfaction as shown in table 12 above. The most impactful job characteristic is Autonomy, explaining 31% of the variance in Job Satisfaction. This might stem from individuals feeling empowered and in control of their work, leading to a sense of fulfilment and accomplishment. Increase autonomy allows employees to make decisions aligned with their preferences, potentially contributing to higher job satisfaction.

These Results Validate H2 which State:

The five core manifest job characteristics of Hackman-Oldham's (1975) model (Skill Variety, Task Identity, Task Significance, Autonomy and Feedback) impact Job Satisfaction. (Accepted) This is shown in *Table12 above.*

Table 13: Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	1.000[a]	1.000	1.000	.00000	1.000	5.685E16	5	284	.000	.832

a. Predictors: (Constant), Feedback From Job Mean, Mean Of Autonomy, Task Significance Mean, Task Identity Mean, Skill Variety Mean

b. Dependent Variable: Job Satisfaction Mean

Table 14: ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	72.930	5	14.586	.	.000[a]
	Residual	.000	284	.000		
	Total	72.930	289			

a. Predictors: (Constant), Feedback From Job Mean, Mean Of Autonomy, Task Significance Mean, Task Identity Mean, Skill Variety Mean

b. Dependent Variable: Job Satisfaction Mean

The Model Summary and ANOVA using *the ENTER Method are in Tables 13 and 14,* respectively.

The regression "R" results showed a strong correlation between Job Characteristics and Job Satisfaction. The Regression R - Square results showed that Job Characteristics explain 100 percent variance in Job Satisfaction. *(Table 14)*

Thus the Regression Equation:

Job Satisfaction (R) = 4.224 + .200 (Autonomy) + .200 (Skill Variety) + .200 (Task Significance) + .200 (Task Identity) +.200 (Feedback From Job)

Stage III: EFA Process

Job Satisfaction EFA

The researcher used a new scale to analyze the Job Satisfaction Instrument developed by Hackman and Oldham in 1975. Factor analysis (FA) using PCA and Varimax rotation was then used to extract the latent contructs. PCA was used because the measurement model was formative. Statistical theory suggests PCA should be used with formative constructs and ML methodology with reflective measurement models (Bollen & Lennox, 1991). The Varimax rotation method is chosen in factor analysis to simplify factor interpretation by maximizing the squared loadings' variance. It aims to achieve a more precise, straightforward structure in the rotated factor solution. Varimax rotation helps make the factors more orthogonal (uncorrelated), which can enhance the interpretability of the factors by reducing the complexity of the relationships between items and factors.

The results supported a five-factor solution for Job Satisfaction across the Trinidad and Tobago population. As shown in Tables 16 - 20, multiple items loaded onto each of the five factors had a common theme. The five factors were labeled latent drivers of Job Satisfaction in Trinidad and Tobago, they were: 1. Significance of Job Tasks 2. Autonomy in Decision Making and Work Methods 3. Empowerment 4. Delegation 5. Autonomy in Scheduling.

The Correlation Matrix was not positive definite. – No KMO, AIC, or Bartlett's test since there is no Correlation Matrix. Despite this finding, the researchers still proceeded cautiously with the factor analysis. We investigated the underlying cause of the non-positive definite correlation matrix to ensure the validity of the factor analysis results. The cause was found to be the size of the sample. In small sample sizes, the estimated correlation matrix might not be positive definite due to random variability (Cochran, 1963). This was addressed by applying statistical methods, such as bootstrapping, to assess the variability of the estimates and construct confidence levels. These methods helped quantify the uncertainty in the survey results (Belsley, Kuh, & Welsch, 1980).

The following data was collected after having adapted Hackman Oldham's (1975) job diagnostic survey (JDS) and pilot-tested it with a new ratio scale. The information was evaluated using both descriptive and inferential statistics.

Only 290 responded to the job satisfaction questionnaire component. The population of this study is estimated to be 20 companies. A sample of 12 companies was purposefully chosen; more than 50% of the population was sampled. These 12 companies were chosen because they represent the leaders in each sector. It is estimated that there are 20,000 employees in

total from these 12 companies. This was determined after consultation with company leaders.

The results of the exploratory factor analysis of the job satisfaction instrument are given in Table15.

Table 15: Exploratory Factor Analysis of Hackman - Oldham (1985) Job Characteristic Model

Scale	Factors	Factors (Variance)	No of items
1	Significance of Job Tasks	36.3%	9
2	Autonomy in Decision Making and work methods	28.0%	5
3	Empowerment	14.6%	3
4	Delegation	10.7%	3
5	Autonomy in Scheduling	5.1%	4
	Total	94.7%	24

Note the Correlation Matrix is not positive definite. – No KMO, AIC, or Bartlett's test since no correlation matrix. Those metrics all stem from that.

Exploratory factor analysis was carried out to examine the factorial validity of the job satisfaction construct (Chyung, A., Hunt, B., & Sevier, R. (2017). It was conducted using principal components analysis extraction with varimax rotation and *a priori* criteria of five factors were extracted based on the previous studies. The 5-factor structure of the job satisfaction construct was confirmed; however, all 24 items load differently from the original 1975 Hackman and Oldham 5 dimensions, thus producing 5 different named factors see Table 15 above.

There are two distinct Autonomy factors – Autonomy in scheduling explained 5.1% of the variance shown in table (20) below and Autonomy in decision making and work methods accounts for 28.0% in the variance see table (17) below. Significance of job tasks factor is explained by 36.3% shown in table (16) below, Empowerment factor is explained by 14.6% table (18) below and the factor Delegation accounts for 10.7% in variance shown in table (19) below.

The five (5) latent factors extracted that drive job satisfaction are presented in tables 16 – 20.

Table 16: Factor 1 - Significance of Job Tasks

TASK SIGNIFICANCE - The job that is performed has a significant impact on people outside the organization.	.946	-.117	.198
SKILL VARIETY - The job involves performing a wide variety of tasks.	.927	.236	.253
TASK IDENTITY - The job involves completing a piece of work that has an obvious beginning and end.	.919	.264	.258
TASK IDENTITY - The job allows me to complete work i start.	.919	.264	.258
SKILL VARIETY - The job requires the performance of a wide range of tasks.	.882	.318	.253
TASK SIGNIFICANCE - The job itself is very significant and important in the broader scheme of things.	.855	.399	.279
TASK SIGNIFICANCE - The results of my work are likely to significantly affect the lives of other people.	.682	.498	.170
SKILL VARIETY - The job involves doing a number of different things.	.680	.646	.281
FEEDBACK FROM JOB - The job itself provides feedback on my performance.	.655	.568	-.307

Table 17: Factor 2 - Autonomy in Decision Making and Work Methods

DECISION-MAKING AUTONOMY - The job provides me with significant autonomy in making decisions.	.137	.952	.168	-.113	.088
DECISION-MAKING AUTONOMY - The job allows me to make a lot of decisions on my own.	.128	.922	.208	.046	.103
WORK METHODS AUTONOMY - The job gives me considerable opportunity for independence and freedom in how i do the work.	.266	.886	.176	-.188	.247
WORK METHODS AUTONOMY - The job allows me to decide on my own how to go about doing my work.	.462	.804	.263	.130	-.196
SKILL VARIETY - The job involves a great deal of Skill Variety.	.112	.708	.435	.316	-.109

Table 18: Factor 3 - Empowerment

WORK SCHEDULING AUTONOMY - The job allows me to decide on the order in which things are done on the job.	.304	.298	.891	-.109	-.096
FEEDBACK FROM JOB - The work activities themselves provide direct and clear information about the effectiveness (e.g., Quality and quantity) of my job performance.	.468	.283	.808	-.111	.117
WORK SCHEDULING AUTONOMY - The job allows me to make my own decisions about how to schedule my work	.322	.303	.618	-.339	.489

Table 19: Factor 4 - Delegation

DECISION-MAKING AUTONOMY - The job gives me a chance to use my personal initiative or judgement in carrying out the work	-.160	.008	.154	-.948	.070
WORK METHODS AUTONOMY - The job allows me to make decisions about what methods i use to complete my work.	.267	.609	.351	-.643	-.134
TASK IDENTITY - The job provides me the chance to completely finish the pieces of work i begin.	.362	.261	.513	.621	.065

Table 20: Factor 5 – Autonomy in Scheduling

TASK IDENTITY - The job is arranged so that i can do an entire piece of work from beginning to end.	.639	-.496	.008	-.093	.364
TASK SIGNIFICANCE - The job has a large impact on people outside the organization.	.601	.575	.309	.307	-.095
WORK SCHEDULING AUTONOMY - The job allows me to plan how i do my work.	.597	.255	.467	.106	.471
FEEDBACK FROM JOB - The job itself provides me with information about my performance.	.546	.484	-.023	.511	.433

The paper will now focus on the discussion of the research findings and distinguish it from previous global studies.

VII. Discussion

Each statistical test answered a specific research question linked to a specific research objective. In light of the results determined in the previous section the findings are now discussed answering the research questions and fulfilling the research objectives. The discussion will highlight major findings of this research and specify how they contribute to the existing body of literature on Job Characteristics and Job satisfaction.

Research Questions (RQ), Objectives (RO)

Research Questions:

RQ1: Does Hackman-Oldham's (1975) five (5) manifest Job Characteristics of Skill Variety, Task Identity, Task Significance, Autonomy, and Feedback impact Job Satisfaction in the three (3) service sectors of ICT, Tertiary Education, and Public Utilities in Trinidad and Tobago?

RQ2: What are the latent drivers of Job Satisfaction in the three (3) service sectors of ICT, Tertiary Education and Public Utilities in Trinidad and Tobago?

RQ3: Does Hackman–Oldham's (1975) Job Characteristic Instrument validly measure Job Satisfaction in the three (3) service sectors of ICT, Tertiary Education, and Public Utilities in Trinidad and Tobago?

These three critical research questions give rise to three complementary research objectives, which will now be outlined below.

RO1: To determine if Hackman-Oldham's (1975) five (5) manifest Job Characteristics of Skill Variety, Task Identity, Task Significance, Autonomy, and Feedback impact job satisfaction in the three (3) service sectors of ICT, Tertiary Education, and Public Utilities in Trinidad and Tobago.

Effect of Job Characteristics on Job Satisfaction

The Standardized Beta coefficient of the Job Characteristics revealed that Skill Variety explained 19 percent ($\beta=0.19$; $\rho<0.001$), Task Identity explained 14 percent ($\beta=0.14$; $\rho<0.001$), Task Significance explained 26 percent ($\beta=0.26$; $\rho<0.001$), Autonomy explained 31 percent ($\beta=0.31$; $\rho<0.001$), and Feedback explained 20 percent ($\beta=0.20$; $\rho<0.001$) variance in Job satisfaction. The most impactful job characteristic is Autonomy, explaining 31% of the variance in Job Satisfaction. This might stem from individuals feeling empowered and in control of their work, leading to a sense of fulfillment and accomplishment. Increased autonomy allows employees to make decisions aligned with their preferences, potentially contributing to higher job satisfaction.

The results of the regression analysis table (21)below confirmed that the five (5) core manifest job characteristics of Hackman Oldham's (1975) model (Skill Variety, Task Identity, Task Significance, Autonomy, and Feedback) impact job satisfaction in the three (3) service sectors of ICT, Tertiary Education, and Public Utilities in Trinidad and Tobago.

Table (21) below showing results of regression analysis of Job Satisfaction on Hackman-Oldham (1975) five job characteristics factors.

The regression "R" results showed a strong correlation between Job Characteristics and Job Satisfaction. The Regression R - Squared results showed that Job Characteristics explain 100 percent variance in Job Satisfaction.

Thus, the Regression Equation:

Job Satisfaction (R) = 4.224 + .200 (Autonomy) + .200 (Skill Variety) + .200 (Task Significance) + .200 (Task Identity) +.200 (Feedback From Job)

Table 21: Multiple Regression Results for Job Characteristics and Job Satisfaction Summary Statistics

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	HYPOTHESES
	B	Std. Error	Beta			
(Constant)	4.224E-15	.000		.000	1.000	
Autonomy	.200	.000	.312	8.418E7	.000	SUPPORTED
SkillVariety	.200	.000	.193	4.058E7	.000	SUPPORTED
TaskSignificance	.200	.000	.260	6.233E7	.000	SUPPORTED
TaskIdentity	.200	.000	.141	3.067E7	.000	SUPPORTED
Feedback	.200	.000	.195	4.350E7	.000	SUPPORTED

a) Theoretical Implications of Correlational Results

The correlation results ranged from a minimum of .56 between Task Identity and Autonomy to a maximum of .95 between Job Satisfaction and Skill Variety (Table 22) below. The varying correlation results suggest that different factors influence the relationships between job satisfaction and specific job characteristics. A correlation of 0.56 between task identity and autonomy indicates a moderate positive relationship, while a correlation of 0.95 between job satisfaction and

Skill Variety suggests a strong positive association. These differences could be attributed to each job characteristic's unique impact on an individual's overall job satisfaction, with some factors playing a more significant role than others. The overall correlation results showed a strong, positive relationship between Hackman Oldham's (1975) five job characteristics and job satisfaction in the three service sectors of ICT, tertiary education, and public utilities in Trinidad and Tobago.

In this research, the correlation results are much higher (see table 22 below) than those found in a Pakistani study on Job satisfaction and Motivation (Bhatti, Syed, & Shaikh, 2012). The sample for that research was drawn from the Banking Industry, while this study covered three sectors spanning seven (7) industries (ICT Sector - Smartphone, Landline, Internet Service Provider (ISP) industries; Tertiary Education Sector – Tertiary Education Industry; Public Utilities Sector – Water, Electricity and Public Transportation industries. This study's correlation results are excellent (close to 1) compared to those found in other studies like the Pakistani Banking industry case measuring job characteristics and job satisfaction. In that study the correlation results ranged from a minimum of .125 between task identity and growth satisfaction to a maximum of .384 between task significance and general satisfaction. Overall job characteristics were found to be positively related to personal outcomes (e.g. general (job) satisfaction, internal work motivation and growth satisfaction (Bhatti, Syed, & Shaikh, 2012).

Table 22: Comparison of Correlation Results from this Study (Trinidad and Tobago Case) and the Pakistan Case

Correlational Relationship	Trinidad and Tobago	Pakistan (Bhatti, Syed, Shaikh, 2012)
Job Satisfaction and Autonomy	(r = .881)**	(r = .297)**
Job Satisfaction and Skill Variety	(r = .947)**	(r = .327)**
Job Satisfaction and Task Significance	(r = .933)**	(r = .384)**
Job Satisfaction and Task Identity	(r = .854)**	(r = .207)**
Job Satisfaction and Feedback	(r = .917)**	(r = .382)**
Autonomy and Skill Variety	(r = .819)**	(r = .335)**
Autonomy and Task Significance	(r = .737)**	(r = .256)**
Autonomy and Task Identity	(r = .557)**	(r = .232)**
Autonomy and Feedback	(r = .718)**	(r = .292)**
Skill Variety and Task Significance	(r = .855)**	(r = .322)**
Skill Variety and Task Identity	(r = .800)**	(r = .132)*
Skill Variety and Feedback	(r = .834)**	(r = .281)**
Task Significance and Task Identity	(r = .827)**	(r = .290)**
Task Significance and Feedback	(r = .825)**	(r = .390)**
Task Identity and Feedback	(r =.866)**	(r = .331)**

***Correlations are significant at 0.01 levels*
**Correlations are significant at 0.05 levels*

Correlation results can have theoretical implications by providing insights into the relationships between variables. They may support or challenge existing theories, helping researchers refine or develop new hypotheses. Understanding correlations can contribute to a deeper comprehension of underlying mechanisms, guiding future studies and informing theoretical frameworks in a specific discipline. Biggs (2003) found a weak relationship (r = .39) between skill variety and job satisfaction, while this study contradicted that result, finding a strong correlation (r = .947). This is due to the differing backgrounds of the respondents (Biggs, 2003). The above correlational results from this study add to the global body of knowledge by establishing new linkages between job characteristic variables and job satisfaction.

RO2: To determine the latent drivers of Job Satisfaction in the three (3) service sectors of ICT, Tertiary Education, and Public Utilities in Trinidad and Tobago.

The factors that impact job satisfaction are not static; they are dynamic. What motivated employees forty-eight years ago may or may not be their current motivation. Research must be sensitive to these changes over time thus this researcher believes empowerment and delegation are two key factors that influence job satisfaction. This was proven via exploratory factor analysis.

Table 23: Extracted 5 Named Factors that Make up the Construct Job satisfaction in the Trinidad and Tobago Setting

Scale	Factors	Factors (Variance)	No of Items
1	Significance of Job Tasks	36.3%	9
2	Autonomy in Decision Making and Work Methods	28.0%	5
3	Empowerment	14.6%	3
4	Delegation	10.7%	3
5	Autonomy in Scheduling	5.1%	4
	Total	94.7%	24

The five new latent drivers of job satisfaction shown in table 23 above will now be discussed in the context of previous research findings. A key point to be restated is that these factors differ from the five (5) core job characteristics espoused by Hackman and Oldham (1975) in that they were not directly measured.

b) Significance of Job Tasks

The dimension of job tasks is a significant underlying factor that drives job satisfaction and consists of nine items. It is important first to clarify the concept of tasks and differentiate it from the concept of skills. Tasks refer to units of work activity that produce output, such as goods and services, whereas skills represent the capabilities possessed by individuals to perform various tasks (Acemoglu & Autor, 2011). Tasks are specific to actual jobs or workplaces and may change as these environments evolve, while skills are held by individuals who perform these tasks (Matthes, Christoph, & Janik, 2014). While a job's task profile and an incumbent's skills may align, there can be instances where the incumbent lacks some necessary skills for task performance or possesses skills that are not required for the job, resulting in under- or over qualification respectively. These concepts are inter-connected since performing tasks can help develop the necessary skills, and possessing certain skills can provide employees with better opportunities for jobs requiring those skills. To analyze the interdependencies between tasks and skills effectively, it is crucial to accurately differentiate between these two concepts.

c) Autonomy in Decision Making and Work Methods

Autonomy refers to the scope of freedom, independence, and discretion that an individual has in scheduling their work and determining the procedures to carry it out (Hackman & Oldham, 1975). The concept of autonomy covers different areas, which have been identified through exploratory factor analysis. Specifically, autonomy in decision-making, work methods, and Skill Variety has been identified as a latent driver of job satisfaction. This dimension consists of five items and accounts for 28% of the variance in job satisfaction. These findings align with prior research on job satisfaction conducted by Breaugh (1985), which also emphasized the significance of work autonomy.

i. *Autonomy in Scheduling*

Autonomy in scheduling is identified as a separate latent driver of job satisfaction. It consists of four-line items that specifically address the issue of scheduling within autonomy. This dimension explains 5.1% of the variance in job satisfaction. Scheduling involves managing and optimizing workloads in industrial or manufacturing environments, as defined by Pinedo in 2012. It is distinct from other dimensions, such as autonomy in decision-making, work methods, and Skill Variety. Similar to the Autonomy in Task dimension developed by German researchers (Matthes et al., 2014), this dimension includes items that capture the concept of autonomy within scheduling.

ii. *Empowerment*

Empowerment is a latent driver of job satisfaction. It accounts for 14.6% of the variance in job satisfaction. Empowerment means giving colleagues knowledge, facts, and authority (Spreitzer, 1995). Empowerment includes giving employees freedom of action to decide how they go about their daily activities (Carless, 2004). The belief in improving a job's quality by enhancing authority and participation in decision-making in one's job (Hales & Kalidas, 1998). Research shows that employee empowerment and job satisfaction positively impact loyalty (Waqas, 2014). A study by Waqas et al. (2014) of Pakistan's Public and Private Sectors confirmed this via hypothesis testing.

iii. *Delegation*

Delegation is identified as a driver of job satisfaction, although it explains a smaller percentage of the variance in job satisfaction compared to empowerment (10.7% vs. 14.6%). At the individual level, delegation involves granting authority and responsibility to others within the organizational hierarchy (Tannenbaum, 1968). It represents a transfer of power downward in the organization and the authorization for individuals to perform tasks typically carried out by higher-ranking personnel (Kanter, 1979). Delegation can reshape the organizational structure and operations, although downsizing and delayering may have limited delegation opportunities, counterbalanced by the demand for greater flexibility and empowerment. Effective delegation is crucial in the era of empowerment (Greiner, 1972), and it has long been recognized as a

vital aspect of successful management and leadership (Gul, 2012). Previous studies have established a link between delegation and job satisfaction (Jha, 2004; Riisgard et. al 2016), and the findings of this research support the notion that delegation serves as a driver of job satisfaction.

Figure 2: Latent Drivers of Job Satisfaction in Three Service Sectors of ICT, Tertiary Education, and Public Utilities in Trinidad and Tobago

Reconceptualization of the Hackman Oldham (1975) Job Characteristics Model (JCM)

Given the inconsistencies in measuring job satisfaction, there is a need for a re-conceptualization of this construct. While previous studies have approached job satisfaction as a multidimensional concept, there is still no consensus on the specific factors that should be included (Boonzaier, Ficker, & Rust, 2001). This study investigated the psychometric properties of cognitive job satisfaction by incorporating the five subscales of Hackman Oldham's (1975) Job Characteristics Model. It was hypothesized that these five factors could explain job satisfaction. Results of the correlational and regression analysis of this paper supported the proposition that job satisfaction can indeed be measured using these five factors, which aligns with the findings of Johari, Mit, and Yahya (2010) in their study of the Malaysian public service context. However, factor analysis using PCA and varimax rotation revealed five new latent factors that drive job satisfaction, as shown in Figure 2 above. These new five latent factors are significance of job tasks, autonomy in decision-making and work methods, empowerment, delegation, and autonomy in scheduling.

RO3: To determine the construct validity of Hackman-Oldham's (1975) Job Characteristic Instrument in the three (3) service sectors of ICT, Tertiary Education, and Public Utilities in Trinidad and Tobago.

To evaluate the effectiveness of this research tool, it becomes crucial to examine the concerns related to the reliability and validity of the instrument, drawing insights from previous research outcomes. Reliability, as defined by Collis and Hussey (2013), pertains to the consistency of a measuring instrument in producing reliable findings within the research context.

The minimum mean score is 1.64 for autonomy, suggesting a relatively low level of independence or freedom in decision-making, while the maximum mean score was 3.00 for task significance indicates a high perceived importance of tasks.

The standard deviation score ranges from .36 for task Identity to .78 for autonomy, which indicates moderate variability for these dimensions. This suggests that perceptions regarding task identity and autonomy are somewhat dispersed among respondents, showing a degree of diversity in their views on these aspects.

The Cronbach alpha values range from .70 for task identity to .91 for autonomy, suggesting acceptable to high internal consistency reliability. The overall internal

consistency for the 24-item job satisfaction scale is .95, well above the acceptable level of .70 as recommended by Cronbach, L. J (1951). This indicates that all 24 items strongly correlate with each other, implying a reliable measurement of the Job Satisfaction construct. The results provided an overview of the existence of job characteristics in the employees of ICT, Tertiary Education, and Public Utilities Sectors in Trinidad and Tobago with a small quantity of variation. (Gliem & Gliem, 2003).

Although several instruments exist to measure job satisfaction, such as the Job in General Scale (JGS) by Ironson et al. (1989) and the Nurse Satisfaction Scale (NSS) by Ng (1993), the two-stage Job Diagnostic Survey (JDS) by Hackman and Oldham (1975)was chosen due to its popularity andthe confirmation of its 5-factor structure through confirmatory factor analysis (CFA) in various settings, including Malaysia's public service (Johari et al., 2010).

Table (24) below shows the mean and reliability scores for the job satisfaction sub-scales scales used in the Malaysia setting by Johari et al (2010) in the Malaysia public service settings. Cronbach alpha values are in the range of .70 for task identity to .91 for autonomy in the Trinidad and Tobago setting in contrast to .61 for Skill Variety and .82 for autonomy in the Malaysia setting. It should be noted autonomy has the highest internal consistency in both countries as shown in Table 24 below. The overall internal consistency for the 24-item job satisfaction scale is .95 in this study while .76 in the Malaysia setting both well above the acceptable level of .70 (Hair, Black, Babin, & Anderson, 2019). Previous research by Johari et al. (2010) confirmed the 5-factor structure of job satisfaction via confirmatory factor analysis (CFA) using structural equation modeling (SEM) (Johari, Mit, & Yahya, 2010).

Table 24: Reliability of the Hackman Oldham (1975) Job Satisfaction Questionnaire used in Two Different Populations Trinidad and Tobago and Malaysia

	Trinidad and Tobago		Malaysia	
Job characteristics	Mean	Cronbach α	Mean	Cronbach α
Skill Variety	2.24	.85	4.45	.61
Task Identity	2.94	.70	4.56	.63
Task Significance	3.00	.88	5.56	.61
Autonomy	1.64	.91	4.61	.82
Feedback	2.82	.73	5.61	.79
Personal outcomes:				
Job Satisfaction	2.53	.95	4.96	.76

The validity of a measurement instrument is determined by its ability to accurately gauge the intended attribute it purports to measure, as articulated by Bryman and Bell (2007). Hackman and Oldham (1975) assert that their Job Diagnostic Survey (JDS) questionnaire demonstrates evidence of construct validity, which involves assessing how well the instrument aligns with theoretical expectations and its relationships with other constructs. To support the validity of the JDS, Hackman and Oldham (1975) correlated it with another job satisfaction questionnaire, the Job Characteristic INVENTORY (JCI), which was developed by Fried (1991). The correlations between the two questionnaires, as shown in Table 25below, confirm that they measure similar perceptions and values, further supporting the instrument's validity (Van Saane, Sluiter, Verbeek, & Frings-Dresen, 2003).

Additionally, the results in Table 25 below indicate that both questionnaires capture the same cognitive aspect of respondents' experiences. While the JDS by Hackman and Oldham (1975) survey indirectly captures some affective elements by evaluating employee satisfaction and motivation, its main emphasis is on cognitive factors related to the perceived design and structure of the job. In the context of job satisfaction and motivation, the terms "affective domain" and "cognitive domain" are often used to distinguish between emotional and thought-related aspects, respectively. The Job Characteristics Model, developed by J. Richard Hackman and Greg Oldham (1975), includes both affective and cognitive components.

- *Affective Domain:*
  - The affective domain refers to emotional or feeling-related aspects of job satisfaction.
  - Within the framework of the Job Characteristics Model, affective outcomes are shaped by the psychological states of employees, encompassing their perceived meaningfulness of work, accountability for outcomes, and understanding of results.
  - The Job Characteristics INDEX (JCX) (1976), derived from the model, primarily measures affective responses to job characteristics.
- *Cognitive Domain:*
  - The cognitive domain involves thought-related or evaluative aspects of job satisfaction.
  - In the Job Characteristics Model, cognitive outcomes are related to employees' evaluations of their jobs based on characteristics like skill

variety, task identity, task significance, autonomy, and feedback.

– The Job Diagnostic Survey (JDS), associated with the model, assesses employees' perceptions of their jobs and is often used to measure cognitive facets of job satisfaction.

In summary, both the JCX and the JDS contribute to assessing both affective and cognitive aspects of job satisfaction, with the JCX (1976) focusing more on affective responses and the JDS providing a broader measurement that includes cognitive evaluations of job characteristics.

Table 25: Validity of Scores between the Hackman Oldham,(1975) (JDS) and Job Characteristics Inventory (JCI) Fried, (1991) Questionnaires

Instrument	Population	Internal consistency	Convergent Validity	Comparative Instrument	Discriminant Validity	Comparative Instrument
Job Diagnostic Survey (JDS)	Heterogenous	.56 - .88	0.32 – 0.71	JCI	0.12 – 0.28	subscales

Source: Reliability and Validity of Instruments Measuring Job Satisfaction – a Systematic Review (Van Saane, Sluiter, & Verbeek, 2003)

From the above discussion, it can be deduced that the scales in Hackman and Oldham's (1975) research instrument show respectable reliability and validity in the three service sectors of ICT, Tertiary Education, and Public Utilities in Trinidad and Tobago.

The final part of the paper will now be presented. The conclusion summarizes the research objectives and findings, details implications for theory, policy, and practices, limitations, prospects for future research, and concrete policy recommendations.

VIII. Conclusion

Research Objectives (RO):

RO1: To determine if Hackman-Oldham's (1975) five (5) manifest Job Characteristics of Skill Variety, Task Identity, Task Significance, Autonomy, and Feedback impact job satisfaction in the three (3) service sectors of ICT, Tertiary Education, and Public Utilities in Trinidad and Tobago.

Results of multiple regression analysis confirmed the five (5) manifest Job Characteristics factors of Skill Variety, Task Identity, Task Significance, Autonomy, and Feedback impact job satisfaction in the three (3) service sectors of ICT, Tertiary Education, and Public Utilities in Trinidad and Tobago.

RO2: To determine the latent drivers of Job Satisfaction in the three (3) service sectors of ICT, Tertiary Education, and Public Utilities in Trinidad and Tobago.

Exploratory Factor Analysis using PCA and Varimax rotation revealed five new latent factors. These factors are the Significance of Job Tasks (36.3%), Autonomy in Decision Making and Work Methods (28.0%), Empowerment (14.6%), Delegation (10.7%), and Autonomy in Scheduling (5.1%). These five situational factors account for (94.7%) variance in job satisfaction.

RO3: To determine the construct validity of Hackman-Oldham's (1975) Job Characteristic Instrument in the three (3) service sectors of ICT, Tertiary Education, and Public Utilities in Trinidad and Tobago.

Assessing the validity of the job satisfaction scale is crucial for ensuring it accurately measures what it's intended to. The following methods were employed.

1. *Construct Validity:*

- Convergent validity: Correlate the scale with other established measures of job satisfaction or related constructs like employee engagement or motivation. High correlations support the scale's validity (Cronbach & Meehl, 1955).
- Factor analysis: Analyze the scale items to see if they are grouped into distinct sub-factors representing different aspects of job satisfaction, as expected (Hair et al., 2019).

2. *Criterion Validity:*

- Concurrent validity: Compare scale scores to external indicators of job satisfaction, like supervisor ratings or performance reviews. The agreement reinforces the scale's accuracy (Guion, 2011).

3. *Reliability:*

- Internal consistency: Assess the inter-item consistency using measures like Cronbach's alpha. High alpha values (e.g., >0.7) indicate reliable measurement (Cronbach, 1951).

Additional Considerations was Given to:

- Sample size: Ensure the sample used to test validity represents the target population to generalize the findings.
- Statistical methods: Choose appropriate statistical tests based on the research questions and data type.
- By employing these methods, the researcher rigorously assess the validity of the Hackman Oldham (1975) job satisfaction scale, ensuring it provides accurate and meaningful data for understanding and improving employee experiences in the workplace.

a) Sector Specific Findings

ICT Sector job satisfaction mean scores range from a low 2.36 for FLOW to 2.40 for both DIGICEL and TSTT. Tertiary Education Sector job satisfaction mean scores range from a low of 2.04 for SAM to a high of 2.47 for UTT. Public Utilities Sector job satisfaction mean scores range from 2.26 for T & TEC to 2.44 for WASA.

Job Satisfaction mean scores were relatively higher in the Tertiary Education Sector (2.47 for UTT) when compared to the ICT Sector (2.40 for both DIGICEL and TSTT) and the Public Utilities Sector (2.44 for WASA). One possible explanation for this pattern could be job satisfaction may be higher due to intrinsic rewards associated with academia, such as the fulfilment of contributing to education and research. Conversely, the ICT and Public Utilities Sectors may face higher stress levels, faster-paced environments, and stringent regulations potentially impacting employee satisfaction. All three sectors scored below average (2.5) job satisfaction mean scores, suggesting poor sector-wide performance.

Interestingly job satisfaction mean scores in Trinidad and Tobago were significantly lower than those observed in a study conducted by Al Shehhi et al. (2021) in the UAE. The mean job satisfaction score in that study was (3.30) in the public sector and (3.48) in the private sector. These results support the notion that the conceptualization of job satisfaction varies with sector and population (Gilbert & Von Glinow, 2015).

Implications for Theory, Policy, and Practices will now be discussed.

b) Implications for Theory

Job satisfaction research findings have several theoretical implications, influencing organizational and psychological theories. Some implications include:

Individual–Level Implications:

1. *Motivation Theories:*

Job satisfaction and motivation theories share a complex relationship in organizational psychology. According to Maslow's Hierarchy of Needs (1943), job satisfaction is influenced by fulfilling basic needs, while Herzberg's Two-Factor Theory (1959) suggests that motivation and satisfaction are distinct factors. Locke's Range of Affect Theory (1976) emphasizes that job satisfaction is influenced by the perceived discrepancy between what one has and wants.

Additionally, Vroom's Expectancy Theory (1964) posits that motivation is driven by the expectation of a desired outcome, impacting job satisfaction indirectly. Adam's Equity Theory (1963) asserts that perceived fairness in reward distribution affects motivation and satisfaction.

These theories collectively illustrate the interconnectedness between motivation and job satisfaction, highlighting intrinsic and extrinsic factors' role in shaping employees' workplace experiences (Maslow, 1943; Herzberg, 1959; Locke, 1976; Vroom, 1964; Adams, 1963).

2. *Organizational Behavior Theories:*

Job satisfaction and organizational behavior theories are intertwined in understanding employee experiences within an organization. Blau's Social Exchange Theory (1964) suggests that the level of job satisfaction is dependent on the mutual exchange of benefits and contributions between the employees and the organization. Organizational Behavior Modification (OB Mod) (Skinner, 1974) posits that behavior reinforcement strategies implemented by the organization can impact job satisfaction positively.

Furthermore, the Job Characteristics Model (Hackman & Oldham, 1976) emphasizes how task significance, autonomy, and skill variety contribute to job satisfaction. According to Tajfel and Turner's Social Identity Theory, job satisfaction is influenced by an individual's sense of belonging to a particular organization or group.

Organizational behavior theories provide frameworks to understand the dynamics affecting job satisfaction, emphasizing the impact of social exchanges, organizational interventions, and the nature of job characteristics (Blau, 1964; Skinner, 1974; Hackman & Oldham, 1976; Tajfel & Turner, 1979).

3. *Employee Engagement Theories:*

Job satisfaction and employee engagement theories are closely linked, reflecting the interplay between individual contentment and overall involvement in the workplace. The Job Characteristics Model (Hackman & Oldham, 1976) emphasizes that engaging job characteristics contribute to both job satisfaction and employee engagement, stressing the importance of skill variety, task identity, and task significance.

Kahn's model of Employee Engagement (1990) suggests that engagement involves both physical and cognitive aspects, with job satisfaction being a crucial cognitive component. The Gallup Q12 model (Harter et al., 2002) identifies specific factors, such as feeling recognized and having opportunities for personal development, that contribute to both engagement and satisfaction.

These theories collectively highlight how job satisfaction and employee engagement are interconnected, with engaging job characteristics and specific organizational practices influencing both aspects (Hackman & Oldham, 1976; Kahn, 1990; Harter et al., 2002).

4. *Job-Demands-Resources Model:*

This model integrates job satisfaction into a broader framework, considering job demands (stressors) and resources (supportive aspects) and their impact on well-being and performance. The Job Demands-Resources (JD-R) model, proposed by Demerouti, Bakker, Nachreiner, and Schaufeli (2001), is

a theoretical framework that helps explain the relationship between job characteristics and employee well-being. According to this model, jobs are two broad categories: job demands and resources.

1. *Job Demands:* These aspects of the job require sustained effort and may lead to physical or psychological strain. Examples include high workload, time pressure, and conflicting demands (Demerouti et al., 2001).
2. *Job Resources:* refer to the factors that make it easier to accomplish work-related goals, minimize job stressors, and promote individual development. Job resources can include social support, feedback, and opportunities for skill development (Demerouti et al., 2001).

The JD-R model suggests that high job demands, if not balanced by sufficient resources, can lead to burnout and other negative outcomes. On the other hand, when jobs provide adequate resources, employees are more likely to experience positive well-being, job satisfaction, and performance. This model has been influential in research on occupational health and well-being, providing a comprehensive framework for understanding the interplay between job characteristics and employee outcomes.

These implications contribute to developing and refining motivation, organizational behavior, and organizational performance theories.

c) Organizational-Level Implications

- Culture and leadership: Positive organizational cultures characterized by autonomy, respect, and support contribute to higher job satisfaction. This underscores the importance of strong leadership in shaping work environments.
- Job design and work-life balance: Research suggests that characteristics like challenging and meaningful work, opportunities for growth, and flexibility contribute to satisfaction. This knowledge can guide organizations in designing engaging and supportive jobs.
- Work-life conflict: Job demands that spill over into personal lives can lead to dissatisfaction. This emphasizes the need for organizations to promote work-life balance initiatives to improve overall well-being.

d) Implications for Policy and Practice

- Policy and regulations: The knowledge gained from research can aid in creating policies and regulations aimed at boosting job satisfaction, ultimately contributing to a more constructive and efficient workforce.
- Macroeconomic implications: Higher job satisfaction can lead to increased productivity and economic growth, suggesting that investing in strategies to improve work environments can have beneficial societal impacts.
- Benchmarking and best practices: Organizations can use the new instrument to benchmark job satisfaction against other organizations in their industry or sector. This can help them identify areas to improve and learn from best practices.
- The changing nature of work: Research can help us understand how job satisfaction evolves in the context of automation, remote work, and other transformations in the workplace.

Job satisfaction research offers valuable insights into the complex relationship between tasks and work outcomes. By understanding the theoretical implications of its findings, organizations, policymakers, and individuals can work towards creating work environments that are both productive and fulfilling.

Limitations

- *Complexity of Job Design*

The Job Characteristics Model is considered the most influential theory of Job Design. Therefore, analyzing all its aspects in one study is very difficult. Job design is a multi-dimensional psychological construct that involves shaping a job to satisfy organizational and individual needs. Job characteristics, a key aspect, include skill variety, task identity, task significance, autonomy, and feedback. The complexity arises as job designers must balance these factors to create roles that engage employees, enhance productivity, and align with organizational goals, requiring a nuanced understanding of the specific context, tasks, and workforce dynamics. This study focuses on specific aspects, particularly cognitive job satisfaction. Hackman Oldham's (1975) Job Characteristics Model (JCM) is just one out of hundreds of Job Characteristics measurement models.

- Findings specific to the three service sectors of ICT, Tertiary Education, and Public Utilities

The researcher was unable to gather data from sectors such as Banking and Fast Food in Trinidad and Tobago due to limitations in time and finances. By studying job satisfaction in Trinidad and Tobago's banking and fast-food sectors, organizations can tailor strategies to create healthier work environments, improve experiences, and ultimately achieve better organizational and national outcomes.

e) Prospects for Future Research

This research provides the following prospects for future research.

1. This is the first Multi-Industry, Multi-Sectorial study conducted on the Job Characteristics Model (JCM) in the context of Trinidad and Tobago. It covers three major service sectors. So, it can be replicated in other service sectors in Trinidad and Tobago, like the Banking and Fast Foods Sectors, to generalize

the applicability of the Job Characteristics model in Trinidad and Tobago.

2. This research has only considered job satisfaction. The effect of Job Characteristics should also be tested on behavioral outcomes such as customer satisfaction, employee benefits, and employee engagement.
3. Employee Benefits can be both a dependent and independent variable (Young, 2023).The relationship between demographic characteristics, organizational culture, and job satisfaction on employee benefits should be examined via a General Linear Model (GLM).

IX. Recommendations

The Job Characteristics Model can be very helpful in designing jobs for employees across the Public and Private Sectors. The human resource managers of companies must design employees' jobs, paying proper consideration to job characteristics. Moreover, if they feel that the Job Satisfaction level of the employees is reducing due to fatigue, burnout and boredom from the work, they should redesign their jobs by including these job characteristics to rebuild the Job Satisfaction level of the employees.

Implementing a new job satisfaction instrument can have various policy and practice implications. Here are some specific recommendations:

a) Policy Implications

1. *Job Satisfaction Integration Policy:* Develop a company-wide policy that integrates job satisfaction assessments into regular employee evaluations, emphasizing the organization's commitment to employee mental health.
2. *Data Privacy Policy:* Establish clear guidelines on collecting, storing, and using job satisfaction data to ensure employee privacy and compliance with relevant regulations such as GDPR or other local data protection laws.
3. *Training and Communication Policy:* Implement a policy for training managers and employees on the purpose of the job satisfaction instrument, emphasizing open communication about job satisfaction results and creating a supportive work environment.

b) Practice Implications

1. *Customized Interventions:* Use job satisfaction data to tailor interventions and support programs that address specific areas of concern identified by employees, promoting a targeted and effective approach to improving job satisfaction.
2. *Managerial Training Programs:* Develop training programs for managers to enhance their ability to identify signs of stress or burnout and equip them with strategies to support job satisfaction.
3. *Flexible Work Arrangements:* Consider adopting flexible work arrangements based on Job Satisfaction assessments, allowing employees to adjust their schedules or work environments to better suit their needs.
4. *Job Satisfaction Initiatives:* Implement Job Satisfaction initiatives based on the instrument's findings, such as Job Satisfaction workshops, mental health resources, and employee assistance programs to create a strong workplace culture.
5. *Performance Recognition:* Incorporate job satisfaction metrics into performance recognition and rewards, reinforcing the importance of both productivity and employee satisfaction.

Remember to regularly review and update policies and practices based on the evolving needs of the workforce and the insights gained from the job satisfaction instrument.

In conclusion, the reconceptualization of job satisfaction presented in this research offers a holistic and nuanced understanding of employee job characteristics in the modern workplace. By considering new dimensions (factors), validating the measurement instruments, and new theoretical linkages, organizations can better support their employees, foster job satisfaction, and create a positive work environment conducive to long-term success.

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Optimizing Returns: A Holistic Financial Model for Off-Grid Glamping Ventures

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Abstract- Glamping is becoming increasingly popular and may yield better financial returns than traditional hotel developments in some situations, especially in unspoiled locations which are inaccessible for traditional hotel/resort construction because it disturbs the site too much. This paper presents a detailed financial model for analysing the performance of glamping properties to inform decision-making about investing in them.

It focuses particularly on properties that are "off the beaten track" for singles, couples, small families and others who want to "unwind" and "commune with nature" in relatively isolated off-grid locations, such as nature reserves, vineyard/wineries, golf resorts or wellness and spa hideaways. In the authors' view, glamping is particularly well suited to this kind of hotel.

In the normal way, the financial model summarizes the development of these properties in detail and itemizes the specific capital investments needed to establish an off-grid glamping property, in contrast to a similar traditional grid-connected hotel.

Keywords: glamping; business case analysis; new hotel development.

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Richard Whitfield [α], Leon Juffermans [σ], Paul Dean [ρ] & Gert Noordzy [ω]

Abstract- Glamping is becoming increasingly popular and may yield better financial returns than traditional hotel developments in some situations, especially in unspoiled locations which are inaccessible for traditional hotel/resort construction because it disturbs the site too much. This paper presents a detailed financial model for analysing the performance of glamping properties to inform decision-making about investing in them.

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In the normal way, the financial model summarizes the development of these properties in detail and itemizes the specific capital investments needed to establish an off-grid glamping property, in contrast to a similar traditional grid-connected hotel. It then models the detailed operating costs and income streams for a proposed glamping project to determine its potential profitability and rate of return under different operating scenarios.

Generally, from the financial model, we conclude that glamping can be a very good alternative investment to traditional hotel development in many off-grid situations. Relatively, the capital investment is substantially lower for a glamping property while simultaneously demonstrating the potential to generate similar revenues to traditionally constructed mid-tier to upper-scale hotels but with lower operating costs. Moreover, there are fewer fixed overheads in the initial investment so that the property can be developed incrementally to cost effectively grow capacity along with demand thus making more efficient use of the available funds. Incremental development also facilitates "tuning" the site mix in the property over time to better match evolving customer preferences and thus maximize the return on investment.

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I. Introduction

Glamping (Wikipedia Contributors, 2022; Grand View Research, 2022) is now a well-known term to describe the fusion of luxury accommodation with camping for tourists seeking the amenities and services of excellent hotel accommodation along with the escapism and adventure of camping. While the tents or cabins used are, strictly speaking, temporary lodging, they are fitted out to a much higher standard than typical tents and often incorporate air-conditioning, ensuite bathrooms, decks with baths or plunge pools, outdoor rain showers, kitchenettes and other facilities more often associated with high quality hotel rooms. Also, like a traditional hotel, the tents or cabins are kept in place semi-permanently and serially rented to transient guests and are thoroughly cleaned and restocked between visitor stays. This is all very different to the normal camping situation where holidaymakers bring their own tents, assemble and use them during their stay and dismantle and take them away at the end of their holiday.

Glamping is often associated with eco-tourism of various kinds and these properties are typically sited in relatively remote locations where utilities grid connectivity may not be viable. It also works best in temperate and warmer climates with extended periods of stable and drier weather conditions so that a mix of indoor and outdoor living is appropriate. Tent or simple cabin accommodation is usually relatively small and so outdoor space is typically used to expand the living area. In environmentally sensitive areas, tents have the added advantage of requiring minimal site preparation and disturbance, thus maintaining the attractiveness of the location.

Remote glamping is becoming more popular for several important reasons (Grand View Research, 2022). Increasing numbers of tourists are looking for more exotic experiences, and they are willing to pay handsomely for them. There is a relatively large, and growing, group of well educated, socially and environmentally progressive people who are looking for new products and services that offer an authentic experience and real connections with suppliers. These consumers are happy to pay a premium for the right novel experience that gives them opportunities to learn and interact with suppliers. See Honeywell (n.d.), for example.

For efficiency, resilience and other reasons, many communities share infrastructure for electricity generation and distribution, potable water collection and distribution, sewerage collection and treatment and Internet and other communications. These shared resources are generally called utilities grids. They work well when grid participants are close together, but distribution infrastructure costs rise quickly with distance so that this approach is not worthwhile for spread out, lightly populated and remote areas. Thus, in such locations it is usually far more cost effective to provide smaller facilities at the point of use, which is often denoted as being "off-grid."

The regulatory and other hurdles needed to get approval for semi-permanent glamping lodgings are often significantly lower than for comparable traditionally constructed permanent hotels. For instance, the extensive engineering and fire services analysis required for hotel buildings is often minimal for tents. Additionally, the design and construction costs for glamping accommodations are generally much lower than traditional hotel development (Smitherman, 2021). Moreover, glamping properties are very well suited to prefabricated modular construction, which has many advantages for hotel developments in remote locations, e.g., see Whitfield & Noordzy (2022) or Noordzy, Whitfield, Saliot & Ricaute (2021). Specifically, prefabricated modular construction is usually significantly less expensive for the same build quality, far quicker to construct and is much less reliant on the quality and capacity of the local labour force available in remote locations. It also leads to much less site disturbance and onsite waste, which are especially important issues for remote and fragile natural environments. All this means that glamping can be a very cost-effective way to "test the waters" for new vacation concepts in remote locations while simultaneously minimizing their environmental impacts.

The rest of this paper presents a comprehensive financial model for developing and operating typical off-grid glamping properties and explains the logic underpinning its constituent elements. This financial model follows the common approach for evaluating the potential return from an investment, whereby the investments needed to create an asset are put on a timeline along with reasonable estimates of the income and expenses that can be generated by subsequently operating the asset. In this way the Payback Period, Internal Rate of Return and Net Present Value of the potential investment can be estimated to help decide whether or not it is worthwhile to proceed with the venture.

First, the components of a typical off-grid glamping property are described along with how it should be designed and built and the overall structure of the financial model representing it. Then the constituent costs and revenues from subsequently operating the business, are explained including methods for estimating their values. Finally, the model is run for different development and operating scenarios to illustrate the variability in the overall costs and returns and to help identify optimal development strategies for such properties.

II. The Nature of a Typical Off-Grid Glamping Property

Based on reviews of public information, see Smitherman (2021) for example, a typical glamping property consists of a bounded and attractively landscaped area holding a well separated collection of individual glamping units that are usually grouped into several clusters to share electricity, water and other services infrastructure and road access. In many cases the property is a natural bushland area or working agricultural property, where the needed access roads and utilities infrastructure are well hidden.

Vehicle access to each unit is usually via a branching access road from the property entrance to each cluster of sites and then to each individual unit. Guest parking may be centralized or distributed to each cluster of sites or, most commonly, to each individual unit. Generally, scattered individual site parking is preferred because it is much less obtrusive and has significantly lower environmental impact. The area normally has some kind of entrance and access control to monitor usage of the property, which may be via a central reception facility near the entrance.

Each glamping unit usually accommodates individual guests, couples, or small families. Site clusters can be for unrelated guests, or they may be group booked by extended families and other groups that want private sleeping arrangements along with a shared communal gathering space. Either way, the sites in clusters are usually well separated for better privacy, but may have communal eating areas and shower blocks.

Accommodation units typically offer a raised platform deck with a large tent or small cabin on it with internal sleeping and sitting spaces that may be heated /air-conditioned. The deck also usually holds seating for an outdoor living space that may be partly covered and incorporate a fire-pit, outdoor bathing and/or other amenities. Individual units may also have attached outdoor kitchens/BBQs, or these may be shared by a cluster of sites. The outdoor kitchen-dining facilities may also be partly covered. Similarly, each unit may have an attached ensuite bathroom or a larger bathroom block may be shared by a cluster of units. These structures are normally designed to minimize site disturbance and are made from "environmentally friendly" materials like canvas and timber. Roads an parking areas are often permeable gravel instead of tarmac.

Furthermore, off-grid glamping properties must usually provide infrastructure for electricity, water, Internet and sewerage and other waste disposal and these may be provided at individual sites or may be shared by site clusters or the whole property. For example, the whole property may have a small solar electricity farm and battery system and then use electric supply cables to distribute the generated power to each cluster and thence to each individual site. Similarly, a reasonable and modern solution for providing Internet and Wi-Fi to each unit is to have a central Starlink (www.starlink.com) ground station that interconnects to a router and a set of Wi-Fi mesh network nodes (Lloyd, 2017) located at each cluster or site to cover the entire property. (The router and mesh network nodes may be interconnected via Ethernet or fibreoptic cabling or Wi-Fi.) For water, there may be a central dam or large water tank with a piping network that distributes water to smaller header tanks for each cluster and then to each unit. Finally, sewerage may be processed at each unit or collected via pipe to property wide or cluster based settling tanks and then onto a leach field or other further processing equipment.

Glamping properties often only offer a relatively small subset of the services provided in traditional hotels. Like traditional hotels they usually have sophisticated online booking and service websites, but they rarely have a conventional reception area or traditional check-in and check-out processes, or even room keys. Guests simply book online and proceed direct to their site on arrival and depart at the end of their stay. They normally carry their own luggage in and dirty laundry out and there are often no clothes washing facilities. Typically, sites are only cleaned and restocked after each guest leaves, and garbage is also normally removed as part of this process. There are rarely any conventional daily hotel room cleaning and turn down services. If guests need special or extra items, they are typically ordered via the property's online systems and specially delivered.

Glamping properties seldom provide traditional hotel meals services. There is rarely a breakfast, lunch or other meals room, or room service meals. Guests are generally expected to dine out or to order takeaway meals or to order in food hampers so they can cook for themselves. There may be nearby restaurants and cafes, but they are usually separate businesses. Similarly, glamping properties rarely incorporate bars or cafes. Typically, each accommodation unit will have a kettle and other kitchenette facilities along with a refrigerator and drinks/snacks locker so that guests can serve themselves.

Finally, glamping properties rarely incorporate a business centre, gym, etc. or other traditional concierge services (although some of these facilities may be nearby, operated as separate businesses). Most often, the property's online systems allow guests to learn about nearby attractions and services and self-book them. Generally, guests are expected to bring any business or other equipment that they need to use during their stay with them and take it away themselves when they leave.

All this means that most glamping properties have minimal facilities beyond guest accommodation, and thus their staffing levels are usually much lower than traditional hotels. For example, assuming a minimum 2-night stay, which is popular for glamping properties, the housekeeping workload is less than half that of a comparable traditional hotel that provides daily room cleaning. Similarly, the glamping property will have no kitchen staff because it does not directly provide any meals.

a) Designing and Building the Property

Particularly for relatively remote locations, prefabricated modular construction is often the fastest and most cost-effective construction methodology to adopt and it has many well recognized advantages (Jones & Laquidara-Carr, 2020). In this approach, the property is first designed in its entirety in detail with all the structures divided into separately transportable modules. Then while the site is being prepared, the modules for buildings and other structures are prefabricated offsite in factories. The completed modules are finally transported to the prepared site and assembled into position.

Glamping accommodations often consist of large tents or tented cabins which are always prefabricated before being delivered to site for assembly. It is also common industry practice to prefabricate bathroom pods for delivery to site and insertion into hotel buildings. The same approach is becoming common for outdoor BBQs and kitchens and can readily be done for outdoor living spaces. Prefabricated construction for lightweight roofing based on sails is also very common and can also be cost-effective for other kinds of lightweight roofing. While decking is often made in situ there is no difficulty in prefabricating it, and this can lead to significant cost savings and reductions in onsite construction times and wastes.

Renewable electricity generation and storage systems are also inherently prefabricated. Similarly, large water storage tanks, pumps and other water handling equipment are commonly pre-made in pieces in factories and then delivered to site for final assembly. And the same is true for sewerage settling tanks and other processing equipment, and for Internet infrastructure.

Thus, besides access roads, landscaping, and pipe and cable laying for electricity, water, Internet, and sewerage, and possibly dams, there is very little within a glamping project that cannot be prefabricated offsite, delivered and quickly assembled in place. Moreover,

there are many cost, construction, speed-to-market, and other benefits in adopting this approach. And it does not limit design creativity or flexibility and enforces the adoption of good project management practices and minimizes onsite land disturbance and construction wastes.

Therefore, prefabricated modular construction is unarguably the best way to design and build remote, off-grid glamping properties and the financial model being developed here assumes that it is adopted for building the entire property which we divide into three major stages:

- Property design and construction preparation – including overall project management, land acquisition, detailed design of all the facilities and infrastructure, licensing and regulatory approvals and selection and contract negotiations with all onsite and offsite construction partners.
- Site Preparation – Including overall property landscaping, access roads and parking areas, deck and building pads and foundation piles, electricity, water, Internet, sewerage and other waste distribution and collection piping and cabling and property fencing, fire and flood mitigation structures and other security arrangements.
- Prefabricated Module Manufacturing, Transportation, and Installation - Including modules for electricity generation and storage, water collection, storage, pumping and purification, Internet equipment, sewerage treatment, site cluster shared kitchen, bathroom, outdoor living interior design and fit-out and provision of other facilities and site-specific individual accommodation, kitchen, bathroom and outdoor living and other spaces, as well as some form of reception area.

Adopting prefabricated modular construction means that the entire property must be designed in fine detail before any actual construction work commences. Suppliers cannot bid to prepare the location and make the modules to be delivered and assembled there until they know exactly what is to be built and how the site preparation works will inter-connect with the building modules. As an added benefit, combining all this leads to good project management with few late-stage design changes or other development "surprises" or delays.

b) Estimating the Infrastructure Capacity Needed

Off grid properties are unusual in that utility's infrastructure must be incorporated within the development. This is not usually a separate major consideration for traditional "on grid" hotel development.

When providing infrastructure for electricity, water, sewerage, and Internet both peak and average demand must always be considered. Luckily, when the central, cluster and site facilities are designed for a new off-grid glamping property, the infrastructure consumption loads are important and well known considerations and so peak and average values for each will emerge during the design process and will be available well before any actual construction work begins.

For environmental and cost reasons, new glamping properties should always try to use renewable electricity generation technologies. These must all generally be combined with batteries for electricity storage because they can only intermittently generate power, e.g., photovoltaic panels only work during the daytime and wind generators only work in suitable weather conditions.

The necessary renewable electricity generating capacity is then simply the sum of the average loads from all of the facilities to be put in place multiplied by a safety factor. Our financial model uses a safety factor of two, but this can be easily changed. In the authors' view this safety factor is more than adequate to provide power to recharge the electricity storage system while simultaneously satisfying all the ongoing electrical loads from the property. Transient peak loads, which nearly always occur at different times for different clusters of sites, can be readily handled by drawing additional power from the batteries as needed.

Our financial model further assumes that it is prudent to design the electrical system so that the batteries have the capacity to store two full days of average electricity consumption for the whole property, but this value can also be easily changed. If it ever becomes necessary, a portable fossil fuel powered generator can be used in emergencies to supplement the renewable energy generation equipment.

Similarly, as part of the facilities design, water consumption and storage values will be specified. Generally, water is only consumed by guests, and wastes are only produced by them. Guest water allocations generally include the water consumed for drinking, washing and handling wastes. Finally, Internet connectivity costs are generally fixed overheads and normally charges are set according to peak data transfer rates with little consumption variability. Again, guests are the primary Internet users, and it is typical to give guests a fixed allocation. Based on the total guest capacity of the property, computer vendors can advise on the total Internet connectivity capacity needed and the associated costs. Like electricity, all of these are also well-known considerations that will emerge as part of the property design.

Luckily, renewable electricity systems are relatively low maintenance and are already popular for remote locations so that maintenance and repair expertise is usually readily available. The same can be said for water, Internet and sewerage treatment infrastructure. Nonetheless, the local availability of expertise in these fields is an important question to be

answered during the feasibility analysis for any new glamping property.

c) The Financial Model

The financial model for off-grid glamping properties that is presented here is divided into three parts, as shown in Figure 1. First, it incorporates a flexible definition of the proposed property that considers access roads, the placement of centralized electricity, water, Internet, and sewerage treatment facilities, along with the positions of glamping site clusters and the individual units within each cluster. It also considers the phasing of the overall development of the property. Entrepreneurs wanting to use the model need to fully define the property they wish to develop.

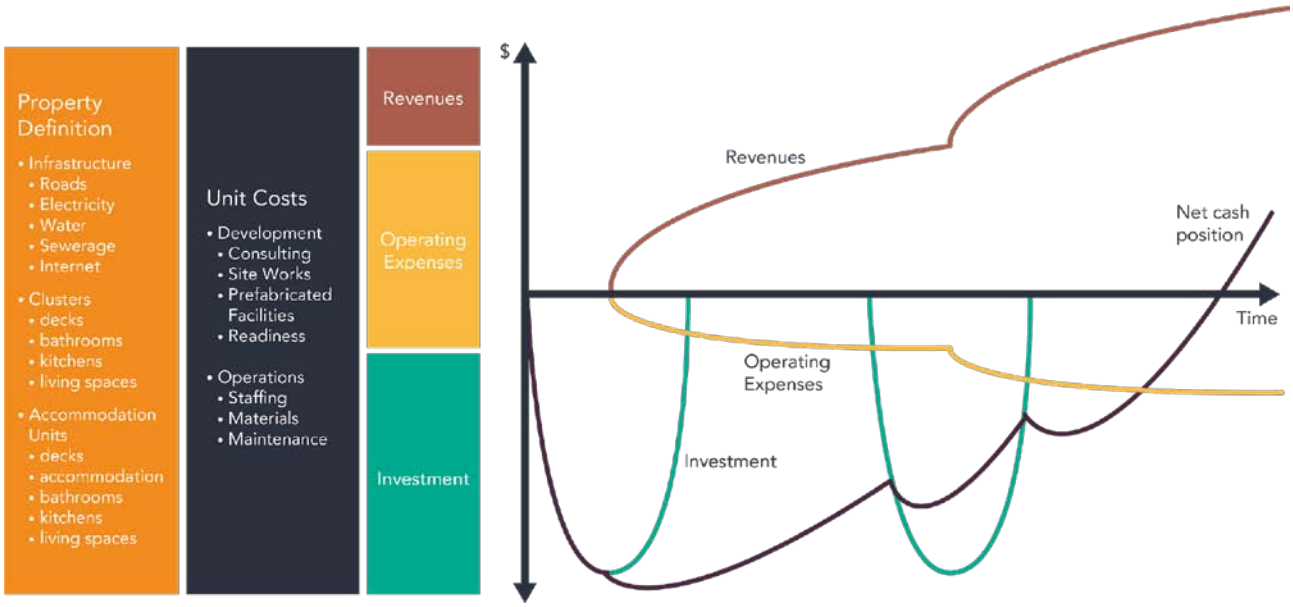

Figure 1: Off-grid Glamping Property Financial Model

For each phase of the property development, the property definition part of the financial model describes the centralized facilities and the clusters of accommodation units and the individual units within each cluster that are to be built. Entrepreneurs and their advisors can often define the design for their proposed property simply using a map to decide the best locations for access roads, centralized utilities infrastructure, and clusters of glamping accommodation units and deciding the best sequential phases to use for building them.

Second, the model considers unit costs for developing and operating the property based on local circumstances. Entrepreneurs using the model can ask advisors and potential suppliers for values for each of the property's development and operating costs. Generally, these correspond to items in the property description. For example, in Germany in 2022, based on surveys, the median installed cost for electricity storage battery systems bigger than 10kWh was about AU$ 1,300 (€870) per kWh (Lichner, 2022).

Third, the model estimates the 10-year investment and operating costs and returns for a proposed property for both optimistic and pessimistic operating scenarios and for different ways of phasing the development. Modern, well-made glamping tents often have a 10 year, or even longer, economic life, although some furniture and fittings may need more frequent replacement. Three development phasing scenarios are considered: (1) build the entire property at the beginning, (2) build the property in two halves, one at the beginning (year 0) and the other at year 5, and (3) build the property in three equal phases, at years 0, 4 and 8. It also considers optimistic and pessimistic occupancy growth, i.e. patronage gradually rising to meet projected occupancy targets over 2 years and 4 years, respectively. It summarizes the estimated investment, operating expenses and income profile for these scenarios and determines estimates for the maximum investment that must be financed and the IRR (Internal Rate of Return) for this investment. The financial modelling duration and development phasing can be changed in the model.

As illustrated by the graphs in Figure 1, once all the investments, revenues and costs are reasonably estimated, it is a simple matter to model the movements of money into and out of the venture over time. The graph in Figure 1 shows these cashflows over time. The estimated investments made to build property phases are shown in red, and revenues are shown in green and operating expenses are in yellow, and finally, the net cash position is shown in black. For any given point in time, the investment made to establish the venture, less the profit accruing after subtracting the subsequent operating costs from the corresponding operating revenues, gives the net cash the entrepreneur still has in

the business. For a venture to be worthwhile, entrepreneurs should recoup their entire investment within a reasonable payback period and thereafter the venture should generate an acceptable free cash flow that can continue to be withdrawn.

III. Modelling a Proposed Off-Grid Glamping Property

Following Noordzy and Whitfield (2021), the development of a new hotel can be divided into Conceptualization, Delivery and Operations stages. During Conceptualization, the nature of the property is defined, and the financial and other other aspects of its viability are evaluated to decide whether the venture should move forward. Then, the resources needed to develop the property are assembled and it is designed and constructed and made ready to accept guests during the Delivery stage. Finally, once it is fully ready, the property begins operating. A glamping property is not dissimilar to a hotel, in terms of planning and development, but here we refactor this development process to first consider the issue of managing the overall project, followed by conceptualising, and designing the property and then building it and preparing it to accept guests and, finally, modelling its ongoing operations. This refactoring is useful when adopting modular construction for the venture because this building methodology demands more "up front" design effort. It also makes the costs for managing the overall project more explicit and easier to quantify.

a) Project Management and Coordination

Generally, along with others, Noordzy & Whitfield (2021) strongly recommend appointing an experienced and competent project manager at the very beginning of every new hotel development project. The project includes settling on the land, conceptualizing, and designing the property and getting operating licenses and approvals, building everything, recruiting staff, and ensuring all technical, operational and commercial systems and supplier relationships are in place to handle paying guests and finally launching business operations. Managing the project generally involves setting up and overseeing and coordinating the work of many specialist consultants and suppliers.

The work effort to project manage a new hotel development is typically proportional to the scale of the property and in the authors experience it may cost 1%-3% of the total project investment. As well as general project management, there will normally be various specialist consultants involved in different aspects and stages of the project. This includes consulting for things like, market analyses to estimate customer demand, interior design and landscaping, engineering for electricity, water and sewerage, website and accounting systems design and the development of staffing planns and standard operating procedures and staff training. As noted in Table 1 below, this specialist consulting can generally be grouped as relating to the architecture, engineering and actual operation of the property. This is no different for an off-grid glamping property and the financial model developed here assumes that this is the case, as set out in Table 1. The specific proportional project management and coordination cost can be easily adjusted in the financial model. Table 1 sets the total project management and consulting fees at 10% of the total project value. Realistically, there is a minimum viable cost for this work so that the percentage cost may be much higher for very small glamping projects, say those with fewer than 5 accommodation units. This is because project management and consulting costs are relatively insensitive to the scale of the project and so they consume a larger percentage of the overall costs for smaller projects.

A further issue that must be addressed for a proposed glamping property is the land. Much of the detailed conceptualization and design for the property will highly depend on its specific location. Therefore, the developer must secure the rights to use the land within which the glamping property will be located, before moving forward with any detailed design and other work. This will mean purchasing or leasing the land, or at least securing an option on it at the very beginning. It also means getting at least "in principle" agreement that a glamping property is a suitable use for the land from the appropriate authorities. This is the same as for any traditional hotel development but may be easier because a glamping property may be viewed as being more "temporary." For instance, in Australia the government sets permissible land uses, including where accommodation can be put. Generally, these rules are much more flexible for "temporary" accommodation. It should be noted that changing the permitted land use for a given property can be a long drawn out and expensive legal process, if it can be done at all. Thus, whether a proposed glamping property will be permitted on the chosen land must be clarified at the very beginning to reduce the risk of wasted planning and design efforts.

Finally, in projects it is always prudent to budget for a contingency amount, only to be used if unforeseen problems arise (and they very often do).

Table 1: Glamping Development Project Management, Acquisition and Related Costs

General Project Management	(%age of project value)	3,00%	Land Purchases	$	$200 000,00
			Hotel licensing	$	$50 000,00
Architectural Consulting	(%age of project value)	3,00%			
Engineering Consulting	(%age of project value)	2,00%	Project Contingency	%	1,00%
Hotel Consulting	(%age of project value)	2,00%			
	TOTAL CONSULTING	10,00%			

b) Conceptualization and Design

Table 2 below identifies the information needed to define an off-grid glamping property for use in the financial model being presented here. Entrepreneurs should complete the information for their proposed property with advice from their chosen consultants and suppliers. Table 2 presupposes that the property comprises of clusters of glamping units branching from a single access road. Moreover, each unit may incorporate a deck with an accommodation tent/cabin, along with a bathroom and outdoor kitchen-dining and living areas that may be covered. Each cluster of accommodation units may also share a larger bathroom block, deck and outdoor kitchen-dining and living spaces, which may be covered. Also, there may be centralized utilities infrastructure for electricity, water, Internet, and sewerage with sub-facilities at each cluster. Finally, the whole property may be developed in several phases, i.e., an initial phase may be built and opened first, with subsequent phases being built later in line with guest demand growth.

Table 2: Definition of the Off-grid Glamping Property

Phase 0 – initial development	
Implementation year	
Central Infrastructure	
Main Access Road (m)	length shared by all campsite clusters and central facilities
Electricity Spur Road (m)	length from the main access road
Electricity Generating Capacity (kW)	needed to service average demand
Electricity Storage Capacity (kWh)	Needed to service overnight demand
Water Spur Road (m)	length from the main access road
Water Storage Capacity (kl)	kl
Sewer Spur Road (m)	length from the main access road
Sewer Processing Capacity (kl)	to service maximum demand
Internet Spur Road (m)	length from the main access road
Internet Capacity (MB/s)	to service maximum demand
Number of Clusters	Count of the Clusters
Site Cluster A	
Cluster Spur Road (m)	length shared by all sites in the cluster (m)
Cluster Parking Spaces	Number
Cluster Electric infrastructure ($)	Electric cabling and other equipment; central facility to cluster
Cluster Water Infrastructure ($)	Water piping, tanks and other equipment; central facility to cluster (m)
Cluster Sewer Infrastructure ($)	Sewer piping, tanks and other equipment; cluster to central facility (m)
Cluster Internet Infrastructure ($)	Internet cabling and other equipment; central facility to cluster (m)
Cluster Deck Area	Area (m2)
Bathroom Block (Quality Level)	Cluster Bathroom Block Level ID
Outdoor Kitchen (quality level)	Cluster Kitchen Level ID
Kitchen Roof (m2)	Cluster Kitchen Roof area (m2)
Outdoor Living Space (Quality ID)	Cluster Outdoor Living Space Level ID
Outdoor Living Space Roof (m2)	Cluster Outdoor Living Space Roof area (m2)
Number of Accommodation	Count of the Accommodation Units Within the Cluster
Site A.1	
Maximum Occupants	
Site Finger Road	private length from cluster to site (m)
Site Parking Spaces	number
Site Electric infrastructure	Electric cabling and other equipment; cluster to site (m)
Site Water Infrastructure	Water piping, tanks and other equipment; cluster to site (m)
Site Sewer Infrastructure	Sewer piping, tanks and other equipment; site to cluster (m)
Site Internet Infrastructure	Internet cabling and other equipment; cluster to site (m)
Site Deck Area (m2)	
Tent Area (m2)	
Bathroom Pod (Quality Level)	Bathroom Level ID
Outdoor Kitchen (quality level)	Kitchen Level ID
Kitchen Roof (m2)	
Outdoor Living Space (Quality ID)	Living Space Level ID
Outdoor Living Space Roof (m2)	
The same information above is repeated for every site in the Cluster	
The same information above is repeated for every Cluster in the development phase	
The same information above is repeated for every phase of the development	

Once the specific location for the proposed property has been decided and a suitable team of advisors and suppliers has been chosen, it is not difficult to conceptualize and define the property based on Table 2. As well as experts in architecture and hotel operations, advice from experts in several other fields is needed, including road builders, cable and pipe laying contractors, utilities infrastructure suppliers for electricity, water, Internet and sewerage, and manufacturers and installers of prefabricated decking and roofing, tents/cabins, outdoor kitchens and living spaces and bathroom facilities.

While the actual construction of the glamping units may be spread over time, it is far more efficient to plan the overall property and carry out the detailed design of all the clusters of units at the beginning. It is a well-known maxim of project management that good and thorough initial planning is the best way to prevent future problems in project execution, which are the source of many time and cost overruns; in the building industry, prevention is generally far less expensive than rectification work.

Once the conceptual arrangement of the finished property features and facilities have been settled, the detailed design and costing for everything must also be estimated, as set out in Tables 3 (a), (b) and (c). These tables divide the unit costs for constructing the property into three major parts - land formation and utilities distribution (part a), utilities equipment (part b) and guest facilities (part c).

Land formation and utilities distribution includes building all roads and pathways and landscaping, area clearing and constructing building and deck foundations and laying any needed electrical and Internet cabling, water and sewerage piping and, possibly, dams. Generally, these are all priced on a unit distance, area or volume basis as noted in Table 3 (a).

Table 3 (a): Property Unit Construction Costs - Land Formation and Utilities Distribution

Roads	$/m	$ 5.00	$ 4.00	$ 3.00				Making roads and ancillary works. including cable/pipe laying Main = main road running through the property Branch = minor road branching from the main road to a cluster of sites Spur = small road within a cluster to an individual site
Electric Cabling	$/m	$ 2.00	$ 2.00	$ 2.00				
Internet Cabling	$/m	$ 1.00	$ 1.00	$ 1.00				
Water piping	$/m	$ 2.00	$ 2.00	$ 2.00				Landscaping & clearing. piling. utilities distribution interconnects
Sewer piping	$/m	$ 3.00	$ 3.00	$ 3.00				NA =No facilities cluster, no amenities XS = extra small size site/cluster 2-person site, no amenities S = small site/cluster 4-person site, no amenities M = medium site/cluster 2-person site, full amenities L = large site/cluster 4-person site, full amenities XL = extra large site/cluster cluster, full amenities
Dams	$/Ml	$10,000.00	$15,000.00	$ 20,000.00				
		NA	XS	S	M	L	XL	
Preparing a site	$	$ 0.00	$ 1,000.00	$ 2,000.00	$ 3,000.00	$ 5,000.00	$ 6,000.00	

As shown in Table 3 (a), our financial model caters for three different levels/kinds of road and cable and pipe networks within the property. This should be more than adequate for most situations, but more categories can be added as needed. Similarly, the model caters for five different kinds of accommodation unit, cluster and other facility foundations based on their size and/or complexity. Again, this should be adequate, but more can be added as needed. Finally, it caters for up to three different kinds of water storage dam, but in many cases no new dams will be needed for the venture. Generally, property designers should aim to minimize the different kinds of siteworks needed to simplify the project and streamline the work.

Good utilities vendors can help entrepreneurs to design suitable utilities infrastructure for a given proposed property, as summarized in Table 3 (b). They can propose suitably sized and located equipment for electricity generation and storage. This may be located centrally, or dispersed among clusters of glamping sites, depending on the relative costs of the equipment and distribution cabling. Similarly, they can propose suitably sized water pumping and storage equipment and advise on where it should be located. A key decision for water is whether rainwater is collected and used or if water is purchased from the local government (or equivalent entity) under a rights agreement. Other contractors can advise on capacities and locations for sewerage collection piping and settling tanks and other processing equipment and how it should be dispersed among clusters of glamping sites. Finally, the equipment and cabling to support Internet connectivity and Wi-Fi networking within the property can also be proposed by other suitable suppliers. Generally, suppliers can quote for the provision of utilities infrastructure in terms of unit costs for central, cluster and individual site equipment. All this is summarized in Table 3 (b).

Table 3 (b): Property Unit Construction Costs - Utilities Equipment

		XS	S	M	L	XL	
PV Array	$/kW	$ 3,000.00	$ 2,500.00	$ 2,000.00	$ 1,750.00	$ 1,500.00	Making roads and ancillary works, including cable/pipe laying
Battery	$/kWh	$ 3,000.00	$ 2,500.00	$ 2,000.00	$ 1,750.00	$ 1,500.00	Main = main road running through the property
Water tank	$/kl	$ 0.00	$ 3,000.00	$ 2,000.00	$ 1,000.00	$ 0.00	Branch = minor road branching from the main road to a cluster of sites
Sewer Settling Tank	$/kl	$ 0.00	$ 6.00	$ 0.00	$ 0.00	$ 0.00	Spur = small road within a cluster to an individual site
Sewerage Processor	$/kl	$ 0.00	$ 8.00	$ 0.00	$ 0.00	$ 0.00	
Internet Groundstation	$/kl	$ 0.00	$ 3,000.00	$ 0.00	$ 6,000.00	$ 0.00	
Internet Mesh Node	$/kl	$ 0.00	$ 750.00	$ 1,000.00	$ 1,250.00	$ 0.00	

Generally, everything except the onsite preparation works will be fabricated offsite and then delivered, installed and commissioned by the different suppliers as part of constructing the property.

Table 3 (b) explains how our financial model caters for five different capacity "bundles" for each kind of utilities equipment. These can be distributed around the property as needed at central locations or at different sites and clusters. For example, it may be that a hierarchy of electricity storage batteries is the most appropriate design choice, with a large central battery linked to mid-size batteries at each cluster and small batteries at each individual site. Again, five bundles for each different kind of utility equipment should be more than adequate for most properties, but more can be added as needed.

The final group of prefabricated modular construction suppliers make the different guest facilities offsite and then deliver, install, and commission them, as outlined in Table 3 (c). The different guest facilities include (1) decks, (2) roofing, (3) tents/cabins, (4) bathrooms, (5) outdoor kitchen/dining spaces and (6) outdoor living spaces, which may be provided by several different suppliers. Each of these facilities may be specific to a single glamping unit or for the guests staying in a cluster of units e.g., each unit may have an individual bathroom, or a single cluster-wide bathroom block may be shared by all the guests staying at the accommodation units within the cluster. The split between unit and cluster facilities must be decided as part of the property design. Moreover, to increase manufacturing efficiency and for other reasons, it is normal to settle on a few different specific designs for each kind of guest facility and repeatedly use them in different parts of the property. Furthermore, for simplicity and efficiency it is also normal to specify fully fitted out facilities that include all furniture and fixtures and equipment. Suppliers will typically quote separate pricing for the manufacturing, delivery, and installation of each different guest facility design.

Table 3 (c): Property Unit Construction Costs - Guest Facilities

		XS	S	M	L	XL	
Deck	$/m2	$ 300.00	$ 275.00	$ 250.00	$ 225.00	$ 200.00	Guest Facility "bundles"
Roof	$/m2	$ 2,000.00	$ 1,750.00	$ 1,500.00	$ 1,250.00	$ 1,000.00	XS = extra small size
Tent	$	$ 0.00	$ 2,000.00	$ 1,500.00	$ 0.00	$ 0.00	S = small size
Bathroom	$	$ 0.00	$ 1,250.00	$ 1,000.00	$ 750.00	$ 0.00	M = medium size
Outdoor Kitchen	$	$ 0.00	$ 1,250.00	$ 1,000.00	$ 750.00	$ 0.00	L = large size
Outdoor Livingroom	$	$ 0.00	$ 600.00	$ 500.00	$ 400.00	$ 0.00	XL = extra large size

Again, as shown in Table 3 (c), five different size/quality "bundles" for each different kind of guest facility are catered for in our financial model, but more can be added if needed. As an example, it is easy to think of a small, simple bathroom pod for a 2-person unit and a larger, more extravagant bathroom block to be shared by up to ten guests staying in three clustered units.

When working with module manufacturers for prefabricated modular construction, it is essential that you select reliable and experienced partners (Noordzy, Whitfield, Saliot & Ricaute, 2021; Whitfield & Noordzy, 2022). Prototype modules should first be made and evaluated, and then volume production should be closely monitored to ensure that the agreed delivery schedules are met. Also, the working of each individual module should be thoroughly tested before it is released for shipment to the project location. Normally, final onsite assembly and testing should also be included as part of the price paid to the supplier(s). All of this can be incorporated in the contractual arrangements with the module manufacturers. In this way off-grid glamping properties will include arrangements with several different module suppliers, and their work must be coordinated.

Once suitable suppliers have been selected and they have all collaboratively worked out the detailed design of all the onsite works and the prefabricated offsite works, the preceding Tables 3 (a), (b) and (c) can

be fully completed and the total cost to construct the property can be simply calculated.

Next, the effort needed to prepare the property to accept paying guests can be estimated, as outlined in Table 4. Traditionally, in hotel development this is ensuring that the fully constructed property is technically, operationally, and commercially ready to accept paying guests.

Table 4: Property Readiness Costs

Technical Readiness								
	Contingency		%age of total project cost	0,25%				
Operational Readiness					Commercial Readiness			
	Staff					IT Systems		
		Recruitment	$/person				Website	$
		Pay Rate	Average $/hour				Accounting	$
		Hours/Site-Day	hours/day				Hosting	$/month
	Utilities – Electricity, if applicable							
		Setup	$			Average Room Rate		$375,00
		Consumption	$/kWh			Annual Inflation		3,00%
						Tax Rate		10,00% of turnover
	Utilities – Water					Marketing Commissions		2,00% of turnover
		Setup	$					
		Consumption	$/kWh		Operating Simulation			
						Guest cost		$/guest-day $100,00
	Utilities – Internet					Duration		days 1
		Setup	$					
		Consumption	$/month					
	Consumables							
		Setup						
		Consumption	Average $/guest-day					

Once a hotel has been built, technical readiness traditionally involves procuring and installing all furniture, fittings, and equipment (FF & E) and hotel operating supplies and equipment (HOES). However, in pre-fabricated modular construction it is much more efficient to largely fold this work into the manufacture, delivery and installation of all the building modules. The financial model being presented here assumes that this is largely the case so that all of the furniture and fittings and equipment are included in the costs for supplying the different facilities. For example, for a glamping unit, it is much more cost-effective to include the cost and delivery of the bed within the tent costs and have them delivered together, rather than have a separate bed purchase and delivery contract.

Operational readiness is, generally, hiring and training staff and setting in place arrangements for procuring operating supplies and initially stocking all the facilities. Hotel operating experts can advise on the staffing levels and operating supplies needed for the proposed glamping property and give estimates for the related costs as noted in Table 4. Because of the limited services typically offered by glamping properties, the staffing levels are usually low and only relatively small quantities of operating supplies are needed.

Internet connectivity is often needed for glamping properties, and water may be obtained through a rights entitlement. In both cases, connections and metering equipment must be installed and configured and then ongoing consumption must be paid for. These investments and operating costs are included as part of operational readiness in Table 4. If the property is connected to the community electricity grid, instead of having its own generating capacity, there will also be electricity grid connection and consumption charges.

Normally, commercial readiness is setting up the hotel marketing, accounting, and related systems. Again, hospitality industry consultants can advise on the systems needed for the proposed glamping property and provide estimates for the related costs as noted in Table 4. Because of the limited services typically offered by glamping properties, these systems are often simpler than for a comparable full service hotel. Commercial readiness also often includes deciding on room rates and prospective guest demand and thus potential revenues. Similarly, the taxes payable must also be defined, based on local regulations. Finally, there are often marketing commissions paid to organizations that steer guests to the property, which are typically a percentage of the room rate. Hospitality consultants can advise on all commercial aspects of readying a glamping property for ongoing operations, as defined in Table 4.

Lastly, it is very typical to carry out a guest simulation before opening a new hotel, and this should also be done for glamping properties. This involves inviting guests to stay at the property for free on the understanding that they will use and evaluate all the property's features and facilities and report any problems. Hospitality consultants can advise on the scale of any quest simulation, including the number of

guests to invite and suitable durations for their stays. This is also set out in Table 4.

Once all of the information in Tables 1-4 has been determined for the proposed property, the financial model can be run to give estimates for the timeline and amounts for the investments to develop the property, and its operating expenses and potential revenues. Thus, the potential investment returns for the prospective property can be evaluated to come to a final decision on whether to proceed with the venture.

IV. Off-Grid Glamping Investment Sensitivity Analysis

This section of the paper presents a sensitivity analysis of a typical remote glamping property using our financial model. It analyses a hypothetical property that comprises of a total of six clusters each containing three individual glamping units, as shown below in Figure 2. This 18-unit property sits comfortably within the 10–30-unit range that is common for such properties. It is also similar ro many that actually exist.

This property is designed to attract high spending, socially and environmentally responsible visitors who are looking for authentic, relaxing and novel holiday experiences in "down to earth" natural locations with a variety of nearby attractions. While it is not explicitly discussed here, it is assumed that this glamping property is located in attractive natural bushlands with nearby farm style restaurants and is close to vineyard/wineries or golfing or health/wellness resorts and other attractions within 1-2 driving hours of a major city.

The six clusters are grouped into three pairs that branch off each side of the main access road at the same location. Every cluster has 1 unit which can accommodate up to 4 visitors, and 2 units which can only manage 2 visitors each, so, in total, every cluster can sleep up to 8 guests spread over its 3 units. Three of the clusters (one of each pair) have shared bathroom, outdoor kitchen-dining and outdoor living space facilities, which are shown in green in Figure 2, so that they can be used by larger groups of visitors. In these clusters the individual units do not have their own bathrooms or outdoor kitchen-dining or outdoor living spaces. By contrast, all of the units within the other three clusters (the other of each pair) have their own individual bathroom, outdoor kitchen-dining and outdoor living spaces and no shared facilities. This hypothetical glamping property presupposes that the market analysis indicated significant demand for larger group bookings. If this is not the case, the mix of accommodation unit designs and the split between individual units and cluster shared facilities would, of course, be very different.

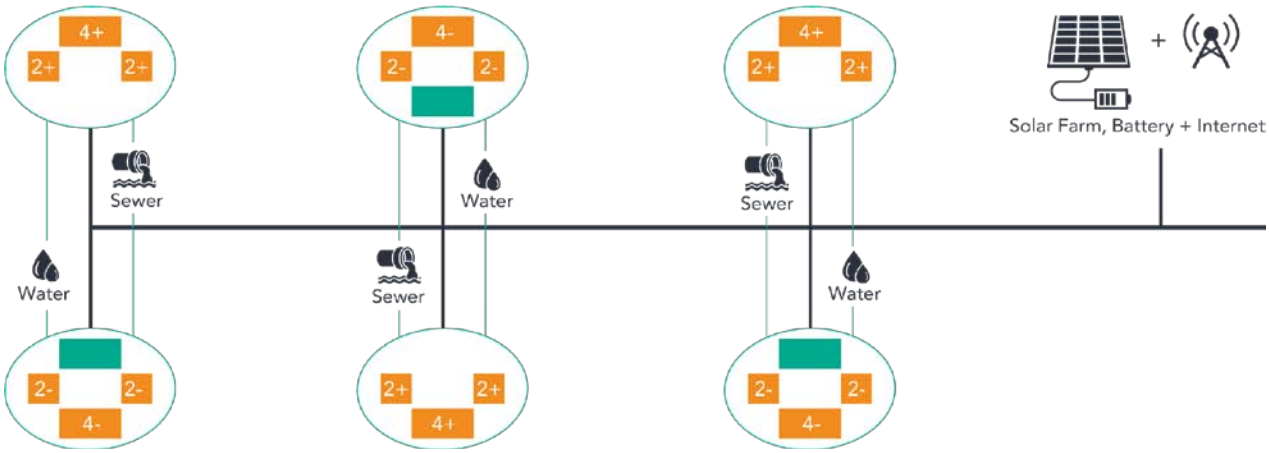

Figure 2: Glamping Property Design for the Sensitivity Analysis

Furthermore, the main access road stretches for 3km alongside a hypothetical river, with pairs of unit clusters branching off at the 1, 2 and 3 km marks. There is a single property wide solar farm and battery near to the main entrance, as shown in Figure 2. The financial model estimates that the complete property requires 15kW of generating capacity and 60kWh of electricity storage. Also, there are main water holding tanks at each pair of clusters which draw water from the river, which is paid for according to a water entitlements agreement. The model estimates that each pair of unit clusters needs 5kl of water storage and may draw 1,500l/day from the river, on average. Similarly, there is a small 500l/day sewerage treatment plant to serve each pair of unit clusters. Finally, there is one Starlink ground station at the solar farm with an Internet traffic switch/concentrator at each pair of clusters and Wi-Fi mesh nodes at each site.

The analysis considers the investments, operating income, and expenses over a 10-year period for three development scenarios for this whole property, namely:

- All clusters/units constructed at the beginning,
- Three clusters of three units constructed at the beginning and the remaining three clusters of three units constructed in year 5, and
- One pair of clusters of three units built at the beginning, another pair of clusters of three units built in year 4 and the final pair of clusters of three units built in year 8.

Each of these three development scenarios is modelled with both rapid and slow occupancy growth, where rapid growth is defined as taking 2 years to reach full occupancy and slow growth is taking 4 years to reach full occupancy. Further, full occupancy is defined as an average of 65% of the total number of available units being rented every night, or each unit being rented 3-5 nights/week. In the authors' experience, these growth and occupancy projections are reasonable for this kind of offgrid glamping property. The horizontal axis of the three graphs in figures 3, 4 and 5 are time measured in quarter years, so that the 10-year financial modelling horizon spans forty quarters.

If the property is developed all at once, all of the utilities, infrastructure and guest and other facilities are built at the same time. Alternatively with phased development of the property, smaller central electricity and internet infrastructure facilities are initially built, and then expanded as each pair of unit clusters is added to the property. Similarly, the access road is extended, and the water and sewerage infrastructure are added as each pair of unit clusters is developed.

An Excel® spreadsheet containing all of the property definitions and costs is available from the authors. This spreadsheet can be used to create the graphs in the following Figures 3, 4 and 5. Interested readers can review full details of the financial model and the values of all the variables for the hypothetical property analysed in the spreadsheet. As can be seen, these graphs show timelines of the property development investments along with the optimistic and pessimistic operating revenues and expenses projections for each of the three development scenarios considered. It also shows the net investment position during each year for each of the three different development scenarios.

Based on our general understanding of 2022 Australian construction costs and operating labour costs, the spreadsheet model gives a ballpark total investment of about AU$150,000/per unit on average. About 40% of this money is spent on tents/tented cabins, with a similar amount for other guest facilities (bathrooms, outdoor kitchens, and dining, etc) and the final 20% is needed to pay for the site preparation and utilities infrastructure. The spreadsheet model further estimates the average room revenue at AU$375 per unit, per night, with each unit being occupied for up to 65% of the year as noted above. As expected, the operating costs in the spreadsheet are low, generally being less than 10% of revenues. The reasonableness of all the costs and revenues in this analysis have been confirmed with experienced industry practitioners.

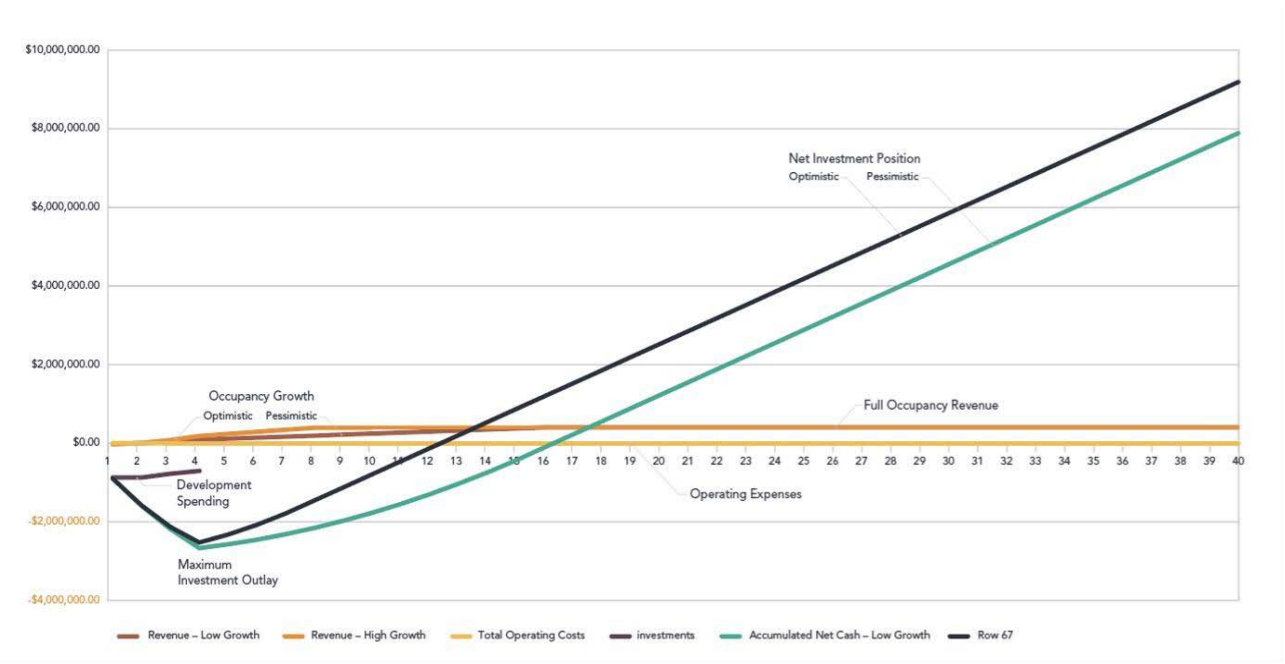

Figure 3: Investments, Revenues and Expenses for Initially Building the Whole Property

As noted in Figure 3, the first scenario is developing the entire property at the beginning. As expected, this scenario has a large initial cash outlay of around $2.66 million to build the whole property. This investment is then gradually repaid from the operating profits, more slowly at first as the property occupancy

increases, and then more rapidly once the property reaches stable "full" occupancy. As can be seen in Figure 3, under the optimistic occupancy growth assumption, the initial investment is entirely repaid after about 3 years (12 quarters), while under the pessimistic occupancy growth assumption this milestone is only achieved after just under 4 years (16 quarters).The IRR for the optimistic occupancy growth assumption is a very healthy 9.01%, and it is 5.56% for the low growth assumption. Finally, if a 4% discount rate is used, over the 10-year investment horizon, the NPV (Net Present Value) of the venture is $8.42 million under the low growth assumption but this rises to $26.70 million if the high occupancy growth rate can be achieved.

Careful readers will notice that in the sensitivity analysis the property is open and serving guests before the initial investment is fully completed, which is quite desirable because it significantly reduces the time till first income is generated. This is possible because of the nature of the property and is rarely possible with traditional hotel development. Because most of the construction work is actually done offsite, it is quite feasible to open the pair of clusters nearest to the gate after they and the solar farm have been made and installed. Work on extending the access road and finishing the other pairs of clusters can quite readily be done while the property is already open and serving guests staying in the finished sites. Readers may also recognize that the overall development project duration is very short compared to the time needed to build a comparable traditional hotel. Rapid build-out is a well-known benefit of prefabricated modular construction.

Achieving payback within 3-4 years is an excellent outcome compared to a similar traditional hotel. This is because the initial investment is relatively low, perhaps being less than half that needed for a small, traditionally built hotel. As important, the operating costs are also very low because of the much-reduced services compared to a traditional hotel (which consequently greatly reduces the staffing needed). By contrast, the room rates achieved are comparable to, or even higher than, a similar traditional hotel because of the novelty and attractiveness of the guest experience. In the authors experience, the IRR for the proposed off-grid glamping property is significantly higher than a comparable traditionally designed, constructed and operated hotel.

As noted in Figure 4, the second scenario splits the development of the property into two halves. As shown, there is an initial investment to build the first three clusters of three units and then there is a second investment in year 5 to build the remaining three clusters of three units. The maximum cash outlay for the developer is around $1,343,000 by the end of the first year (fourth quarter), and again this amount is fully repaid from operating profits in 3-4 years for the high and low occupancy growth assumptions, respectively. Also, as noted in Figure 4, a second cash outlay is needed at the end of year 5 (20 quarters) to build the second half of the property but the accumulated profits from the initial 5 years of operations can be used for most of it. The cost penalty for splitting the construction over two phases is minimal because of the nature of the development. This is very different to the situation for the equivalent traditional hotel construction, where all the accommodation units are typically in a single large building.

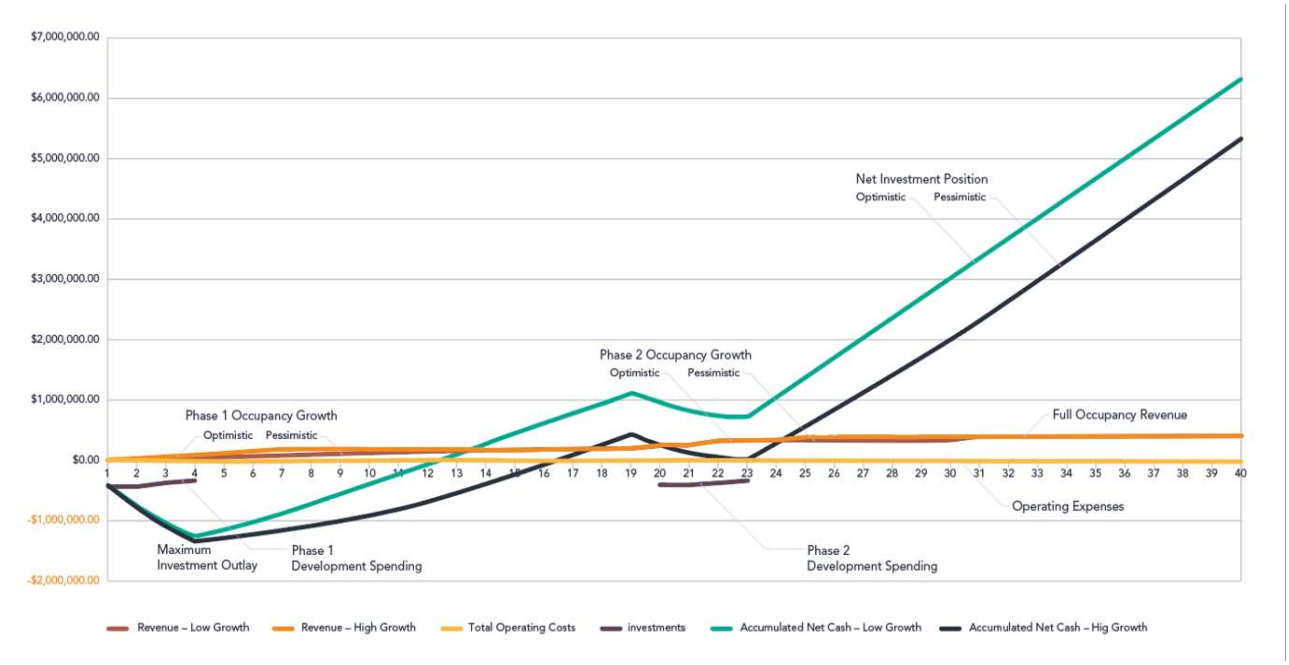

Figure 4: Investments, Revenues and Expenses for Building the Property in Two Equal Phases

This second development scenario follows a similar pattern to the first, where initial investments are made to build the property, and these are gradually recouped from operating profits. However, the maximum investment in the first year is about half that of the first scenario because the major cost, namely the property construction, is split over two equal phases that are carried out 5 years apart.

When the property is built in two halves, the high occupancy growth assumption also gives a very healthy IRR of 8.69% and the low occupancy growth scenario give an IRR of 4.93%. These values are relatively little changed from the case where the property is entirely built at the beginning, but the cash that actually needs to be paid out by the developer is approximately halved. Building the property in two stages is very beneficial if the developer has limited resources. The corresponding NPV values building the property in two halves are about $2.57 million and $13.4 million for the low and high occupancy growth assumptions, respectively. These values are significantly lower than building the whole property at the beginning because it operates with fewer units for the first half of its operating life. At the end of the 10-year modelling horizon, half of the units are only 5 years old and so they have significant unused working life. Extending the time horizon for the financial modelling will increase these NPV estimates.

The third development scenario, shown in Figure 5, involves building one third of the property initially, and the next third after 4 years and completing the final development phase after 8 years. As can be seen, the investment is again fully paid back after 3-5.5 years, for the high and low occupancy growth assumptions, respectively. The IRR for this third development scenario is still a very healthy 8.64% and 4.37% for the high and low occupancy growth assumptions, respectively. And finally, using a 4% discount rate, the NPV for the investment is $9.58 million and $0.72 million for the high and low growth assumptions.

When the property is built in three phases, the initial cash outlay further reduces to $917,000 to build the first part of the property. If the high occupancy growth rate can be achieved, the second investment outlay in the fourth year can be paid entirely from the accumulated profits; otherwise, a cash injection of $3-400,000 will be needed. It should be possible to entirely pay for the construction of the final part of the property in year 8 from the accumulated profits, irrespective of the occupancy growth achieved.

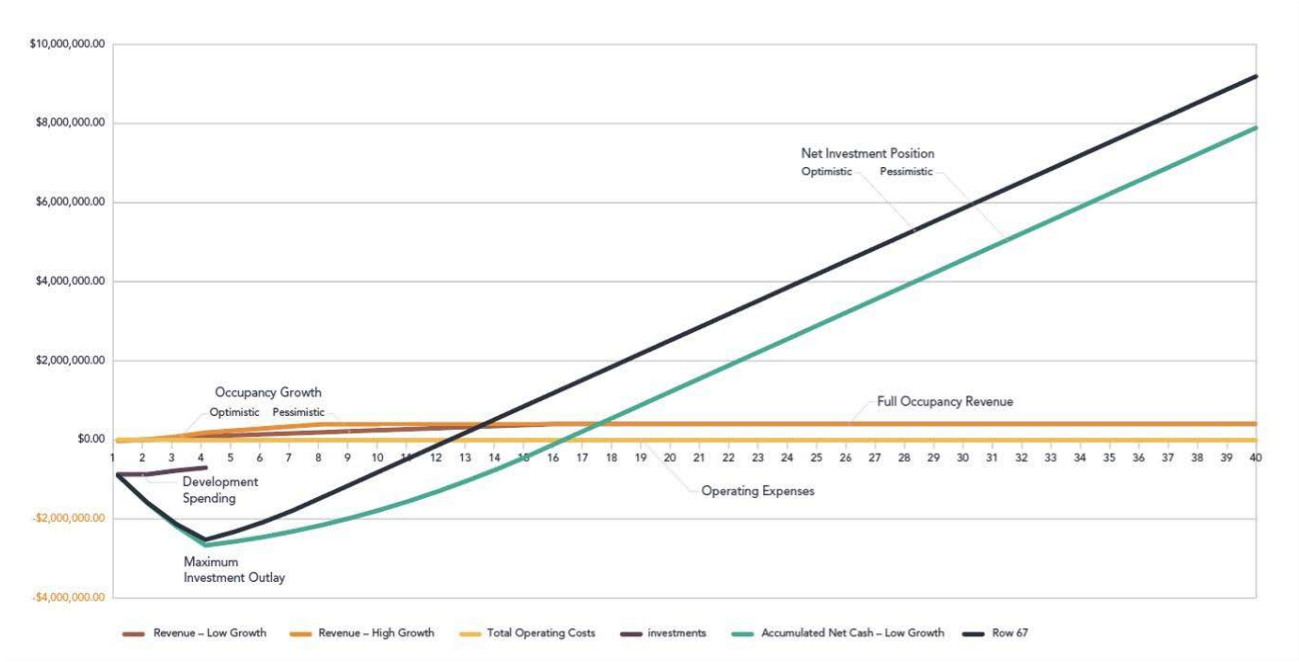

Figure 5: Investments, Revenues and Expenses for Building the Property in Three Equal Phases

Table 5 summarizes the financial results for the three different development scenarios and the low and high occupancy growth assumptions. As expected, building out the property in several phases significantly reduces the maximum cash outlay for the developer. Moreover, initially operating at smaller scale and progressively growing the property in line with demand growth has little impact on the overall payback period. It also has little impact on the IRR. These are all very healthy investments that pay for themselves quickly.

Table 5: Financial Modelling Results Summary

Development Scenario	Maximum Cash Draw	Payback Period		Internal Rate of Return		Net Present Value	
		Low	High	Low	High	Low	High
Buld All at Beginning	$ 2,656,000	3	4	5.56%	9.01%	$ 8,417,000	$ 26,696,000
Build in Halves	$ 1,343,000	3	4	4.93%	8.69%	$ 2,659,000	$ 13,396,000
Build in Thirds	$ 917,000	3	5,5	4.37%	8.64%	$ 717,000	$ 9,574,000

However, building the property in phases does reduce the NPV of the investment. This is to be expected because progressively building the property means that it operates at significantly smaller scale for long periods, which pushes the investment returns further into the future and reduces the NPV. For example, when the property is built in thirds, six of the sites are only 2 years old at the end of the 10-year modelling horizon. Extending the time horizon for the financial model increases the NPV values.

Because of the nature of the property and the way it is designed and constructed there are minimal cost penalties in building it in phases. Moreover, constructing the property in phases has the benefit of greatly de-risking the venture – the entrepreneur can "test the waters" with a small property and then grow its capacity in line with actual customer demand growth. If customer demand is especially strong, it is quite feasible to accelerate construction of the later property phases, or to delay (or even abandon) them if occupancy growth is weak. Thus, prudent off-grid glamping property developers should phase their investments and only expand once guest demand has proven itself.

As important, building the property in phases has the added advantage of enabling the entrepreneur to evaluate the market demand for different accommodation unit and cluster designs. The first development phase can include several varied unit designs. Then actual customer feedback on their relative popularity can be used to adjust the unit mix built in later phases to speed up occupancy growth and thus maximize the overall return on investment.

V. Conclusions

In this paper we have noted the rising popularity of off-grid glamping and developed a detailed financial model that clearly shows the substantial benefits of adopting this approach in comparison to a traditional hotel development in these circumstances. These benefits include much reduced development and operating costs while achieving premium nightly rates. As important, the ability to easily and cost-effectively phase the development of the property to significantly de-risk the venture and to adjust the property's room capacity and mix of unit types to match actual customer demand is a key benefit that cannot be ignored. Of course, there are several other important benefits of adopting prefabricated modular construction and using only semi-permanent hotel facilities, including low environmental impact and very quick construction of a relatively high-quality property at a relatively low cost and, often, simplified development and operating licensing procedures. Overall, in the authors' view, entrepreneurs should nearly always choose to build a glamping property instead of a traditional hotel when it is to be located in a remote, off-grid, natural location that has a moderate to warm climate.

The approach proposed here for offgrid glamping properties also maximizes their "ecotourism" credentials. Site disturbances are minimized, use of "environmentally friendly" construction materials is maximized, and sustainable electricity, water, sewerage and Internet infrastructure is maximized. All electrical distribution cabling is also put underground to minimize fire risks.

The financial model also clearly demonstrates that developing an off-grid glamping property is very different to traditional hotel development and considerable changes in how the project is approached, planned and executed are needed. In particular, the engineering and architecture are very different, along with the adoption of prefabricated modular construction, so that the development team needs very different skillsets. The selection of very good site preparation and module manufacturing contractors and closely monitoring their performance is also crucial to the success of the project. Because they are so heavily relied upon, all the construction and other contractors should be very well respected and have strong experience in comparable projects and they should be extensively vetted before they are engaged.

The financial model presented here provides a comprehensive roadmap that entrepreneurs can follow to cost-effectively conceptualize, design, and develop an off-grid glamping project. It can also be used to evaluate the financial viability and potential rewards for developing a proposed property and making the key decision of whether or not to proceed with a given venture. We strongly encourage entrepreneurs to adopt the approach advocated here for their future offgrid glamping ventures.

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Factors Affecting the Competitiveness of the Seaport: A Case Study in Ho Chi Minh City, Vietnam

By Ho Dinh Phi, Van Phan Thi Hai, Bich Dinh Nguyet & Hien Vo Thi Dieu
Van Hien University

Abstract- This study uses primary data from a survey of 370 observations in Ho Chi Minh City, Vietnam, and adopts the Exploratory Factor Analysis, Confirmatory Factor Analysis (CFA), and Linear Regression Modeling (LRM) with Bootstrap analysis for a reliable test of LRM. Its result shows that factors affecting Seaport competitiveness included Geographical Location, Connectivity, Information Technology, Facilities, Reputation, and Port authority.

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GJMBR-A Classification: JEL Code: R4

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I. Introduction

A Seaport is a gateway for import and export activities, which is a transit point between sea routes and rail, road, and inland waterway networks. As a coastal country, Vietnam has nearly half of its provinces and cities with seas with a total coastline length of over 3,260 km running along the length of the country. It has a large sea area with many peninsulas, bays, and deep, sheltered bays that face the international maritime route between the Indian Ocean and the Pacific Ocean. From Vietnam's coastal ports on the East Sea, it is easy to go through the Malacca Strait to the Indian Ocean, the Middle East, Europe, Africa, etc., and through the Bashi Strait to the Pacific Ocean to ports in Japan, Russia, and America. However, the development and usage of seaport services have not been commensurate with their available potential and advantages; The seaport system is still scattered and fragmented; Transport infrastructure and industrial parks have not been developed in line with the seaport system; Its technology, equipment, and services are still outdated; Customs service quality is limited and customs clearance costs are high; Scattered investment and unreasonable structure are characterized by an excess of small ports and a lack of large ports and deep-water ports; The modernization of the seaport system is slow, so it is not qualified to receive the world's medium and large tonnage ships, etc. (Nguyen Duc Phu, 2023). This leads to the top issue for seaport development which is building their connectivity and improving their competitiveness. These are also challenges for researchers and seaport managers. This study focuses on (i) Determining the factors affecting its competitiveness; (ii) Building a quantitative model of the above relationship; and (iii) Implications for policies to improve Ho Chi Minh City seaport competitiveness. This study uses primary data from a survey of 370 observations (Seaport experts, port authority managers, managers of domestic shipping lines, and managers of foreign shipping lines) in Ho Chi Minh City to build a practical basis for modeling. Ho Chi Minh City is the economic center of Vietnam, which is adjacent to the sea with a rich river system and has the most developed seaport system in the country with 42 ports and port clusters covering a length of about 13km, which support logistics accounting for nearly 60% of the South Region. Ho Chi Minh City ranks 22nd and 26th among the 50 best container ports in two consecutive years 2020 and 2021, which was awarded by the World Shipping Council 2022, a member of the International Association of Ports and Harbors (IAPH) and ASEAN Port Association (APA). Ho Chi Minh City's seaport system has a significant growth, especially the amount of goods throughput has increased steadily over the years, with more than 93 million tons in 2015, it had increased to more than 163 million tons between 2020 and 2022 (of which container goods are 7.8 and 8.11 million TEUS), a number of goods through Ho Chi Minh City seaport system is forecast for steady growth in the years to come (Vietnam Maritime Administration, 2023).

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II. Literature Review

1. *"Industrial Cluster" Theory:* According to Porter (1998), an industrial cluster is a group of companies and institutions that are geographically linked in a specific field and interconnected by their similarities and mutual support to improve their competitive advantage. The "industrial cluster" theory assumes that the inevitable requirement for enhancing the competitiveness of an economic cluster is to have industrial linkages within it. Today's seaports are not only considered a junction in the transportation chain but also a multi-industry economic cluster including post-port logistics areas (industrial parks, export processing zones, and logistics centers) and multi-modal transport (sea, railway, river, and air transport).

2. *Stakeholder Theory:* According to Freeman and Reed (1983), stakeholder theory refers to any group or individual that can influence or be affected by the achievement of an organization's goals. Different stakeholders have different interests, perceptions, and ideas on competitive advantages (Castro and Nielson, 2003), they find their interests without appreciating what is significant to others. Therefore, the interests of stakeholders create diverse sets of expectations, needs, and values (Harrison and John, 1994). This diversity of interests poses a potential problem where a failure to satisfy a particular stakeholder may disadvantage others due to resource scarcity and management skills (Freeman, 1984; Mahoney and Pandian, 1992). To balance the interests of different stakeholders, this theory suggests that managers should make decisions by taking into account the interests of their stakeholders (Sternberg, 2000). It recommends that modern companies must satisfy multiple stakeholders to survive in a volatile and uncertain environment (Foley, 2005). The importance of stakeholder orientation comes from several fields, with several studies showing that stakeholder orientation has a positive impact on outcomes (Clarkson, 1995; Greenley and Foxall, 1997). Stakeholder orientation is a condition for achieving the highest goals because stakeholders are not isolated from each other, the success of one stakeholder depends on the others (Polonsky, 1995). Stakeholder theory implies that all parties that are involved in the port system should be taken into account when determining seaport connectivity.
3. *Institutional Theory:* The institutions are sets of formal, and informal rules, regulations and norms, culture-based perceptions, and strategies of actors in an economic environment(North, 1991; DiMaggio, 1998; Scott, 2001; Strambach, 2010). Organizations can impose constraints on shared participation, limiting the degree of autonomy in decision-making and management control of other organizations (Greif, 2005; Saka-Helmhout and Geppert, 2011). Conversely, institutions also enable actors to choose how to act by removing existing barriers and facilitating access to material resources and relationships (Carney and Child, 2013). With their role in establishing ownership rights, institutions determine several aspects related to how competition between companies is shaped, thereby regulating their missions, fields, functions, and territories (Thorelli, 1986; Fligstein and Freeland, 1995). Institutions with different geographical locations have different procedures and outcomes, which emphasizes the relevance of geography in such analysis (Van der Lugt *et al*., 2014). With consideration to seaports, their authorities can be highly institutionalized organizations (Child *et al.,* 2012; Notteboom *et al*., 2013), which are bound by national rules and policies as well as local structures and values that influence both their behavior and outcomes (Hall, 2003; Ng, *et al*., 2013; Debrie *et al*., 2013). Consequently, port authorities themselves can be institutions for other actors, if they are authorized by governments to design regulations and standards for actors within the port's jurisdiction. They can potentially facilitate or hinder strategic options for developing connectivity in a port system. Because institutions are not always consistent, they can facilitate and hinder the strategies of actors (Rodrigues, 2013). From an organizational perspective, port authorities are territorial-bound institutions, in which distance, local agreements and costs committed to infrastructure are interconnected in determining the local institutional logic, including market participants (Notteboom *et al*., 2013). Some studies consider organizational connectivity as a factor that promotes innovation and new habits (Hall and Jacobs, 2010). As port operating companies acting as part of supply and transportation chains have a natural incentive to integrate networks (Carbone and De Martino, 2003; Notteboom, 2007; Song and Panayides, 2008; Veenstra *et al*., 2012), changes in port management with greater autonomy and governance rights are provided for port authorities. Similarly, it brings about opportunities to expand their role in shaping port products by expanding into the hinterland (Notteboom *et al*., 2013). Therefore, the organizational linkage between port authorities and port operators, which naturally exists in port areas, then expands into the hinterland. In this regard, the port authorities do not disrupt existing development paths but develop new capacities and operations through a process of institutional expansion. According to Wilmsmeier *et al*.(2014), port authorities invest in transshipment centers in the hinterland, which arise beyond their traditional jurisdiction, and the particular importance of informal networks is noted.
4. *Port Geography Theory:* Weigend (1956) believes that port geography includes key parts such as ports, aircraft carriers, cargo, inland, hinterland, land, and maritime spaces (Wiegmans *et al.,*2008). It is, therefore, necessary to study ports in the context of a network, rather than as an independent entity. Among them, geography has the most prominent meaning. An ideal port is that it has enough space for its operations and attributes of easy access, deep water, a small tidal range, and an unobstructed climate condition for the whole year. It should pay special attention to the origin and destination of goods, both incoming and outgoing goods. A port that is only a destination for incoming goods has a much narrower function and

opportunity for expansion and development than a port through which cargoes are shipped to and from. Additionally, the connectivity of the port and hinterland will be strengthened in case of their reduced distance, close relationship, and effective spatial planning. Weigend (1956) emphasizes that the effective planning and use of land have a strong influence on both port growth and function as well as that the maritime spatial planning and the growth of a port play an important role in the development of hinterland and maritime networks. The theory of port geography has been adopted by many scientists around the world to build models related to seaports (Kenyon, 1970; Hayuth, 1981; Hoyle, 2010; Ducruet, 2020).

5. *Theory of Competitiveness:* Porter (1990) introduced the Diamond model with new concepts and explanations about competitive advantage. Instead of focusing on cost minimization in closed economies, today's competition is dynamic and is based on innovation and the search for strategic differentiation as countries are opening up their economies. Porter argues that four interconnected factors represent the significant competitive advantages of countries in specific industries, which include conditional factors of market demand, related supporting industries, strategy, and structure along with business competition. It can be seen that, when applying the theory of competitive advantage to the seaport, the conditional factor is related to seaport facilities. The diamond model emphasizes the possible impact of a port's fundamental strengths and weaknesses on its competitive advantage, which also highlights the potential for competition and cooperation between port users and port service providers (Porter, 2000). In this case, the diamond model is a good solution for reflecting the real conditions because it realizes that port service providers can cooperate with each other and get mutual benefits while minimizing their destructive competition, thus changing the overall competitive structure of the port (Ng, 2006). However, the diamond model does not take into account the characteristics of international and multinational activities (Cartwright, 1993). Rugman and D'cruz (1993) introduced the double diamond model to demonstrate the nature of international competition in the port market. To getan international competitive advantage, the dual diamond model recommends that port managers and decision-makers establish their own national and international diamond mechanisms. This is consistent with the concept of supply and logistics chain because the weakness of any link in the chain will directly affect the performance of other links (Moon *et al*., 1998*)*. To include inter-nationality as a fundamental concept of port competitiveness, Rugman and Verbeke (1993) developed a model based on the Porter diamond model which builds local, regional, foreign, and global inventories for each corner of the diamond model. They argue that some have local competitive levels while others havean international level. The inclusion of these inventories in Porter's model formed the expanded diamond model, making it relevant to the global economy. Although Porter's model emphasizes the host country as the main factor of competitive advantage, Dunning (1997) stated that countries other than the host country could influence the competitive advantage of a company in a particular market.

The above arguments relate to this research in explaining the nature of the seaport competitiveness.

a) Seaport Connectivity and its Competitiveness

1. *Seaport connectivity:* Indriastiwi *et al.* (2020) state that seaport connectivity is the linkage of maritime, inland, and ports. Therefore, the concept of seaport connectivity should be studied from the perspective of the entire freight transport chain and the assessment of hinterland connections (inland ports and trade) and maritime connections (Zhang *et al*., 2018).
2. *Hinterland Connectivity:* Is mainly determined by inter-modal networks from the port to the hinterland (Wang *et al.,* 2016; Parola *et al*., 2017). If the smoothness of seaport-inland connections is not consistent with the maritime network, it will affect the port's competitiveness because the increasing size of ships, especially the associated emergence of distribution centers and satellite port networks, will only aggravate the bottlenecks related to port hinterland connectivity (Merk and Notteboom, 2015;Abbes, 2015).
3. *Maritime Connectivity:* Is the link between ports and shipping lines as well as the link between ports (Arvis *et al*., 2018). Among them, the link with shipping lines is the most important aspect of maritime connectivity. It is the result of the shipping line's selection of ports. It demonstrates a port's ability to handle ships of different sizes and capacities. The depth of the port, its mooring system, and its facilities play an important role in this connection. While the sea connectivity of the port is its connection to the main sea network, it needs to have efficient sea transport services. This ensures the global movement of goods between this port and other ports. For good sea connectivity, the port needs to have a good link with shipping lines.

Research by Zhang (2006) showed hinterland connectivity can affect the competitiveness of a port in an environment with many competing ports in China. Hinterland connectivity is characterized by transport

corridors dedicated to seaport cargoes, such as designated railway lines connecting to ports or inland roads used by both freight trucks and local commuter cars. With research on OECD seaport cities, Olaf and Theo (2015) believes that hinterland connectivity is one of the most important factors affecting seaport competitiveness. With research on the Valencia seaport, Scaramelli (2010) states that hinterland connectivity affects seaport competitiveness. On the other hand, Hayuth (1981) believes that shipping lines are increasingly trying to control costs and coordinate their activities throughout the entire transport chain. They are seeking to lease and operate their container terminals as a priority. Ports that can meet the specific requirements of individual shipping lines and provide them with dedicated terminals will have a competitive advantage. A study of the Port of Rijeka in Croatia by Tijan *et al*. (2022) states that one of the important factors affecting port competitiveness is hinterland connectivity and maritime connectivity. Research on the seaport system in India, Saha (2022) stated that hinterland port development affects the improvement of seaport competitiveness. Nguyen and Woo (2022) studied the connectivity of the 10 largest container ports in Southeast Asia and found that their connectivity is confirmed to be one of the factors helping Singapore become the most competitive container port in the region. Seaport connectivity is also an important factor that helps Canadian ports promote their competitiveness (Beatriz and Alan, 2015). Seaport connectivity has a positive impact on improving competitiveness (Song and Yeo, 2004;Yeo *et al*., 2007; Low *et al*., 2009; Meersman *et al.,* 2010; Da Cruz, 2012; Wang *et al*., 2016; Parola *et al.,* 2017; Pietrzak *et al*., 2020; Oliwia *et al.*, 2020). Based on empirical studies, we propose the following hypothesis:

H1: Seaport connectivity has a positive impact on its competitiveness.

b) Other Factors Affect a Seaport's Competitiveness

Geographical Location: Plays an important role in the operations of ports. Although distance is not an absolute barrier to trade, to overcome such limitations, building an efficient multi-modal network is indispensable. Each port has a hinterland to serve. However, these hinterlands may vary subject to their distance, cost, and topography. Because freight costs are proportional to distance, a favorable geographical location will boost a port's hinterland connectivity (Pallis and Rodrigue, 2022). With research on seaport competition in Southeast Asia, Yeo (2007) shows that geographical location has a strong impact on a seaport's competitiveness. Research on Valencia port in Spain by Scaramelli (2010) shows that geographical location has a positive impact on a seaport's competitiveness. Similar results were found from the research on the global competitiveness of seaports by Kaliszewski *et al.* (2020), the research on carriers' selection of seaports in Turkey by Baştuğ *et al.* (2022), and the research on Rijeka seaport in Croatia by Tijan *et al.* (2022). With the above studies, we propose the following hypothesis:

H2: Geographical location has a positive impact on a seaport's competitiveness.

Seaport Facilities: Also known as seaport utilities, are container terminals, handling equipment, trailers, container yards, information systems, multi-modal systems, and governance systems (Tongzon and Heng, 2005). In addition, they include container cranes over the length of wharves and deep-water wharves (Wang and Cullinane, 2006). With the emergence of global value chains, it is not surprising that policymakers and port managers around the world are developing strong and competitive port facilities to enhance their hinterland connectivity (Wang *et al.*, 2016; Mohamed-Chérif and Ducruet, 2016; Calatayud *et al.*, 2017). Rajasekar and Rengamani (2019) believe that seaport facilities are one of the extremely significant factors for hinterland connectivity. Especially, several domestic customers during the decision-making process consider adequate port facilities more important than quick response time to the needs of port users (Ugboma *et al.*, 2006). Research on seaports in Spain by Da Cruz (2012) shows that facilities are a factor affecting a seaport's competitiveness. Comparing the competitive advantage of Karachi port with the ones of neighboring emerging countries in the Persian Gulf and Indian Ocean, Liaqait *et al.* (2020) discover that facilities are a decisive factor affecting a seaport's competitiveness. Similar results were found from the study of container ports in Northeast China by Wan *et al.* (2022) and the port systems along the "belt and road" by Liu*et al.* (2020), carriers' selection of seaport in Turkey by Baştuğ *et al.* (2022) and Rijeka seaport in Croatia by Tijan *et al.* (2022). Researching the port system in Vietnam, Ha Minh Hieu (2021) shows that infrastructure affects seaport competitiveness. With the above studies, we propose the following hypothesis:

H3: Seaport facilities have a positive impact on a seaport's competitiveness.

An Information System: Is a combination of human resources, materials, and software to collect, formalize, store, browse, link, and disseminate information within the same organization (O'Brien and Marakas, 2011). Information technology plays an essential supporting role in setting up and deploying information systems and is a catalyst for internal and external integration. According to Sweeny and Evangelista (2005), different types of Information-Communication Technologies enable a degree of external (port community) and external integration as well as the integration of internal and external port processes. Hsu and Lalwani (2010) see the deployment of information and communication

technology as a tool to support international transport, with an emphasis on seaports as a focal point of a transport chain.

Reviewing the competitiveness of Agadir port in Morocco, Jouad and Hamri (2020) find that information technology is the decisive factor affecting its competitiveness. Similar results were found from the studies of regional port systems in China by Yi *et al.* (2021), port chain in Sub-Saharan Africa by Adabere *et al.* (2021), and Rijeka seaport in Croatia by Tijan *et al.* (2022). With the above studies, we propose the following hypothesis:

H4: Information technology has a positive impact on a seaport's competitiveness.

Port Authorities: Have become more autonomous and proactively expanded and redeveloped port infrastructure. Port authority activities can be classified into four main categories: traffic management, customer management, regional management, and stakeholder management. More active engagement of port authorities means their active coordination within the transport chain and cluster and more coordination can lead to more efficient supply chains and more competitive ports. Therefore, they have an incentive to improve their coordination within port clusters and supply chains. The active involvement of port authorities is especially suitable for inland transport, as this is quickly becoming the main bottleneck in the international door-to-door transport chain. Port authorities can contribute to effective hinterland access by investing in infrastructure and terminals within the port area, perhaps also outside the port area. They can improve hinterland access by incorporating infrastructure access rules and developing a system of port communities (De Langen, 2009). According to Van den Berg *et al.* (2012), port authorities recognize the importance of multi-modal transport to serve the development of seaport hinterlands and suggest policies to involve ports in multi-modal connections. Port authorities play an important role in hinterland connectivity to increase traffic flow to their ports. The port authorities also develop new inland routes to their ports. Their engagement in infrastructure investment will increase reliability and attract port users to their ports. Research on seaport connectivity in Southeast Asia by Yeo (2008) shows that port authorities are the decisive factor for a seaport's competitiveness. Research on regional port systems in China by Yi *et al.* (2021) discovers a positive relationship between a port authority and its port competitiveness. Similar results from the studies of Valencia seaport in Spain by Scaramelli (2010) and seaports in Indonesia by Wahyuni *et al.* (2019),performance of the port in Sub-Saharan Africa by Adabere *et al.* (2021), carriers' selection of seaports in Turkey by Baştuğ *et al.* (2022); Rijeka seaport in Croatia by Tijan *et al.* (2022) and Chittagong seaport in Bangladesh show that port authorities are the decisive factor for a seaport's competitiveness (Munim *et al.*, 2022).With the above studies, we propose the following hypothesis:

H5: Port authorities have a positive impact on a seaport's competitiveness.

Corporate Reputation: Can be defined by several attributes that shape buyers' perceptions of whether a company is known, good or bad, trustworthy, reputable, or not (Levitt, 1965). The reputation of a company refers to how people perceive it based on any information (or misinformation) they have about its activities, work environment, and performance in terms of past and future (Fombrun *et al.*, 2000). The reputation of seaports (as measured by the Fortune Reputation Index) influences shippers' expectations of close relationships with specific ports and acts as a moderator of the customer's trust in suppliers. It also constitutes a moderator of the effects of trust on commitment and investments, and the adaptation of business systems to specific relationships. In addition, it is characterized by the fact that the supplier always adjusts its behavior to adapt to new customer requirements, and it affects seaport competitiveness (Bennett and Gabriel, 2001). Research on the port of Valencia, Spain by Scaramelli (2010) shows that the port's reputation is the decisive factor for its competitiveness. A study of container port systems in West Africa by Meersman *et al.* (2010) discovered a positive relationship between port reputation and its competitiveness. Similar results were found from the studies of seaports in Zachodniopomorskie Voivodeship, Poland by Pietrzak *et al.* (2020) and Rijeka seaport in Croatia by Tijan *et al.* (2022). Thus, a port's reputation affects its attractiveness to customers and is closely linked to the extent to which a mechanism ensures fair competition between different entities in ports (Bennett and Gabriel, 2001). Therefore, it is related to preventing anti-competitive practices that often takes much time in exclusive ports. The environmentally friendly operations of a port and its reputation have become more and more important for its competitiveness (Lam and Notteboom 2014; Lun, 2011). With the above studies, we propose the following hypothesis:

H6: The reputation of a seaport has a positive impact on its competitiveness.

III. Research Model

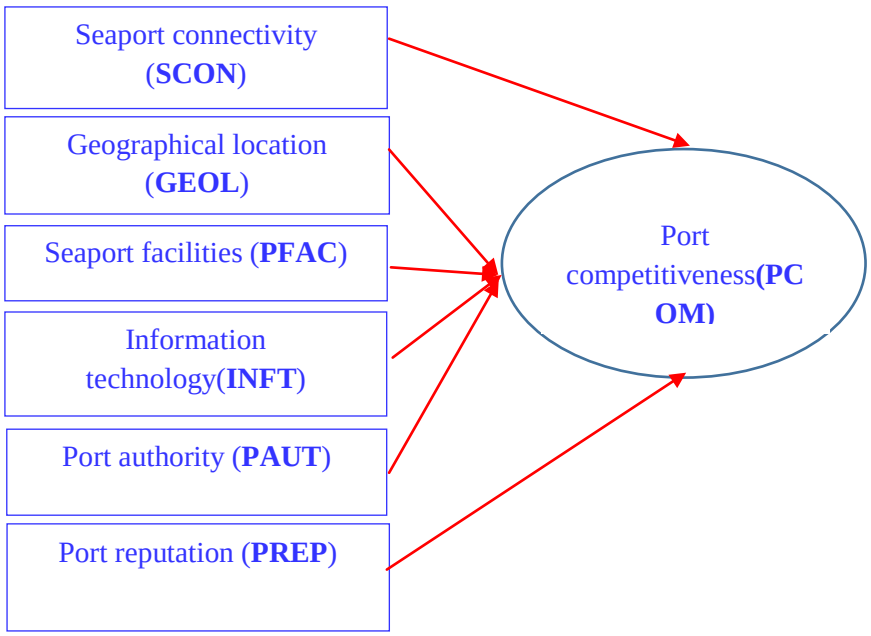

Figure 1: Theoretical Modeling

It is required to have a theoretical assessment and empirical study for further research to expand this theory and provide more empirical evidence and policy implications related to improving seaport competitiveness. Previous studies highlighted the factors that impact seaport connectivity with qualitative analysis or measurement of relationships using quantitative models such as statistical testing, or separate regression models, but did not provide a complete basis for a comprehensive analytical frame-work on seaport competitiveness. Therefore, the purpose of this study is to extend the findings from previous ones and integrate analysis of their correlation into an exploratory factor analysis and linear regression modeling. The research teams selected a case to study seaport competitiveness in Ho Chi Minh City Port as shown in Figure 1.

IV. Methodology

Measurement: All scales are modified from previous studies to fit the research context in Vietnam. We designed a three-step process for the survey. First, we carried out a survey using the expertise method of discussing with 10 port experts with at least five years of experience working at agencies related to the port industry. They are leaders of departments and agencies in Ho Chinh Minh to refer to measuring scales and observation variables that are suitable for the Port Logistics industry. Second, a pilot survey with 10 managers of import and export companies and 10 managers of shipping lines in Ho Chi Minh City to verify if there were any errors in the questionnaire. The sample was selected based on the respondents' willingness to participate in this study. Third, a complete survey was conducted for seaport researchers (20 people), port authority managers (30 people), managers (225 people) of domestic shipping lines, and managers (225 people) of foreign shipping lines whose ships docked at Ho Chi Minh City port. They all had experience in handling cargoes in Ho Chi Minh City seaport. A general of four hundred respondents stuffed out the questionnaire.

A five-point Likert scales starting from "strongly disagree" to "strongly agree" were used to measure all observation variables. To measure the "Seaport connectivity" scale, 4 observation variables were included in the questionnaire. This scale is mainly based on research on the performance of the ports in Barcelona, Marseilles Egypt, and Morocco by Arvis *et al.* (2018), and research on seaports in Portugal by Da Cruz (2012). For "Geography", 4 observation variables were included in the questionnaire. It was mainly based on research on the performance of the ports in Vietnam by Ha Minh Hieu (2020). For "Seaport facilities", 4 observation variables are included in the questionnaire. It is mainly based on research on the ability to attract customers at Chittagong Port, Bangladesh by Munim *et al.* (2022). For "Information Technology", 4 observation variables were included in the questionnaire. It was mainly based on research on the port system in Chennai, India by Rajasekar and Rengamani (2019). For "Port Authority", 4 observation variables were included in the questionnaire. It was mainly based on research on port networks by De Langen and Sharapova (2013) and it was adjusted to suit the Vietnamese situation and had several new observation variables built by the authors from the expertise discussion results such as "Port authority can actively participate in investment projects

for highway and barge terminals outside their port area"; "Port authority builds a port community information system to allow an effective communication between companies, contributing to the coordination of the transport chain. "For "Seaport reputation", 4 observation variables were included. It was mainly based on research on the Chittagong port network in Korea by Yeo *et al.* (2015), and it changed into adjusted to fit the Vietnamese situations and had numerous new commentary variables constructed via way of means of the authors from the effects of professional discussions such as "The port we are using has very good relationships with famous ports in the world"; "The port we are always using emphasizes responsibility for the environment and attracting tourists to Ho Chi Minh City." For "competitiveness", 4 observations were included in the questionnaire. It was mainly based on research on port connectivity and competition by Da Cruz (2012) and had several new observation variables built by the authors from the results of expert discussions such as "Annual share growth of the port against the adjacent region/country"; "Dynamic changes of cooperation policies based on economic fluctuations around the world and increasing revenue." Details of the scales are in the Appendix (Table A).

Data Collection and Processing: We launched a survey in Ho Chinh Minh City with 400 questionnaires. This survey lasted from February to May 2023. After data processing, 370 reliable observations were used for data analysis.

According to Fontaine (2005), the exploratory factor analysis modeling was performed in 4 steps: Reliability test of scale; Exploratory Factor Analysis (EFA); Confirmatory Factor Analysis (CFA), and Multiple variable regression. Data analysis was performed on SPSS and AMOS software version 21.0.

V. Results

a) Descriptions of Survey Subjects

Table 1 showed the details of the questionnaire. Results showed that 80% were men. The ages were distributed across three groups: under 30, 31-45, 46–55, and over 55 with 20%, 55%, 16%, and 9%, respectively. Also, education levels in four groups: Highschool, College & University, Posgraduate, and Other, are 25%, 56%, 12%, and 8%, respectively. Occupation with four groups: Managers of domestic transport enterprises, Managers of foreign transport enterprises, Port authority officials, and Seaport experts are 54%, 32%, 8%, and 6%, respectively. The majority of survey objects is married (64%). The income of 30-50 million VND per month accounts for mainly (70%).

Table 1: Characteristics of Survey Subjects

	Frequency	%		Frequency	%
Gender			Income		
Male	295	80	<30	65	18
Female	75	20	30-40	132	36
Total	370	100	41-50	124	34
Ages			>50	49	13
<30	73	20	Total	370	100
31-45	203	55	Occupation		
46-55	60	16	Managers of domestic transport enterprises	200	54
>55	34	9	Managers of foreign transport enterprises	120	32
Total	370	100	Port authority officials	30	8
Education level			Seaport expert	20	6
Posgraduate	44	12	Total	370	100
Highschool	92	25	Marital status		
College & university	206	56	Single	135	37
Other	28	8	Married	235	64
Total	370	100	Total	370	100

b) Reliability Analysis

Table 2: Scale Reliability Test and Rejected Observed Variables

No.	Scale	Observed Variable are Excluded	Alpha Coefficients	Conclusion
1	SCON	None	0.859	Good quality
2	GEOL	None	0.809	Good quality
3	PFAC	None	0.867	Good quality
4	INFT	None	0.848	Good quality
5	PAUT	None	0.851	Good quality
6	PREP	None	0.843	Good quality
7	PCOM	None	0.844	Good quality

The results in Table 2 showed that: The observed variables all satisfy the conditions in the reliability analysis of the scale through an alpha coefficient > 0.6, and a variable-total correlation > 0.3 (Nunnally and Burnstein, 1994).

c) Exploratory Factor Analysis

Table 3: Pattern Matrix

	Component						
	1	2	3	4	5	6	7
INFT1	0.815						
INFT3	0.788						
INFT2	0.764						
INFT4	0.752						
PFAC2		0.878					
PFAC3		0.869					
PFAC1		0.858					
PFAC4		0.771					
SCON2			0.855				
SCON3			0.811				
SCON4			0.791				
SCON1			0.749				
PAUT3				0.860			
PAUT2				0.825			
PAUT1				0.818			
PAUT4				0.816			
PREP4					0.836		
PREP1					0.811		
PREP2					0.807		
PREP3					0.797		
GEOL4						0.791	
GEOL2						0.756	
GEOL1						0.742	
GEOL3						0.715	
PCOM1							0.886
PCOM2							0.878
PCOM3							0.856
Kaiser-Meyer-Olkin Measure						0.827	0.725
Bartlett's test						0.000	0.000
Eigen values						1.375	2.289
% of Extracted variance						69.773	76.285

Note: 0.5 < KMO < 1; Bartlett's test has a significance level less than 0.05; Factor Loading of observed variables (Factor Loading) > 0.5; extracted variance > 50%, and Eigenvalue > 1 (Hair et al., 2006).

Table 4 shows that the factors of PCOM are extracted into six factors corresponding to the measured variables of the theoretical model. The total variance extracted is 69.773% at an Eigenvalue of 1.375; EFA of PCOM is extracted into three observed variables with an extracted variance of 76.285% at an Eigenvalue of 2.289; and the Varimax rotation method used.

d) Confirmatory Factor Analysis

Confirmatory factor analysis aims to test the theoretical measurement model in accordance with practical data (Thompson, 2004).

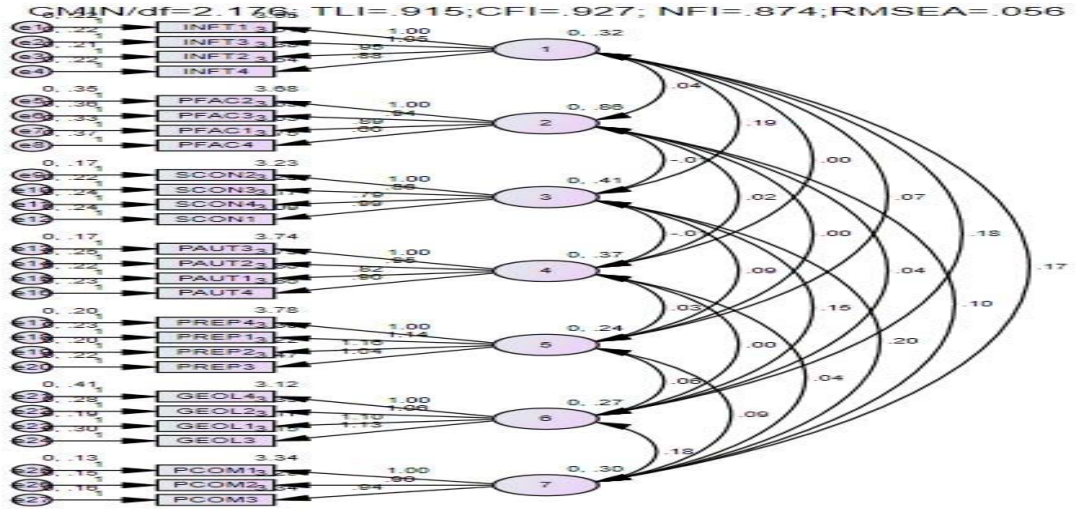

Figure 2: Confirmatory Factor Analysis

Table 4: The Fit Indices of the CFA

No.	Measures	Indicator Standard Values	Model Value	Results
1	Cmin/df	$\chi 2$/d.f. < 3 good fit; < 5 accepted; the smaller the better (Bentler and Bonett, 1980; Bagozii and Jy, 1988)	2.176	Good
2	TLI (Tucker-Lewis Index)	TLI: the closer it is to 1, the more appropriate; TLI > 0.90 is consistent; TLI ≥ 0.95 is in good ag reement (Hu and Bentler, 1995)	0.915	Good
3	CFI (Comparative Fit Index)	CFI > 0.90; 0 < CFI < 1, the closer to 1, the more suitable (Hu and Bentler, 1995).	0.927	Good
4	NFI (Normal Fit Index)	NFI, the closer it is to 1, the more suitable; NFI close to 0.90 is accepted; NFI > 0.95 is, a good fit (Chin and Todd, 1995; Hu & Bentler, 1995)	0.874	Accepted
5	RMSEA (Root Mean Square Error Approximation)	RMSEA < 0.05, the model fits well; RMSEA < 0.08, accepted; the smaller the better (Browne and Cudeck, 1993)	0.056	Good

Table 4 shows that the measurement model is consistent with the actual data.

e) Multivariate Linear Regression Analysis

The scales of the measurement model are converted to quantitative variables

Xi = Mean (observed variables of the scale)

Thus, the regression model of the study has the form:

PCOM = f(SCON,GEOL, INFT, PFAC, PAUT, PREP)

f) Regression Analysis Results

Table 5: Coefficients

	Unstandardized Coefficients		Stand. Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
(Constant)	-0.002	0.238		-0.009	0.993	-0.470	0.465		
SCON	0.241	0.040	0.268	6.008	0.000	0.162	0.320	0.756	1.323
GEOL	0.297	0.042	0.326	7.090	0.000	0.215	0.380	0.716	1.397
PFAC	0.099	0.026	0.148	3.789	0.000	0.047	0.150	0.990	1.010
INFT	0.154	0.045	0.163	3.419	0.001	0.065	0.243	0.667	1.500
PAUT	0.083	0.036	0.089	2.296	0.022	0.012	0.155	0.995	1.005
PREP	0.113	0.040	0.117	2.870	0.004	0.036	0.191	0.915	1.092

Dependent Variable: PCOM

In Table 5, with the t-student test, the independent variables have a statistically significant correlation with the PCOM dependent variable with the significance level ≤ 0.05 (Green, 1991); Other tests include: adjusted R^2: 0.598, model interpretation level 59.8% (Hair *et al*., 2006); ANOVA: Sig. = 0.000, the regression model is suitable (Hair *et al*., 2006); VIF < 10, no collinearity; 1 < d = 2,069 < 3, no autocorrelation (Belsley *et a*l., 1980). The study applied Park test to consider the stability of residual variance (Park, 1966).

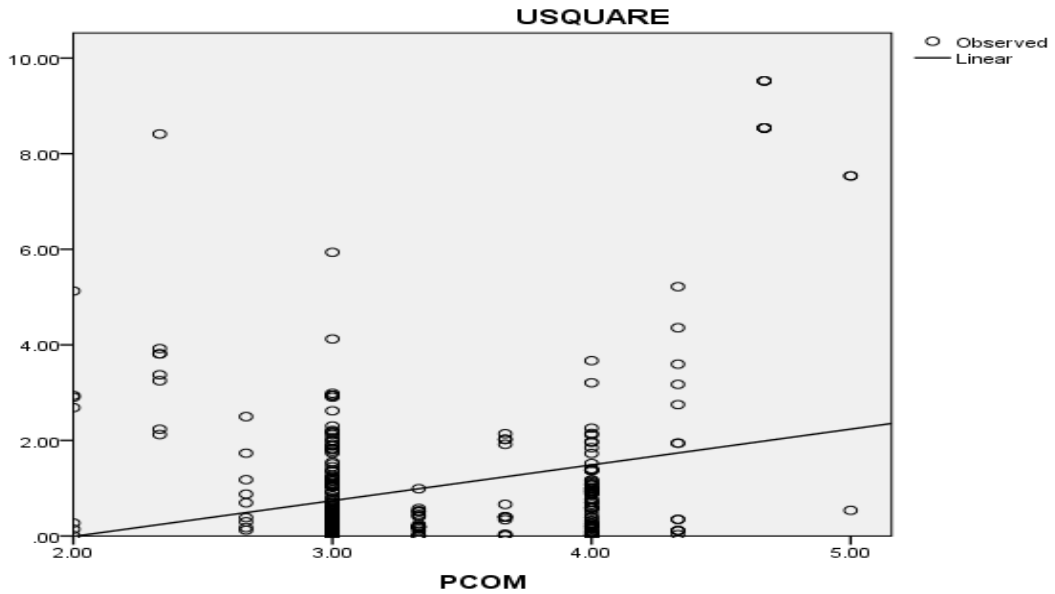

Figure 3: Park Test

In Figure 3, the correlation curve is linear, with constant residual variance.

Conclusion: Through 6 tests, factors affecting port competiveness: SCON, GEOL, PFAC, INFT, PAUT, and PREP'

Table 5: Hypothetical Results

Hypothesis	Impact			Beta	Sig.	%	Position	Decision
H1	PCOM	<---	SCON	0.268	0.000	24.1	2	Accepted
H2	PCOM	<---	GEOL	0.326	0.000	29.3	1	Accepted
H3	PCOM	<---	PFAC	0.148	0.000	13.3	4	Accepted
H4	PCOM	<---	INFT	0.163	0.001	14.7	3	Accepted
H5	PCOM	<---	PAUT	0.089	0.022	8.0	6	Accepted
H6	PCOM	<---	PREP	0.117	0.004	10.5	5	Accepted
	Total			1.111		100		

The results presented in Table 5 show that all hypotheses are accepted at a confidence level of over 95%. Based on the standardized regression coefficient, Beta (Norusis, 1993), factors affecting port competitiveness in order of influence: GEOL (Geographical location), SCON (Seaport connection), INFT (Information technology), PFAC (Seaport facilities), PREP (Port reputation), and PAUT (Port Authority).

g) Using BOOTSTRAP to Analyze the Reliability of LRM Results

Methods of CFA often require large samples (Anderson and Gerbing, 1988), whereas academic research is often limited in sample size. Bootstrap is a suitable alternative (Schumacker and Lomax, 2010). Bootstrap is an alternative, repeatable sampling method in which the original sample acts as a population. The Bootstrap method generates random samples from the original sample, which has numerous observations, often choosing 1,000 observations. The estimated results from N samples are averaged, and this value tends to be close to the estimate of the population. The smaller the difference between the average value of Bootstrap regression coefficients and the model estimate with the original sample, the more reliably the model estimates can be concluded.

Table 6: Bootstrap Implementation Results

Parameter			SE	SE-SE	Mean	Bias	SE-Bias	CR
PCOM	<---	PFAC	0.053	0.001	0.179	0.004	0.002	2.0
PCOM	<---	INFT	0.033	0.001	0.098	0.001	0.001	1.0
PCOM	<---	SCON	0.044	0.001	0.261	-0.001	0.001	-1.0
PCOM	<---	PAUT	0.051	0.001	0.099	0.001	0.002	0.5
PCOM	<---	PREP	0.063	0.001	0.152	-0.004	0.002	-2.0
PCOM	<---	GEOL	0.056	0.001	0.394	-0.002	0.002	-1.0

**CR (Critical Ratios) = (Bias)/(SE-Bias)*

The absolute value of CR is less than or equal to 2, so it can be said that the bias is very small, the difference is not statistically significant at the 95% confidence level (Hair *et al.,* 2006). Regression coefficient results before Bootstrap are reliable with a confidence level greater or equal to 95%.

Table 6 shows regression coefficient results before Bootstrap was reliable.

VI. Discussion and Policy Implications

Our study has identified 6 factors affecting "Competitiveness" and we sort them in descending significance order as follows: Geographic location; Seaport connectivity; Information technology; Seaport facilities; Port reputation; and Port Authorty. This result is consistent with previous research on the port industry in the Bay of Bengal by the Indian Ocean, Croatia by Tijan *et al.* (2022), Turkey by Başţuğ *et al.* (2022), China by Yi *et al.* (2021) and Poland by Pietrzak *et al.* (2020).

We add new observation variables to the research on seaport competitiveness, specifically "Port authorities are proactively involved in investment projects of highway terminals and barge terminals outside their port area"; "Port authorities build a port community information system to allow effective communication between companies, contributing to the coordination of the transport chain"; "The port we are using has very good relationships with famous ports in the world"; "The port we are always using emphasizes responsibility for the environment and attracting tourists to Ho Chi Minh City"; "Annual share growth of the port against the adjacent region/country"; "Dynamic changes of cooperation policies based on economic fluctuations around the world and increasing revenue."

To improve the competitiveness of Ho Chi Minh City Port, it is necessary to pay attention to 6 factors: Geographic location, Seaport connection, Information technology, Seaport facilities, Reputation and Port authority. In particular, geographical location has the strongest and most obvious impact on competitiveness. This is beyond the capacity of the Port Authority, but requires Government's involvement in developing the road network from seaports to import-export industrial parks, linked ports, and central transit centers. This is also a key factor for the development and capacity improvement of Ho Chi Minh City seaport.

VII. Conclusions and Research Limitations

The current study aims to extend the theoretical framework and to provide evidence in empirical results that 6 factors impact port competitiveness, illustrated by the case of Ho Chi Minh City.

The findings highlight the geographical location has the strongest and most significant impact on competitiveness. Hence, this study provides some insights into the current research about factors affecting competitiveness.

Besides its significant contributions, this study has some some limitations. First, the subjects were

drawn from only one city in Vietnam, which limits the external validity of this study. Future study should apply similar methods to cases of other sea ports, and to make comparisons to enhance the power of the findings. Finally, this study focuses on the 6 factors. Future studies can examine the effect of other factors on port competitiveness in Vietnam.

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Appendix

Table A: Measurement Scale and Observed Variables

No.	Scales and Observed Variables	Code
I	Geographical Location	GEOL
1	The port is located near industrial parks and export processing zones	GEOL1
2	The port is located near central transshipment ports	GEOL2
3	The port is located near main transportation routes	GEOL3
4	The port is located close to other linked ports, including depots	GEOL4
II	Information Technology	INFT
5	IT at the port is well connected to ensure communication between the Port and customers and public agencies (Customs, port authorities, border guards, quarantine...), as well as other port users.	INFT1
6	The port has an integrated online payment system	INFT2
7	The port has a developed IT system to manage and operate the port, using software to plan and arrange the use of wharves, yards, equipment, human resources and manage all container loading and unloading work.	INFT3
8	The availability of electronic procedures allows for faster operations.	INFT4
III	Seaport Facilities	PFAC
9	Adequacy and safety of storage facilities (storage spaces, warehouses, liquid cargo tanks...) and container loading yards.	PFAC1
10	Appropriate draft and port depth	PFAC2
11	Docking station, wharf with complete and modern loading and unloading facilities	PFAC3
12	Internal and inter-regional transport infrastructure is well planned and neatly arranged	PFAC4
IV	Port Authority	PAUT
13	PAUT establishes infrastructure access rules that can improve the efficient use of infrastructure.	PAUT1
14	PAUT establishes infrastructure access rules that can improve the efficient use of infrastructure.	PAUT2
15	PAUT builds a port community information system to help exchange data between companies effectively, contributing to the coordination of the transportation chain.	PAUT3
16	PAUT is decided on the concession of port infrastructure exploitation	PAUT4
V	Port Reputation	PREP
17	The port we are using is very reputable for its reliability in the Asian market	PREP1
18	The port we are using has very good relationships with famous ports in the world	PREP2
19	The port we are using has good operating procedures and ensures labor safety	PREP3
20	The port we are using always emphasizes being responsible for the environment and attracting tourists to Ho Chi Minh City (The most famous city in Vietnam).	PREP4
VI	Seaport Connection	SCON
21	Goods/containers enter and exit the inland through the port.	SCON1
22	Ships of large size and tonnage often call at the port	SCON2
23	The number of shipping services (Including the number of transshipment and direct maritime shipments) has increased rapidly over the years	SCON3
24	Many destination ports are connected and the cost of transporting goods from the departure port to the destination port is reasonable	SCON4
VII	Seaport Competitiveness	PCOM
25	The volume of goods through the port increases every year	PCOM1
26	The port's market share compared to the adjacent area/the whole country accounts for a high proportion	PCOM2
27	The port's revenue increases rapidly every year	PCOM3

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Nurturing Growth: Exploring Factors Influencing Female Youth Entrepreneurs in Lusaka's Central Business District

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Abstract- Female youth entrepreneurship is increasingly acknowledged as a catalyst for economic growth, productivity, innovation, and job creation. It plays a pivotal role in sustaining economic dynamism and competitiveness on the global stage. In contributing to the corpus of literature on female entrepreneurship, this study analyzed factors influencing the performance of female youth entrepreneurs in small and medium enterprises (SMEs) in Lusaka, Zambia. The research employed an explanatory mixed methods design and used structured interviews and purposive sampling to collect data. The research findings indicate a commendable pattern of adherence to local authority requirements with 72% majority of female entrepreneurs having consistently fulfilled their tax and levy obligations to the local authority. On marketing strategy, the study has shown that most female entrepreneurs use social media platforms such Facebook as their core marketing channel. The study revealed the intricate challenges that female youth entrepreneurs face when striving to balance the demands of their businesses with family and personal responsibilities.

Keywords: *employment, economic growth, entrepreneur-ship.*

GJMBR-A Classification: *JEL Code: L26*

Strictly as per the compliance and regulations of:

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Angel Bhamjee [α] & Hanson Chishimba [σ]

Abstract- Female youth entrepreneurship is increasingly acknowledged as a catalyst for economic growth, productivity, innovation, and job creation. It plays a pivotal role in sustaining economic dynamism and competitiveness on the global stage. In contributing to the corpus of literature on female entrepreneurship, this study analyzed factors influencing the performance of female youth entrepreneurs in small and medium enterprises (SMEs) in Lusaka, Zambia. The research employed an explanatory mixed methods design and used structured interviews and purposive sampling to collect data. The research findings indicate a commendable pattern of adherence to local authority requirements with 72% majority of female entrepreneurs having consistently fulfilled their tax and levy obligations to the local authority. On marketing strategy, the study has shown that most female entrepreneurs use social media platforms such Facebook as their core marketing channel. The study revealed the intricate challenges that female youth entrepreneurs face when striving to balance the demands of their businesses with family and personal responsibilities. To address challenges faced by female entrepreneurs, the study recommends the need to implement and expand financial programs that specifically target female entrepreneurs. This should be complemented with a review and updating of existing government policies to ensure they are gender-inclusive and do not unintentionally hinder female entrepreneurs.

Keywords: employment, economic growth, entrepreneurship.

I. Introduction

Entrepreneurship has transcended its role as a mere economic factor to become a fundamental driving force in the dynamics of modern economies. It is widely acknowledged for its multifaceted impact on job creation, innovation, and bolstering a nation's economic competitiveness. One demographic that has stepped into the forefront of this entrepreneurial landscape is the youth. The relevance and impact of youth entrepreneurship have grown significantly, making it an essential element for fostering economic growth, enhancing productivity, driving innovation, and generating employment opportunities. This evolution is particularly emphasized by Hisrich (2005) and has gained momentum over the past decade.

In parallel, the contributions of women entrepreneurs have been increasingly recognized as pivotal to socio-economic development across various countries. The Organization of Economic Cooperation and Development report of (2009) underscores that a substantial portion of business owners comprises women, ranging from 15% to over 35% depending on the specific economy under scrutiny. These statistics underscore the growing influence and presence of women in the entrepreneurial sphere.

In addition, Ram (2004), contends that small and medium enterprises (SMEs) have emerged as crucial economic players, bearing the responsibility of generating employment opportunities, fostering economic growth, and driving high-quality commercial innovations. Consequently, the significance of SMEs is being progressively realized by government bodies, development organizations, and civil society. There is an evolving consensus that comprehensive and all-encompassing development necessitates the active participation of women and youth in decision-making processes. Furthermore, the youth demographic, with its rapid growth rate, has outpaced economic expansion and employment opportunities. This disjuncture necessitates the creation of fresh employment opportunities, and one powerful avenue to achieve this is through entrepreneurship. Entrepreneurship presents a dynamic solution for youth to not only tackle unemployment but also foster economic growth.

Young women's participation in the small business sector has gained traction on a global scale as a means of achieving sustainable wealth creation and employment opportunities. The acknowledgment of entrepreneurship as the engine of economic change is a recurring theme in government policy documents, and there is a growing trend in the promotion of small enterprises. Samiti (2006), argues that despite these recognitions and the increasing presence of women and youth entrepreneurs, challenges persist. Women entrepreneurs, in particular, face a series of barriers that hinder their entrepreneurial journeys. These challenges span economic and social dimensions.

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Within this context, the study analyzed the intricacies of entrepreneurship, focusing on the factors that influence the performance of female youth entrepreneurs operating in micro and small enterprises within Lusaka's central business district (CBD). The central objective was to unravel the barriers and challenges faced by these enterprising young women. The study was structured into three essential parts. The initial section conducted a comprehensive review of existing literature concerning micro and small - enterprises, emphasizing their role in poverty reduction and economic stability. Drawing from the global perspective, this section provided a foundation for understanding the significance of female entrepreneurs. Subsequently, the methodology section will provide the systematic approach employed for data collection during the research process. The last section will present the findings, discussions and conclusion of the study.

a) Thesis Statement

The growing importance of entrepreneurship, particularly among youth and women, has become a driving force in modern economies. This thesis explores the multifaceted impact of youth and women entrepreneurship on job creation, innovation, and economic competitiveness, emphasizing their crucial roles in fostering economic growth. Despite the recognition and promotion of small and medium enterprises (SMEs) as pivotal economic players, challenges persist for women entrepreneurs, hindering their entrepreneurial journeys. The study focuses on the factors influencing the performance of female youth entrepreneurs in micro and small enterprises within Lusaka's central business district, aiming to unravel the barriers and challenges faced by these enterprising young women and contribute to a comprehensive understanding of their role in poverty reduction and economic stability"

II. Literature Review

Unemployment in Zambia like other parts of the world is a critical concern, with particularly high rates. The demographic most severely affected by these soaring unemployment levels is the youth. After completing their education at universities and other learning institutions, these young individuals often find themselves grappling with the inability to secure formal employment. This situation results in their inability to make a meaningful contribution to the country's economic development, despite their enthusiasm, energy, and ambition. According to a report by the International Labor Organization (ILO) in 2009, the growing number of youths pursuing secondary and tertiary education is undoubtedly a positive development. However, the labour markets in many countries, including Zambia, currently struggle to absorb this expanding pool of skilled young graduates. Across Africa, numerous governments have recognized the urgency of addressing the youth unemployment issue and its impact on economic growth. As a response, they have initiated entrepreneurial skills development programs aimed at equipping young people with the tools and knowledge required to explore entrepreneurship as a viable path to self-sufficiency and economic prosperity. These efforts are integral in the broader context of mitigating the youth unemployment challenge and fostering economic development.

According to Timmons (2003), the landscape of women's entrepreneurship is dynamic and shaped by a complex interplay of factors, including gender, age, education, family responsibilities, and societal expectations. Understanding these features is crucial for advancing gender equality in entrepreneurship and supporting women in their business endeavours. Gender disparities in entrepreneurship have been extensively examined, revealing that women often encounter unique challenges, including limited access to financial resources and networks. The age of female entrepreneurs spans a wide spectrum. Research has shown that women engage in entrepreneurship at various life stages, from young startups to mid-career professionals and older individuals seeking new business opportunities. The entrepreneurial experiences and challenges faced by women may differ significantly across age groups, with younger entrepreneurs often grappling with issues related to startup capital, while older entrepreneurs may focus on sustainable business growth.

Ram (2004), postulates that, the educational level of female entrepreneurs is a critical determinant of their success. He argued that women with higher levels of education tend to perform better in business ventures. Education equips female entrepreneurs with skills, knowledge, and a competitive advantage in navigating the complex business landscape.

On marital status, Haithi and Vasani, (2004) argues that marital status and family responsibilities play a significant role in shaping the entrepreneurial journeys of women. They indicated that married female entrepreneurs often have the support of their spouses, which can be instrumental in business success. However, they also face the challenge of balancing family responsibilities with business demands. Single mothers who embark on entrepreneurial ventures encounter a unique set of challenges as they juggle childcare and business operations.

In the works of Samiti (2006), access to capital is a critical factor in entrepreneurial success. Female entrepreneurs frequently face barriers in securing financing for their businesses. He contends that gender bias in lending and investment decisions hinders women's access to capital, limiting their business growth potential.

Female entrepreneurs are active in various industries, from technology and finance to retail and healthcare. The choice of industry can be influenced by socio-economic factors, educational background, and personal interests. For instance, women with a background in Science, technology, engeering and mathematics STEM fields may gravitate toward tech startups, while those with expertise in healthcare may establish medical practices or health-related businesses (Manu, 2004). The industry in which a female entrepreneur operates can shape her socio-economic profile and the challenges she faces.

While entrepreneurship offers numerous advantages, it is not without its challenges. These challenges can be categorized into two broad groups, as outlined by Samiti (2006): economic and social factors. Economic factors encompass issues such as market competition, limited market access, restricted access to raw materials, capital or financial constraints, a lack of marketing knowledge, insufficient production and storage space, subpar infrastructure, inadequate power supply, and a dearth of business training. On the other hand, social factors encompass issues like social acceptability, limited external contacts, prevailing prejudices, societal biases, stigmatization, interpersonal dynamics with other employees, and relationships with the workforce.

Furthermore, Hisrich (2005) and the International Labor Organization (ILO) report of (2009) have expanded on these factors affecting entrepreneurship success. These additional factors include social and cultural attitudes toward youth entrepreneurship, the quality of entrepreneurship education, the administrative and regulatory framework, business assistance and support, and barriers related to technology access. These factors play crucial roles in influencing the outcomes of entrepreneurial endeavours. Sarantakes (2000) has emphasized the significance of women entrepreneurs' educational backgrounds, including college education and advanced professional degrees, as well as specialized training. This education and training provide women entrepreneurs with a valuable set of human capital, forming a solid foundation for their business ventures. This human capital includes a wide array of skills and capabilities, ranging from functional expertise in areas like marketing, accounting, sales, and production, to the ability to identify market trends, effectively interact with people, generate innovative ideas, and ultimately gain a competitive advantage. These skills are pivotal in supporting and enhancing the performance of entrepreneurial enterprises.

In the works of Rusten and Alsos (2011), women entrepreneurs, in particular, face a series of barriers that hinder their entrepreneurial journeys. These challenges span economic and social dimensions. Economic factors include competition in the market, limited access to raw materials, inadequate capital, a lack of marketing knowledge, insufficient production or storage space, poor infrastructure, inadequate power supply, and limited business training opportunities. On the social front, challenges range from issues of social acceptability, limited contacts beyond their immediate circles, prejudices, class biases, societal stigmas, and the attitudes of employees and the workforce. These factors create hurdles that demand thorough examination.

III. Methods

a) *Ethics Statement*

Prior to commencing the study, the researchers obtained informed consent from all participants. Each respondent was requested to provide a signed consent form, signifying their willingness to partake in the research. Before the interviews were conducted, interviewees received comprehensive information that the study exclusively served academic purposes. Furthermore, the research team safeguarded the anonymity and confidentiality of all records. To uphold privacy, respondents were not required to disclose their names; instead, a unique respondent code was assigned to each questionnaire. Importantly, the study adhered to ethical standards by obtaining approval from the University of Zambia's School of Humanities and Social Sciences Research Ethics Clearance Committee (HSSREC) before its commencement.

b) *Study Design*

The research employed an explanatory mixed-method approach, combining both primary and secondary data sources to provide a comprehensive understanding of the subject. Primary data was gathered through structured interviews utilizing questionnaires. The collected data was subsequently subjected to analysis using IBM SPSS version 25, employing a blend of descriptive and inferential statistical techniques. In parallel, secondary data sources, including scholarly journals, government policy documents, and online resources, were harnessed to augment and contextualize the study's findings.

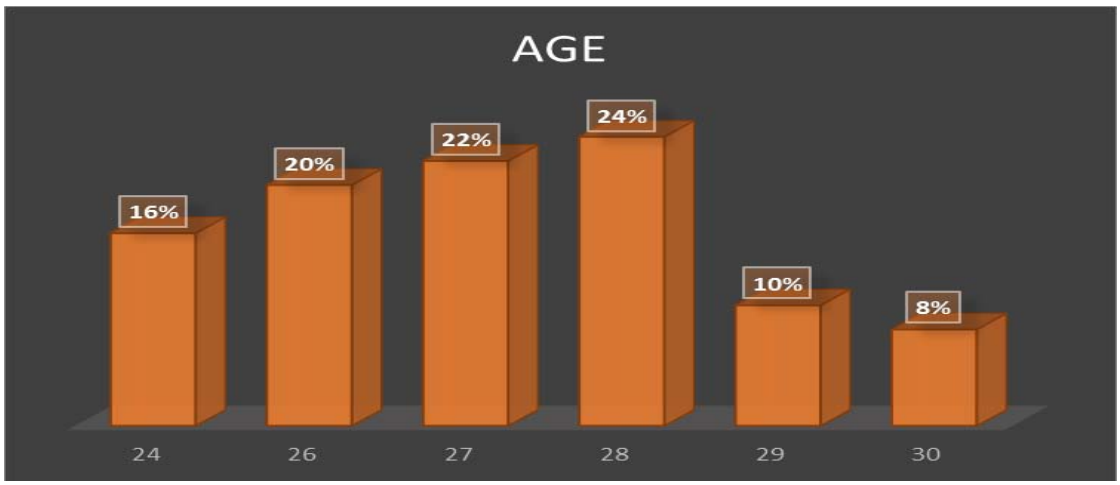
The sample for this research was drawn from the universe of female entrepreneurs within the boundaries of Lusaka central business district. To establish the sample, the council's official register of businesses for COMESA market for the year 2022 served as the sampling frame. The sampling frame encompassed a total of 50 duly registered female micro enterprises. Given the manageable number of registered businesses, the study encompassed the entirety of these micro enterprises officially recognized by the Lusaka City Council. A total of 50 questionnaires were meticulously administered to the selected enterprises. Remarkably, an impressive 97% of these participants demonstrated a responsive approach, actively engaging

with the study, while a small 3% were non-responsive, a factor duly noted in the research's sampling process.

IV. Results

a) Socio-Economic and Demographic Features of Respondents

To establish the age distribution of female entrepreneurs, the study revealed as shown in Figure 1, that female entrepreneurs aged 24 accounted for 16% of the total, while those aged 26 comprised 20%. A notable 22% fell into the 27-year-old category, and 28-year-olds constituted the largest segment at 24%. Those aged 29 and 30 represented 10% and 8% of the total respondents, respectively.

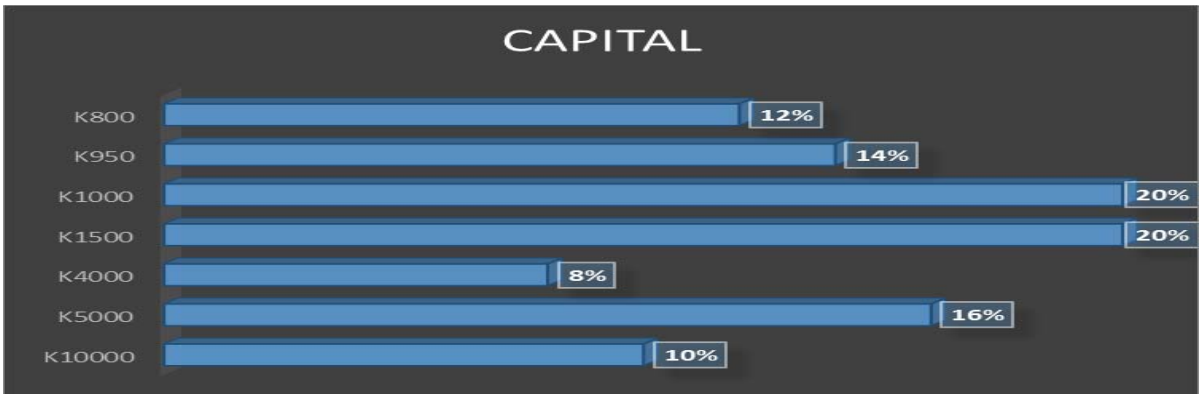


Source: Author, 2023

Figure 1: Age Distribution

In determining the marital status of respondents, the study found that 66% of the respondents were married, signifying a clear majority in this category. This finding implies that marriage is a significant life stage for a substantial proportion of the surveyed population of female entrepreneurs. Furthermore, when examining the educational background of the respondents, a diverse range of attainment levels emerged. Nearly half of the respondents (46%) had acquired primary education, making it the most prevalent educational level among them. Meanwhile, 36% of the respondents had progressed to secondary education, indicating a significant proportion of the sample with a more advanced educational foundation. Additionally, 18% of the respondents had pursued technical or vocational education, suggesting a smaller yet noteworthy contingent with specialized skills and training.

The research findings unveil a significant perception among the respondents regarding the value of their formal education in the context of establishing and running their entrepreneurial ventures. Specifically, an overwhelming 64% of the respondents expressed the belief that their level of formal education played a pivotal role in the success of their business endeavors. This indicates a prevailing sentiment that formal education provides a fundamental foundation for entrepreneurial achievements. Further insights emerged from in-depth interviews with the respondents, shedding light on the practical aspects of how education contributed to their business acumen. The data revealed that the basic knowledge derived from their formal education proved to be instrumental in several crucial areas. These included enhancing literacy skills, fostering the ability to identify business opportunities and market trends, facilitating proficient bookkeeping, and enabling them to prepare essential financial statements. Such findings underscore the multifaceted ways in which education positively influenced their entrepreneurial competencies. It is noteworthy that a minority of the respondents (18%) possessed vocational or technical education, with specialized training in fields like accounting, marketing, fashion, catering, and dressmaking. This subset of respondents had acquired specialized knowledge during their formal education, which was directly applicable to their entrepreneurial pursuits. In contrast, the majority of the respondents had not received specialized training in any specific field during their formal education.



Source: Author

Figure 1: Start-up Capital

To ascertain the initial capital invested by the respondents in launching their businesses, Figure 1 above offers an illustrative representation. It emerges from the data that a significant majority of the surveyed entrepreneurs initiated their ventures with a capital range falling between ZMW1000 and ZMW1500, constituting 20% of the sample. Conversely, a more modest 10% of the respondents commenced their businesses with a notably larger capital sum of ZMW10000. On the lower end of the spectrum, the category with the least representation consisted of those who embarked on their entrepreneurial journeys with a modest ZMW4000 as their starting capital.

In the pursuit of understanding the financial sources for women-led enterprises, the study yielded a diverse landscape of initial capital origins. The findings underscore that at the outset of their entrepreneurial journeys, women entrepreneurs drew upon various avenues for financial support. A significant 28% of these entrepreneurs kick-started their ventures with assistance from their families, with a majority receiving support from their spouses or husbands. This familial backing underscores the importance of family networks and cooperation in the early stages of women-led businesses. An impressive 36% of the respondents relied on their own hard-earned savings to fund their businesses, demonstrating a strong sense of self-reliance among this segment of entrepreneurs. This self-sufficiency highlights the determination and financial discipline of these women in pursuing their entrepreneurial aspirations. Additionally, 22% of the women entrepreneurs accessed funds from rotational financial schemes, showcasing their resourcefulness in leveraging community-based financial mechanisms. This indicates their ability to tap into local financial resources and the value of community support networks. A notable 13% pursued a multifaceted approach, combining their personal savings, family contributions, and participation in rotational financial schemes Locally referred to as Chilimba to establish their businesses. This demonstrates a flexible and strategic approach to funding their entrepreneurial endeavors, utilizing a mix of resources available to them.

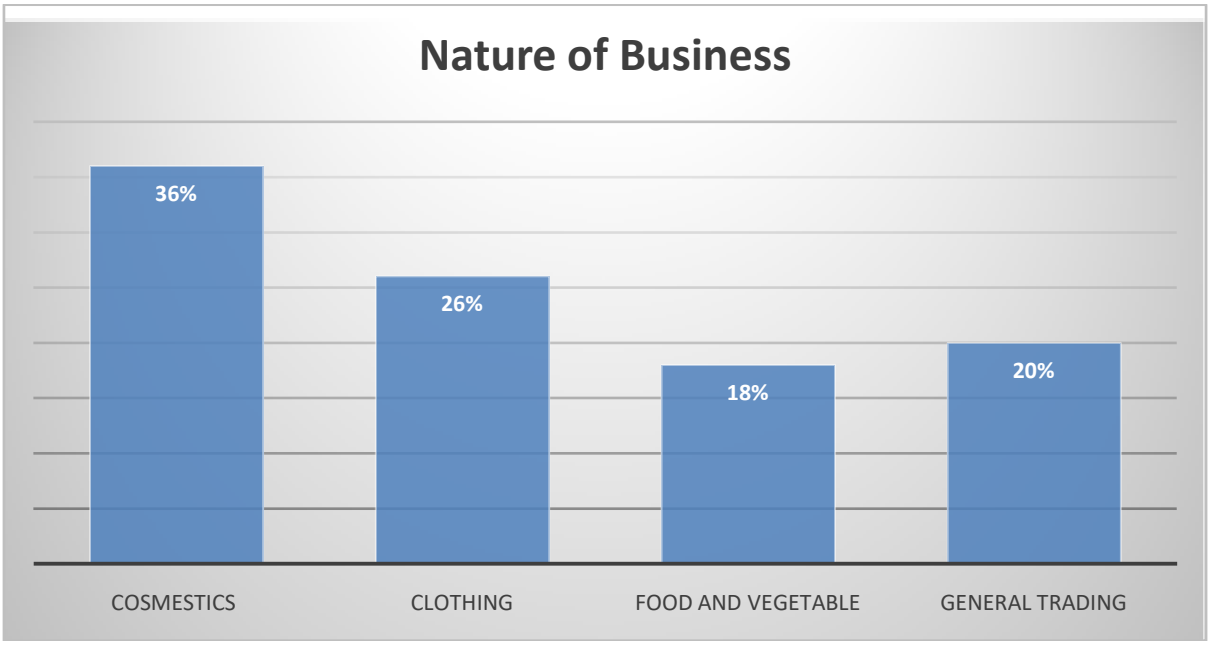
In our quest to unravel the marketing strategies embraced by female entrepreneurs, a prevailing pattern emerged, with a majority of them favoring social media platforms as their primary marketing channel. Notably, a respondent succinctly expressed the effectiveness of this approach, stating, "*It's easy for me to market my products. I have a Facebook page with a substantial following, and I can simply post my new stock*." This remark underscores the simplicity and reach that social media offers as a marketing tool, particularly for those with established online communities. Another respondent highlighted the strategic use of social media by mentioning, "*I usually post in women entrepreneur groups on Facebook and WhatsApp – it's that easy*." This approach showcases the utilization of specialized online communities and social platforms tailored to entrepreneurs, particularly women, for effective product promotion.

b) Types and Economic Contribution of Female Entrepreneurs

The findings from the study shed light on the ownership structures within the sample of women entrepreneurs. Notably, a substantial 64% of these women exclusively possess their businesses, operating as sole proprietors. Additionally, a noteworthy 26% engage in entrepreneurial partnerships, and 10% are involved in businesses structured as limited companies. These statistics reveal a prevailing pattern among the respondents, where a significant majority align with the sole trader type of business ownership, making up 64% of the surveyed sample. This underscores the prevalence of women entrepreneurs who operate their businesses independently, emphasizing their autonomy in entrepreneurship.

The study's investigation into the nature of business activities undertaken by female entrepreneurs has provided valuable insights into the entrepreneurial landscape. It revealed that young female entrepreneurs primarily engage in ventures within specific sectors, with

a predominant focus on clothing, cosmetics, food and vegetables, and general trading. These sectors collectively form the core domains in which these women entrepreneurs are actively participating. This observation implies that the scope of business diversity among female entrepreneurs, especially in the youth category, is somewhat limited. However, this limitation does not diminish the significance of their contributions to the business world. On the contrary, it underscores the consistent themes of trading and service-oriented activities as key areas of focus. This concentration implies that female entrepreneurs are making a notable impact within these sectors and contributing to both local and regional economies. Refer to figure 1 for percentage distribution.



Source: Author, 2023

Figure 2: Nature of Business

In the quest to uncover the relationship between business performance and the duration of business operation, the research has unveiled a nuanced picture. The data reveal that a substantial proportion of 42% of the respondents, have been actively operating their businesses for a duration of 5 years. In addition, a notable 19% of the respondents have demonstrated remarkable resilience in the business arena, boasting a decade of experience. Furthermore, 39% of the surveyed entrepreneurs have navigated the challenges of business ownership for less than 3 years. This intriguing distribution of business operation durations signifies that the study's scope extends beyond early-stage startups. Instead, it encompasses a spectrum of businesses, some of which have progressed to the later stages of development.

In establishing the contribution of female entrepreneurs to employment creation, the research findings paint a nuanced picture. The data reveals that a significant 44% of the respondents initiated their businesses with the employment of a single individual. Furthermore, 42% embarked on their entrepreneurial journeys as sole proprietors, commencing their ventures with no additional employees. Notably, 14% of the respondents exhibited a slightly larger scale of employment creation, as they initiated their businesses with two employees.

In the investigation of tax and levy compliance among female entrepreneurs, the research findings indicate a commendable pattern of adherence to local authority requirements. The data reveals that a substantial majority of female entrepreneurs, approximately 72%, have consistently fulfilled their tax and levy obligations to the local authority. Furthermore, the research shows that among the respondents who have been paying taxes and levies, 85% view it as an essential civic responsibility and believe it plays a pivotal role in the betterment of their local community. Additionally, 62% of these compliant entrepreneurs acknowledge that meeting their tax obligations has helped establish a positive and cooperative relationship with the local authority, enabling them to access support and resources to enhance their businesses.

c) Challenges Faced by Female Entrepreneurs

Research findings indicate that female entrepreneurs face significant challenges in accessing capital for their businesses. A substantial 67% majority of female entrepreneurs, reported experiencing difficulties in securing the necessary funding to start,

maintain, or expand their businesses. These challenges are further underscored by the fact that, among female entrepreneurs who sought external financing, only 31% were successful in obtaining the capital they required. The data also reveals that female entrepreneurs often resort to using personal savings as the primary source of capital for their businesses, with 62% relying on family, friends and their own financial resources. This reliance on personal and family funds is indicative of the limited availability of external financing options, such as loans.

Research findings shed light on the intricate challenges that female youth entrepreneurs face when striving to balance the demands of their businesses with family and personal responsibilities. The study reveals that a significant 72% of female youth entrepreneurs reported experiencing difficulties in maintaining this balance. Furthermore, in exploring the effect of these challenges, the research findings indicate that nearly 84% of female youth entrepreneurs believe that juggling business and personal responsibilities have adverse effects on their overall well-being and stress levels. This suggests that these individuals often find themselves in high-pressure situations, which can have detrimental consequences on their mental and emotional health. Additionally, the research data shows that female youth entrepreneurs frequently employ coping mechanisms to address these challenges, with 61% of them stating that they have had to make personal sacrifices, such as spending less time with family and friends, to prioritize their businesses.

Research findings provide compelling evidence that gender bias and preconceived stereotypes about the roles of women in business have indeed erected formidable barriers for female youth entrepreneurs. The study reveals that 79% of female youth entrepreneurs have encountered gender-related challenges and biases during their entrepreneurial journeys. Furthermore, these biases manifest in various forms, with 64% of the respondents' reporting experiences of discrimination, scepticism, or dismissive attitudes from potential investors and clients based on their gender. This indicates that gender-based bias remains a significant hindrance in their pursuit of entrepreneurial success. The research data also highlights the effect of these biases on female youth entrepreneurs' self-esteem and confidence, with 71% of respondents acknowledging that they have at times felt less confident and self-assured in their business pursuits due to societal expectations and stereotypes. Moreover, the findings suggest that these biases often translate into limited access to key resources, as 82% of female youth entrepreneurs believe that gender stereotypes have hindered their ability to secure funding, attract investors, or access networking opportunities.

In establishing challenges faced, the study unveils the significant challenges that female youth entrepreneurs encounter when seeking experienced mentors and establishing vital connections to facilitate the growth of their ventures. The study demonstrates that a substantial 82% of female youth entrepreneurs face difficulties in accessing appropriate mentors and building essential business networks. These challenges are further highlighted by the data, which reveals that only 18% of female youth entrepreneurs report having been mentored by experienced business leaders or professionals. This indicates a considerable gap in the availability of mentorship opportunities for this demographic. Furthermore, the research findings indicate that 75% of female youth entrepreneurs acknowledge that they have faced hurdles in expanding their professional networks, limiting their access to critical resources, market insights, and potential business opportunities. These obstacles have significant ramifications for the business growth and sustainability of female youth entrepreneurs. The data illustrates that 67% of them believe that mentorship and networking challenges have hindered their business development and expansion.

V. Discussion

a) Theme 1- Socio-Economic and Demographic Characteristics of Female Entrepreneurs

The research findings regarding the age distribution of female entrepreneurs provide valuable insights into the demographics of this group and echo broader trends identified in studies of entrepreneurship and age. The distribution of female entrepreneurs across different age categories reflects the diversity within this demographic and the potential implications for entrepreneurship and economic development.

The data in this study, which reveals that a substantial 24% of female entrepreneurs are in the 28-year-old category, aligns with Bird and Brush (2003), observations that, entrepreneurship is often associated with individuals in their late twenties and early thirties. This is a life stage when individuals may have accumulated relevant experience, developed professional networks, and felt more confident in taking entrepreneurial risks. Additionally, the presence of 20% of female entrepreneurs in the 26-year-old category and 22% in the 27-year-old category signifies that entrepreneurship is not limited to a specific age group. Research conducted by Schorling (2006) has highlighted that entrepreneurship can thrive at various stages of life. The findings in this study underscore the recognition that individuals in their mid-20s are actively engaged in entrepreneurial pursuits.

The distribution of female entrepreneurs across different age categories highlights the dynamic and evolving nature of entrepreneurship. Younger entrepreneurs may bring fresh perspectives and innovative approaches, while more experienced entrepreneurs may

have accumulated industry knowledge and valuable insights. The diverse age distribution within the female entrepreneur population reflects the potential for a range of contributions to innovation, economic growth, and job creation.

The findings of the study on the marital status and educational background of female entrepreneurs offer valuable insights into the diversity within this demographic. These findings resonate with broader discussions on the role of marriage and educational attainment in shaping the entrepreneurial landscape, highlighting the dynamic nature of female entrepreneurship. Studies exploring the relationship between marital status and entrepreneurship have consistently demonstrated that life events such as marriage can influence an individual's decision to start or engage in entrepreneurial activities. The data in this study, which indicates that 66% of the respondents were married, reflects the idea that marriage is a significant life stage for a substantial portion of female entrepreneurs. The findings align with the understanding that marriage can provide emotional and financial stability, which may encourage individuals to pursue entrepreneurial endeavours.

The study has revealed that nearly half of the respondents (46%) had acquired primary education aligns with global trends where many entrepreneurs begin their journeys with varying levels of education. This finding highlights the potential for entrepreneurship to be a pathway for individuals with diverse educational backgrounds to create and manage businesses successfully. Moreover, the presence of 36% of respondents with secondary education and 18% with technical or vocational education reflects the diversity in educational attainment among female entrepreneurs (International Labour Organisation, 2013). These figures suggest that female entrepreneurs are not limited to one specific educational level, and they may have specialized skills that are relevant to their business activities. Studies on entrepreneurship have emphasized the importance of education and skills in business success, and these findings emphasize the potential for a mix of educational backgrounds within the entrepreneurial ecosystem.

In determining the quantums of the initial capital invested by female entrepreneurs, the study has provided valuable insights into the financial landscape of entrepreneurship, aligning with broader discussions on capital requirements for business startups. The study data indicates a wide range of initial capital investments and offers important implications for understanding the financial challenges and opportunities faced by female entrepreneurs. The World Bank Report of (2012), emphasize the significance of capital availability for business startups. The study has shown that 20% of the surveyed entrepreneurs initiated their ventures with a capital range between ZMW1000 and ZMW1500. This aligns with the understanding that many entrepreneurs, particularly in the early stages of their businesses, start with limited capital. This reflects a common challenge for startups, which often need to be resourceful and creative in leveraging their available funds. The presence of 10% of the respondents who commenced their businesses with a notably larger capital sum of ZMW10000 indicates that a segment of female entrepreneurs may have access to more substantial financial resources or are operating in sectors that require higher initial investments. Research on business financing often highlights the diverse capital requirements across different industries, and this finding underscores the variability in capital needs among female entrepreneurs. On the lower end of the spectrum, the category with the least representation, consisting of those who started their entrepreneurial journeys with a modest ZMW4000 as their starting capital, suggests that some entrepreneurs may prioritize lean and frugal approaches to business initiation. This aligns with the principles of bootstrapping and efficient resource allocation (Bryman, 2004).

The research findings on the financial sources for women-led enterprises provide valuable insights into the resourcefulness and determination of female entrepreneurs at the outset of their ventures. These findings align with the study done by Helms (2007) that emphasizes the importance of various financial avenues and support mechanisms for entrepreneurs, particularly women. He highlighted the significance of family networks in providing initial capital. The study has revealed that 28% of women entrepreneurs received assistance from their families, with a majority being supported by their spouses or husbands. This is consistent with the understanding that familial backing is a common and essential source of startup capital. Undoubtedly, family support can provide not only financial resources but also emotional and social support that fosters entrepreneurial success.

The reliance of 36% of the respondents on their own savings to fund their businesses underscores the self-reliance and financial discipline of female entrepreneurs. This aligns with the principles of personal financial responsibility and the need for entrepreneurs to have a sound financial foundation. A study by Powell (2015) on financial behaviour and entrepreneurship, stressed the importance of managing personal finances effectively, and these findings demonstrate that female entrepreneurs are proactive in this regard.

Accessing funds from rotational financial schemes, as indicated by 22% of the women entrepreneurs, showcases their resourcefulness in leveraging community-based financial mechanisms. Research has acknowledged the role of community-based financial schemes in providing access to capital, particularly in areas with limited access to formal financial institutions. These schemes can serve as a

valuable source of financial support and illustrate the ability of female entrepreneurs to tap into local financial resources and community support networks. The 13% of women entrepreneurs who pursued a multifaceted approach, combining personal savings, family contributions, and participation in rotational financial schemes to establish their businesses, demonstrate a flexible and strategic approach to funding their entrepreneurial endeavors. This aligns with research by the International Labour Organisation (2008), on financial management and diversification, emphasizing the benefits of having a mix of resources available to entrepreneurs.

The research findings on the marketing strategies embraced by female entrepreneurs, with a particular emphasis on the use of social media, resonate with existing studies that underscore the significance of digital marketing channels in contemporary entrepreneurship. These findings highlight the effectiveness and accessibility of social media platforms as a primary marketing tool for women entrepreneurs. Numerous studies in the field of entrepreneurship have recognized the growing role of social media in business promotion. The data indicating that a majority of female entrepreneurs favor social media platforms aligns with the broader trend of businesses harnessing the power of social networks to reach a wider audience. (Buttner and Moore, 2007)

The effectiveness of social media, as expressed by one of the respondents who mentioned having a substantial following on a Facebook, instagram and whatsapp page, resonates with the idea that social media provides a cost-effective and convenient way to engage with a customer base. A study by OECD (2012), highlighted the benefits of social media marketing, including its ability to enhance brand visibility, foster customer engagement, and facilitate product promotion.

The utilization of specialized online communities and social platforms tailored to entrepreneurs, especially women, for product promotion, as mentioned by another respondent, reflects the strategic use of niche communities within the digital landscape. This aligns with research on the importance of targeting specific customer segments and engaging with like-minded communities on social media to enhance marketing efforts. Studies on digital marketing often emphasize the need to identify and connect with relevant online groups and forums for effective promotion (Anderson and Smith, 2007).

b) *Theme 2 - Types and Economic Contribution of Female Entrepreneurs*

Research by the International Labour Organisation (2002), shows that a substantial portion of entrepreneurs choose to operate as sole proprietors. The research findings in the current study, with 64% of women entrepreneurs exclusively possessing their businesses, echo this global trend. Furthermore, the data indicating that 26% of female entrepreneurs engage in entrepreneurial partnerships is in line with research that emphasizes the importance of collaboration in entrepreneurship. Studies on entrepreneurship frequently highlight the value of partnerships, as they can bring complementary skills, resources, and shared responsibilities, contributing to the growth and success of businesses. This finding reinforces the idea that partnerships can be a strategic choice for female entrepreneurs, aligning with broader entrepreneurial trends. The presence of 10% of female entrepreneurs involved in businesses structured as limited companies also reflects a diversified ownership landscape.

The study findings on the dominance of specific sectors such as clothing, cosmetics, food and vegetables, and general trading aligns with established patterns in women's entrepreneurial activities. Pinfold (2001), Studies on female entrepreneurship points out that women entrepreneurs often gravitate toward sectors that are seen as more accessible, requiring lower capital investment and aligned with their skills and interests. Further, women entrepreneurs tend to participate in sectors where they can leverage their knowledge and expertise, as observed in the clothing, cosmetics, and food sectors. The research findings also reflect the role of women entrepreneurs in contributing to local and regional economies. This is consistent with studies conducted by OECD (2010), which emphasized the economic impact of women-owned businesses, particularly in the retail and service sectors. Women entrepreneurs in these sectors are known to create job opportunities, generate income, and contribute to the growth of local communities. While the findings suggest a certain degree of concentration in specific sectors, it's crucial to recognize that this does not diminish the significance of their contributions. Women entrepreneurs play a pivotal role in fostering innovation and competition within these sectors, thus promoting economic diversity and development.

This study's nuanced approach to understanding the duration of business operations reveals an insightful distribution of businesses across different stages of development. These findings align with the broader body of research on the lifecycle of businesses and the factors that contribute to their performance. A common theme that emerges is the recognition that businesses go through different stages, each with its unique challenges and opportunities. The research has revealed that 42% of the respondents have been in business for 5 years, implying that a significant portion of the sample is beyond the startup phase. This aligns with the concept of established businesses, which may face different challenges and exhibit varying performance levels. Moreover, the notable 19% of respondents who have been in business for a decade

signify a segment of experienced entrepreneurs who have demonstrated remarkable resilience. Studies on the long-term survival and success of businesses often emphasize the importance of adaptability and innovation. These findings underscore the potential for businesses to thrive and evolve over time, reflecting the adaptability and growth potential of entrepreneurial ventures (Smith, 2006). The presence of 39% of surveyed entrepreneurs with less than 3 years of business operation indicates the ongoing influx of startups and the dynamic nature of entrepreneurship. These early-stage businesses represent a critical part of the entrepreneurial ecosystem and contribute to job creation and innovation.

The research findings regarding tax and levy compliance among female entrepreneurs provide important insights into the responsible financial behaviour of this demographic, and these findings resonate with broader discussions on tax compliance and the role of entrepreneurs in local communities. Green and Cohen (2005), emphasized the importance of taxation as a vital revenue source for local authorities and the overall economic development of a region. The study has revealed that 72% of female entrepreneurs consistently fulfil their tax and levy. The study's findings echo the revelations observed in research on tax compliance, where taxation is often regarded as a civic responsibility were individuals and businesses perceive tax compliance as a moral duty to contribute to the betterment of their local communities. The data indicating that 85% of female entrepreneurs view it as an essential civic responsibility reflects the alignment of their values with this broader perspective. Furthermore, the positive relationship between compliant entrepreneurs and local authorities is well-documented in the literature. Studies have highlighted the importance of trust and cooperation between businesses and governmental bodies. The research showing that 62% of compliant female entrepreneurs acknowledge that meeting their tax obligations has helped establish a positive and cooperative relationship with the local authority aligns with the idea that such relationships can facilitate access to support and resources, contributing to the growth and sustainability of businesses.

c) *Theme 3- Challenges Faced by Female Entrepreneurs*

Research conducted by the Smith (2006), reveals that women-owned businesses often face higher barriers to accessing formal financing compared to their male counterparts. This disparity is attributed to a combination of factors, including gender bias, limited collateral assets, and the perception of higher risks associated with female-led ventures. These findings mirror the data presented in the study, where only 31% of female entrepreneurs successfully secured external financing.

A study by McManus (2012), exploring female entrepreneurship in emerging economies identified the prevalence of personal and family savings as a primary source of capital for women-owned businesses. This pattern reflects the research's data showing that 62% of female entrepreneurs resort to personal and family resources. In addition, research conducted by International Labour Organisation in 2007 emphasise the need for targeted interventions to address the specific challenges female entrepreneurs face in securing financing. These include designing financial products tailored to women's needs, improving financial literacy, and fostering partnerships between financial institutions and women's business associations. Such efforts align with the recognition that tackling the gender financing gap is crucial for fostering gender equality and economic growth.

The research findings pointing to the intricate challenges female youth entrepreneurs face in balancing their business responsibilities with family and personal life are in alignment with numerous studies that have explored the intersection of entrepreneurship and work-life balance for women. These challenges have been identified as a critical aspect of the female entrepreneurial experience, reflecting the broader conversation on gender dynamics in the business world. Women entrepreneurs often grapple with the dual roles of being business leaders and caregivers. This juggling act can lead to increased stress and a negative impact on overall well-being. Moreover, the findings that female youth entrepreneurs employ coping mechanisms to navigate these challenges echo the results of surveys by Schumpter (2003) that investigated the strategies women use to manage work-family conflicts. These strategies may include making personal sacrifices, altering work hours, or seeking social support. This illustrates the resilience and adaptability of this group.

Research by UNECE (2014), demonstrates that gender bias continues to be a significant barrier and that female entrepreneurs frequently encounter skepticism, doubts, and stereotypes that undermine their credibility and opportunities for business success. The data in the current study, indicating that 64% of female youth entrepreneurs have experienced discrimination and dismissive attitudes, aligns with this broader trend. Furthermore, the documented impact of gender bias on the self-esteem and confidence of female youth entrepreneurs reflects the psychological toll that these biases can have. The findings of these studies emphasize the importance of recognizing and addressing the detrimental impact of societal expectations and stereotypes on women's self-assurance in entrepreneurial endeavours.

The research findings highlighting the challenges faced by female youth entrepreneurs in accessing experienced mentors and establishing vital business connections are consistent with a growing

body of literature on the importance of mentorship and networking in entrepreneurship. These challenges significantly affect the growth and sustainability of businesses run by female youth, and they have implications for economic development and gender equality. These studies Highlights the role of mentors in providing guidance, sharing expertise, and fostering confidence among female entrepreneurs. The data presented in the study, with only 18% of female youth entrepreneurs reporting successful mentorship experiences, underscores the need to expand and enhance mentorship programs tailored to this demographic.

Effective networking can provide access to resources, market insights, and potential business opportunities. The finding that 75% of female youth entrepreneurs acknowledge facing networking hurdles aligns with research that has identified the gender disparities in business networks and the need for interventions to bridge this gap. Moreover, the research findings, indicating that 67% of female youth entrepreneurs believe that mentorship and networking challenges have hindered their business development and expansion, resonate with the broader understanding of how these challenges can impact entrepreneurial outcomes. The literature emphasizes the positive influence of mentorship and networking on business growth and sustainability, and the barriers faced by women in these areas can limit their entrepreneurial success.

VI. Conclusion

The study reveals that 24% of female entrepreneurs are in the 28-year-old category, which is consistent with the observation that entrepreneurship is often associated with individuals in their late twenties and early thirties. This suggests that individuals in this age group may have the relevant experience, professional networks, and confidence to take entrepreneurial risks. Moreover, the presence of female entrepreneurs in their mid-20s highlights the dynamic and evolving nature of entrepreneurship, with younger entrepreneurs bringing fresh perspectives and innovative approaches, while more experienced entrepreneurs contribute industry knowledge.

On marital status and educational background of female entrepreneurs. It finds that 66% of respondents were married, emphasizing that marriage can provide emotional and financial stability, encouraging entrepreneurial pursuits. In terms of education, nearly half of respondents had primary education, reflecting the global trend where many entrepreneurs start with varying education levels. This diversity in educational backgrounds highlights the potential for entrepreneurship to be a pathway for individuals with different educational backgrounds to succeed.

Regarding the initial capital invested by female entrepreneurs, the study shows a wide range of investments, with 20% of entrepreneurs starting with limited capital, 10% with notably larger sums, and a segment with modest starting capital. This reflects the variability in capital needs among female entrepreneurs, with some prioritizing lean approaches. The study also explores the financial sources for women-led enterprises, with 28% receiving family support, particularly from spouses. Additionally, 36% rely on their savings, demonstrating self-reliance. Accessing funds from community-based financial schemes and using a multifaceted approach is also common, showcasing resourcefulness.

In terms of marketing strategies, the study highlights the significant role of social media, with a majority of female entrepreneurs using platforms like Facebook for marketing. The effectiveness of social media in enhancing brand visibility, customer engagement, and product promotion is emphasized. Moreover, the study underscores the strategic use of niche online communities for product promotion, aligning with the importance of targeting specific customer segments and engaging with like-minded communities in digital marketing. In this study, 64% of female entrepreneurs exclusively own their businesses, mirroring this global trend. Additionally, 26% of female entrepreneurs engage in entrepreneurial partnerships, in line with research emphasizing the value of collaboration in entre-preneurship. Partnerships often bring complementary skills, resources, and shared responsibilities, contributing to business growth. This reinforces the idea that partnerships can be a strategic choice for female entrepreneurs. The presence of 10% of female entrepreneurs operating as limited companies adds to the diversity of ownership structures.

The study also explores the dominant sectors among female entrepreneurs, such as clothing, cosmetics, food and vegetables, and general trading. This aligns with established patterns in women's entrepreneurial activities, as they tend to gravitate toward sectors requiring lower capital investment and aligned with their skills and interests. These findings also reflect women entrepreneurs' role in contributing to local and regional economies, generating income and job opportunities, consistent with studies conducted by the OECD (2010). Although there's a concentration in specific sectors, the contributions of women entrepreneurs foster innovation and competition within these sectors, promoting economic diversity and development.

The study delves into the duration of business operations, revealing a distribution of businesses across different stages of development. A notable portion (42%) of respondents have been in business for 5 years,

indicating established businesses that may face different challenges. Another 19% have been in business for a decade, signifying experienced entrepreneurs with remarkable resilience. These findings align with the concept that businesses go through various stages, emphasizing adaptability and growth potential. Moreover, 39% of surveyed entrepreneurs with less than 3 years of business operation highlight the dynamic nature of entrepreneurship and its contribution to job creation and innovation.

Regarding tax and levy compliance, the study shows that 72% of female entrepreneurs consistently fulfill their tax and levy obligations, reflecting responsible financial behavior. The majority (85%) view tax compliance as an essential civic responsibility, aligning their values with the broader perspective that taxation is a moral duty to contribute to local communities' betterment. Compliant female entrepreneurs (62%) acknowledge the positive relationship between meeting their tax obligations and establishing a cooperative rapport with local authorities, facilitating access to support and resources for business growth and sustainability. These findings resonate with the importance of tax compliance in supporting local economic development and the cooperative relationship between businesses and governmental bodies.

The study has revealed that women-owned businesses often encounter higher barriers to accessing formal financing due to factors like gender bias, limited collateral assets, and perceived higher risks associated with female-led ventures. Only 31% of female entrepreneurs in the study successfully secured external financing. Further, the study's findings indicate that female youth entrepreneurs face challenges in balancing business responsibilities with personal and family life, reflecting the broader conversation on work-life balance for women in entrepreneurship. They employ coping mechanisms, such as making personal sacrifices, altering work hours, or seeking social support, demonstrating resilience and adaptability.

Based on the study's findings, several recommendations have been proposed to support and enhance female entrepreneurship and business performance. These recommendations include the need to expand financial programs targeting female entrepreneurs, such as low-interest loans, grants, and equity investment opportunities, and the establishment of women-focused investment funds in collaboration with financial institutions. Additionally, there is a call for the development of mentorship and networking initiatives that connect experienced business leaders with aspiring female entrepreneurs through online platforms and offline events. To address work-life balance and well-being, policies promoting flexible working hours and offering mental health and stress management resources tailored to female entrepreneurs are suggested.

VII. Recommendations

Based on the findings of this study, the following recommendations have been made;

- *Access to Capital and Financial Support:* There is need to implement and expand financial programs that specifically target female entrepreneurs, such as low-interest loans, grants, or equity investment opportunities. Government should establish partnerships with financial institutions to create women-focused investment funds.
- *Mentorship and Networking Initiatives:* Government and stakeholders should develop mentorship and networking programs that connect experienced business leaders with aspiring female entrepreneurs by creating online platforms and offline events that facilitate connections and knowledge sharing among women in business.
- *Work-Life Balance and Well-being Support:* Government should introduce policies that promote work-life balance, such as flexible working hours and offer mental health and well-being resources tailored to the specific needs of female entrepreneurs, including stress management and self-care programs.
- *Gender-Inclusive Business Support Programs:* Review and update existing government policies to ensure they are gender-inclusive and do not unintentionally hinder female entrepreneurs. Implement performance metrics to track the effectiveness of these policies and regularly assess their impact on female entrepreneurship and business growth.

By implementing these recommendations, government and stakeholders can help create a more supportive and inclusive environment for female entrepreneurs, ultimately leading to improved business performance and greater economic empowerment for women in the business world.

Authors Contribution

Angel Bhamjee played a pivotal role in the inception and conceptualization of the research study, lending her expertise to shape the study's overarching framework and research objectives. Furthermore, She made substantial contributions throughout the research process, actively participating in data collection, meticulously analyzing the gathered data, and making significant contributions to the drafting and refinement of the article.

Hanson Chishimba, on the other hand, brought valuable expertise to the project by taking the lead in the development of data collection instruments, demonstrating a keen eye for methodological rigor. In addition to this instrumental role, he played a central part in the meticulous analysis of the acquired data,

employing advanced analytical techniques to derive meaningful insights. Moreover, his skillful structuring of the article, coupled with his dedication to the clarity and coherence of the narrative, significantly contributed to the overall quality and readability of the research output. Together, the collaborative efforts of Hanson Chishimba and Angel Bhamjee synergized to produce a well-rounded and rigorously conducted study.

Disclosure of Interest

The authors declare that there are no conflicts of interest pertaining to the research, authorship, or publication of this article. We affirm that the research conducted and the findings presented in this manuscript are devoid of any financial, personal, or professional relationships or affiliations that could potentially bias or influence our objectivity in the research process, data analysis, or the presentation of results.

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Data Availability Statement

The data supporting the findings of this study is publicly available and can be accessed at the University of Zambia library. Additionally, datasets pertaining to the institutions that were investigated in this research are also accessible through the respective institutions' data repositories or archives. Researchers interested in accessing and utilizing this data for further analysis or validation are encouraged to refer to the University of Zambia library's data repository or contact the relevant institutions directly.

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13. Use good grammar: Always use good grammar and words that will have a positive impact on the evaluator; use of good vocabulary does not mean using tough words which the evaluator has to find in a dictionary. Do not fragment sentences. Eliminate one-word sentences. Do not ever use a big word when a smaller one would suffice.
Verbs have to be in agreement with their subjects. In a research paper, do not start sentences with conjunctions or finish them with prepositions. When writing formally, it is advisable to never split an infinitive because someone will (wrongly) complain. Avoid clichés like a disease. Always shun irritating alliteration. Use language which is simple and straightforward. Put together a neat summary.

14. Arrangement of information: Each section of the main body should start with an opening sentence, and there should be a changeover at the end of the section. Give only valid and powerful arguments for your topic. You may also maintain your arguments with records.

15. Never start at the last minute: Always allow enough time for research work. Leaving everything to the last minute will degrade your paper and spoil your work.

16. Multitasking in research is not good: Doing several things at the same time is a bad habit in the case of research activity. Research is an area where everything has a particular time slot. Divide your research work into parts, and do a particular part in a particular time slot.

17. Never copy others' work: Never copy others' work and give it your name because if the evaluator has seen it anywhere, you will be in trouble. Take proper rest and food: No matter how many hours you spend on your research activity, if you are not taking care of your health, then all your efforts will have been in vain. For quality research, take proper rest and food.

18. Go to seminars: Attend seminars if the topic is relevant to your research area. Utilize all your resources.

19. Refresh your mind after intervals: Try to give your mind a rest by listening to soft music or sleeping in intervals. This will also improve your memory. Acquire colleagues: Always try to acquire colleagues. No matter how sharp you are, if you acquire colleagues, they can give you ideas which will be helpful to your research.

20. Think technically: Always think technically. If anything happens, search for its reasons, benefits, and demerits. Think and then print: When you go to print your paper, check that tables are not split, headings are not detached from their descriptions, and page sequence is maintained.

21. Adding unnecessary information: Do not add unnecessary information like "I have used MS Excel to draw graphs." Irrelevant and inappropriate material is superfluous. Foreign terminology and phrases are not apropos. One should never take a broad view. Analogy is like feathers on a snake. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Never oversimplify: When adding material to your research paper, never go for oversimplification; this will definitely irritate the evaluator. Be specific. Never use rhythmic redundancies. Contractions shouldn't be used in a research paper. Comparisons are as terrible as clichés. Give up ampersands, abbreviations, and so on. Remove commas that are not necessary. Parenthetical words should be between brackets or commas. Understatement is always the best way to put forward earth-shaking thoughts. Give a detailed literary review.

22. Report concluded results: Use concluded results. From raw data, filter the results, and then conclude your studies based on measurements and observations taken. An appropriate number of decimal places should be used. Parenthetical remarks are prohibited here. Proofread carefully at the final stage. At the end, give an outline to your arguments. Spot perspectives of further study of the subject. Justify your conclusion at the bottom sufficiently, which will probably include examples.

23. Upon conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium though which your research is going to be in print for the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects of your research.

Informal Guidelines of Research Paper Writing

Key points to remember:

- Submit all work in its final form.
- Write your paper in the form which is presented in the guidelines using the template.
- Please note the criteria peer reviewers will use for grading the final paper.

Final points:

One purpose of organizing a research paper is to let people interpret your efforts selectively. The journal requires the following sections, submitted in the order listed, with each section starting on a new page:

The introduction: This will be compiled from reference matter and reflect the design processes or outline of basis that directed you to make a study. As you carry out the process of study, the method and process section will be constructed like that. The results segment will show related statistics in nearly sequential order and direct reviewers to similar intellectual paths throughout the data that you gathered to carry out your study.

The discussion section:

This will provide understanding of the data and projections as to the implications of the results. The use of good quality references throughout the paper will give the effort trustworthiness by representing an alertness to prior workings.

Writing a research paper is not an easy job, no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record-keeping are the only means to make straightforward progression.

General style:

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear: Adhere to recommended page limits.

Mistakes to avoid:

- Insertion of a title at the foot of a page with subsequent text on the next page.
- Separating a table, chart, or figure—confine each to a single page.
- Submitting a manuscript with pages out of sequence.
- In every section of your document, use standard writing style, including articles ("a" and "the").
- Keep paying attention to the topic of the paper.

- Use paragraphs to split each significant point (excluding the abstract).
- Align the primary line of each section.
- Present your points in sound order.
- Use present tense to report well-accepted matters.
- Use past tense to describe specific results.
- Do not use familiar wording; don't address the reviewer directly. Don't use slang or superlatives.
- Avoid use of extra pictures—include only those figures essential to presenting results.

Title page:

Choose a revealing title. It should be short and include the name(s) and address(es) of all authors. It should not have acronyms or abbreviations or exceed two printed lines.

Abstract: This summary should be two hundred words or less. It should clearly and briefly explain the key findings reported in the manuscript and must have precise statistics. It should not have acronyms or abbreviations. It should be logical in itself. Do not cite references at this point.

An abstract is a brief, distinct paragraph summary of finished work or work in development. In a minute or less, a reviewer can be taught the foundation behind the study, common approaches to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Use comprehensive sentences, and do not sacrifice readability for brevity; you can maintain it succinctly by phrasing sentences so that they provide more than a lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study with the subsequent elements in any summary. Try to limit the initial two items to no more than one line each.

Reason for writing the article—theory, overall issue, purpose.

- Fundamental goal.
- To-the-point depiction of the research.
- Consequences, including definite statistics—if the consequences are quantitative in nature, account for this; results of any numerical analysis should be reported. Significant conclusions or questions that emerge from the research.

Approach:

- Single section and succinct.
- An outline of the job done is always written in past tense.
- Concentrate on shortening results—limit background information to a verdict or two.
- Exact spelling, clarity of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else.

Introduction:

The introduction should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable of comprehending and calculating the purpose of your study without having to refer to other works. The basis for the study should be offered. Give the most important references, but avoid making a comprehensive appraisal of the topic. Describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will give no attention to your results. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here.

The following approach can create a valuable beginning:

- Explain the value (significance) of the study.
- Defend the model—why did you employ this particular system or method? What is its compensation? Remark upon its appropriateness from an abstract point of view as well as pointing out sensible reasons for using it.
- Present a justification. State your particular theory(-ies) or aim(s), and describe the logic that led you to choose them.
- Briefly explain the study's tentative purpose and how it meets the declared objectives.

Approach:

Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done. Sort out your thoughts; manufacture one key point for every section. If you make the four points listed above, you will need at least four paragraphs. Present surrounding information only when it is necessary to support a situation. The reviewer does not desire to read everything you know about a topic. Shape the theory specifically—do not take a broad view.

As always, give awareness to spelling, simplicity, and correctness of sentences and phrases.

Procedures (methods and materials):

This part is supposed to be the easiest to carve if you have good skills. A soundly written procedures segment allows a capable scientist to replicate your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order, but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt to give the least amount of information that would permit another capable scientist to replicate your outcome, but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section.

When a technique is used that has been well-described in another section, mention the specific item describing the way, but draw the basic principle while stating the situation. The purpose is to show all particular resources and broad procedures so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step-by-step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

Materials may be reported in part of a section or else they may be recognized along with your measures.

Methods:

- Report the method and not the particulars of each process that engaged the same methodology.
- Describe the method entirely.
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures.
- Simplify—detail how procedures were completed, not how they were performed on a particular day.
- If well-known procedures were used, account for the procedure by name, possibly with a reference, and that's all.

Approach:

It is embarrassing to use vigorous voice when documenting methods without using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result, when writing up the methods, most authors use third person passive voice.

Use standard style in this and every other part of the paper—avoid familiar lists, and use full sentences.

What to keep away from:

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings—save it for the argument.
- Leave out information that is immaterial to a third party.

Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part as entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Use statistics and tables, if suitable, to present consequences most efficiently.

You must clearly differentiate material which would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matters should not be submitted at all except if requested by the instructor.

Content:

- Sum up your conclusions in text and demonstrate them, if suitable, with figures and tables.
- In the manuscript, explain each of your consequences, and point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation of an exacting study.
- Explain results of control experiments and give remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or manuscript.

What to stay away from:

- Do not discuss or infer your outcome, report surrounding information, or try to explain anything.
- Do not include raw data or intermediate calculations in a research manuscript.
- Do not present similar data more than once.
- A manuscript should complement any figures or tables, not duplicate information.
- Never confuse figures with tables—there is a difference.

Approach:

As always, use past tense when you submit your results, and put the whole thing in a reasonable order.

Put figures and tables, appropriately numbered, in order at the end of the report.

If you desire, you may place your figures and tables properly within the text of your results section.

Figures and tables:

If you put figures and tables at the end of some details, make certain that they are visibly distinguished from any attached appendix materials, such as raw facts. Whatever the position, each table must be titled, numbered one after the other, and include a heading. All figures and tables must be divided from the text.

Discussion:

The discussion is expected to be the trickiest segment to write. A lot of papers submitted to the journal are discarded based on problems with the discussion. There is no rule for how long an argument should be.

Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implications of the study. The purpose here is to offer an understanding of your results and support all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of results should be fully described.

Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact, you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved the prospect, and let it drop at that. Make a decision as to whether each premise is supported or discarded or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."

Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work.

- You may propose future guidelines, such as how an experiment might be personalized to accomplish a new idea.
- Give details of all of your remarks as much as possible, focusing on mechanisms.
- Make a decision as to whether the tentative design sufficiently addressed the theory and whether or not it was correctly restricted. Try to present substitute explanations if they are sensible alternatives.
- One piece of research will not counter an overall question, so maintain the large picture in mind. Where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

When you refer to information, differentiate data generated by your own studies from other available information. Present work done by specific persons (including you) in past tense.

Describe generally acknowledged facts and main beliefs in present tense.

The Administration Rules

Administration Rules to Be Strictly Followed before Submitting Your Research Paper to Global Journals Inc.

Please read the following rules and regulations carefully before submitting your research paper to Global Journals Inc. to avoid rejection.

Segment draft and final research paper: You have to strictly follow the template of a research paper, failing which your paper may get rejected. You are expected to write each part of the paper wholly on your own. The peer reviewers need to identify your own perspective of the concepts in your own terms. Please do not extract straight from any other source, and do not rephrase someone else's analysis. Do not allow anyone else to proofread your manuscript.

Written material: You may discuss this with your guides and key sources. Do not copy anyone else's paper, even if this is only imitation, otherwise it will be rejected on the grounds of plagiarism, which is illegal. Various methods to avoid plagiarism are strictly applied by us to every paper, and, if found guilty, you may be blacklisted, which could affect your career adversely. To guard yourself and others from possible illegal use, please do not permit anyone to use or even read your paper and file.

Criterion for Grading a Research Paper (Compilation) by Global Journals

Please note that following table is only a Grading of "Paper Compilation" and not on "Performed/Stated Research" whose grading solely depends on Individual Assigned Peer Reviewer and Editorial Board Member. These can be available only on request and after decision of Paper. This report will be the property of Global Journals.

Topics	Grades		
	A-B	**C-D**	**E-F**
Abstract	Clear and concise with appropriate content, Correct format. 200 words or below	Unclear summary and no specific data, Incorrect form Above 200 words	No specific data with ambiguous information Above 250 words
Introduction	Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited	Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter	Out of place depth and content, hazy format
Methods and Procedures	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
Result	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
Discussion	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

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