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Optimization of the Automated Sales System as an Effort to Minimize Fraud & Improve Internal Control at The Distribution Company PT Sehat Selalu Banyak Rejeki

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Abstract

Information systems are essential in developing a business, especially in integrating data between one role and another. In addition, the development of information systems can be utilized by management in carrying out internal controls to manage the organization or company and minimize the risk of fraud resulting in material losses. This study aims to explain how the form of efforts to optimize the sales system in a company so that it becomes an automated system as an effort to minimize the risk of fraud and forms of internal control efforts. The research method used is an agile method (to develop a web-based information system) and descriptive qualitative (to identify how to implement a strategy to minimize fraud and as an effort to carry out internal control). The results of this study provide information that the implementation of an integrated web-based system which in this study is referred to as ISSS, can assist companies in improving internal control through the efficiency and effectiveness of business processes which are also visualized in the BPMN notation. This study also explains that implementing a web-based information system presented in the ISSS makes it easier for companies to minimize fraud to reduce material losses.

Keywords: Information System, Fraud, Internal Control, Optimization

JEL Codes: M15, M41, M49

How to Cite

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1. Introduction

An accounting Information System (AIS) is a component that collects, categorizes, processes, analyzes, and combines relevant financial information for the decision-making of interested parties (such as management and shareholders) (Otinur et al., 2017). The importance of using AIS as a way to carry out reasonable internal control and as an effort to prevent fraud has been

realized by PT Sehat Selalu Banyak Rejeki. In its realization, after experiencing business development in the last three years, PT Sehat Selalu Banyak Rejeki has several times often experienced difficulties in carrying out internal controls on the sales system between depot offices managed by the company but in certain distribution areas with the center or called the head office. . One of the problems that often occurs is the frequent occurrence of 1) the difference in recording related to the condition of authentic physical goods with the recording results reported through routine reports to the head office as a form of knowledge control related to the balance sheet owned by each depot, 2) there is a difference in assets in the form of sales proceeds that have not been recognized in the report, giving rise to manipulative records resulting from the use of funds generated from the sale for the personal interests of specific individuals, and others.

The existence of some of these problems, if, in the end, the situation cannot be minimized, will result in material losses in the company with a reasonably large nominal. After the actual audit process, the field audit produces data declared entirely irrelevant. Errors often indicate abuse of authority by staff at the depot or AMO (marketing office area) and the management involved. Based on the problems and conditions that show these indications, it is necessary for the company to carry out regular and continuous inspections and audits to ensure that the risk of fraud is minimized.

Knowing the status quo currently being experienced by PT Sehat Selalu Banyak Rejeki, a system is needed to cover these problems effectively and efficiently. In its implementation, the current system owned by PT Sehat Selalu Banyak Rejeki is still unable to reduce the occurrence of fraud at the depot office; this is evidenced by management statements directly related to several problems of abuse of authority in recent years. Supported the inefficient and ineffective implementation of monthly field audits that require the head office or head office to make visits to each distribution area will result in delayed information for decision making

This study plans to create a web-based integration application that can unify the records between the depot and the head office and describe the implications of implementing the application. This application consists of modules focusing on cash flow and subsequent inventory flows; this application will be used by management to monitor and synchronize data between AMO and the head office. The purpose of making this application is to carry out internal control and prevent fraud in the company. In addition, the reports presented will be more complete, valid, understandable, and comparable. This is in line with the characteristics of an excellent report, namely, comparative, relevant, and easy to understand (Herath & Albarqi, 2017). In an integrated system, all existing information will be entered into one central database, making it easier to synchronize and extract complete information (Kot et al., 2019). So, through the previous description, the title of the research that was raised was "Optimization of Automated Sales System as an Effort to Minimize Fraud & Improve Internal Control in Distribution Company PT. Sehat Selalu Banyak Rezeki."

2. Literature Review

2.1 Internal Control

The COSO framework states that internal control is a set of means to cover an organization's entire process of the activity. Internal control has the meaning described by the Committee of Sponsoring Organizations of the Treadway Commission COSO (2013) as "Internal control is a business process affected by an organization within an entity that is designed to offer reasonable assurance about the achievement of objectives related to operations, reporting, and compliance". Internal control of a method includes basic controls: planning, implementing and monitoring internal control, but according to COSO (2013), there are five interrelated control components.

2.2 Sales Internal Control Management

Effective. Based on the law that was initiated by Sarbanes-Oxley where the rule requires that there be strong and effective internal control in the company, especially in the process of recording transactions and preparing financial reports, so that with this it can facilitate the company in providing directives for the company's operating activities. The benefits of exercising internal control are as follows: 1) providing assurance that assets are protected and used for business purposes, 2) confidence that the information presented is accurate, 3) and confidence that employees comply with applicable laws and companies, 4) belief that efforts have been made to protect company assets from theft, fraud, misuse, or misplacement.

One of the violations due to the ineffectiveness of internal control is the risk associated with employee fraud. Employee fraud (employee fraud) is a deliberate act to deceive the company for personal gain. Like theft, the excess of intentional recording in expense recognition. In a distribution company, several things require more control, especially in implementing the work system to avoid fraud and other risks of loss, namely: 1) the risk of fictitious sales or reporting so that the conditions of documentation and recording do not match the existing realization conditions, 2) risk of bad credit due to the provision of tempo or credit sales, and 3) misuse of the promo budget

2.3 Fraud Triangle

Fraud Triangle Theory (FTT) is an idea about the origin of an act of fraud (Iswahyudi, 2020). Three factors cause fraud: pressure, rationalization, and opportunity (Tiffani & Marfuah, 2015).

Based on SAS No. 99, there are 4 (four) types of conditions that commonly occur in pressure that can lead to fraud: financial stability, external pressure, personal financial need, and financial targets. At the same time, the opportunity itself consists of three categories of circumstances: the nature of the industry, ineffective monitoring, and organizational structure (Fraud Detection in a GAAS Audit: SAS No. 99 Implementation Guide, 2002). The next component that can cause fraud is rationalization. Rationalization is one of the causes of fraud because it is considered to justify the activities of the perpetrators. (Tiffani & Marfuah, 2015).

2.4 Business Process Analysis

Business processes can be said simply as a flow of activities. A business process describes a structured collection of tasks or actions to produce a particular service or product for one or more customers. For business process modeling it is imperative in the life cycle of Business Process Reengineering (BPR) (Sari & Asniar, 2015)

2.5 Previous Research

As for its implementation, providing solutions using a web-based integrated information system at trading companies is based on several previous studies that offered positive comments, which are described in the following table:

Table 1. Previous Research Summary

Research Title	Author	Result
Internal Control, organizational Culture, and Quality of Information Accounting to Prevent Fraud: Case Study From Indonesia's Agriculture Industry	(Setyaningsih & Nengzih, 2020)	<i>The results of the study show that some weaknesses of the internal controls have been identified as one of the factors of fraud. The results show that Internal Control Organizational Culture and Quality of Information Accounting have a positive significant effect to prevent fraud.</i>
Management's Materiality Criteria of Internal Control Weaknesses and Corporate Fraud: Evidence from China	(Wu & Wang, 2018)	<i>The article find that when companies committed fraud in the previous year that remains undetected, their management is more likely to use revenue (rather than pretax income) as the first-time benchmark and to set a higher revenue-based materiality threshold as well. Moreover, once the materiality metrics are set, the first-time revenue-based materiality threshold is significantly and positively associated with subsequent incidence of corporate fraud, which suggests that setting deviant and loose materiality metrics leaves room for the management to engage in future misconduct.</i>
The Impact of Internal Control and Individual Morals on Fraud: An Experimental Study	(Efrizon et al., 2020)	<i>Results show differences among individuals under the conditions of present or absent internal control to commit fraud. Moreover, there are differences among individuals who have high and low levels of individual morality to commit fraud. Finally, results reveal that the interaction between individual morality and internal controls lead to fraud</i>

3. Research Method

Research methodology is defined as a series of processes to guide the system development process. In preparing this research, the methods used are 1) the Agile method for developing applications and 2) the qualitative descriptive method in describing the implications of implementing ISSS to support financial validity.

According to Pressman (2010: 82) Agile method development method is software development that has a short period and can adapt to changes that may occur during the process of developing the system. One method that can be said to be an agile development method if it is interactive, incremental, flexible, responding to charge, and lightweight, but there is still a critical thing about the Agile development method, namely how to describe a system that can be understood easily and can solve party problems. **Clients.**

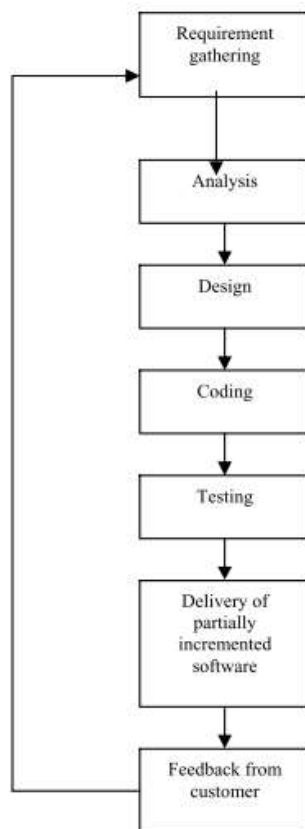


Figure 1. Agile Method implementation cycle (Sharkie, n.d. ; 2018)

Requirement Gathering

In a method for solving problems, the first thing that must be done is to analyze the situation (the status quo) and then look for the most appropriate alternative. In this stage, researchers and software developers identify problems, determine stakeholders, formulate steps for completion by making roadmaps, and collect required documents and various other information. At this stage, it is essential to collaborate and unify the system development objectives and implementation mechanisms. At this stage, data is collected and examined at the feasibility level and project scope using the PIECES Performance, Information, Economics, Control, Efficiency, Service framework. This is done to find the core of existing problems (problems), opportunities to improve organizational performance (options), and new needs imposed by management or the government (directives).

Analysis

After collecting data, what was done by the researcher was to analyze the problem and determine the proper steps to solve the problem. At this stage, the problem identification process uses BPMN (business process management notation) so that with the visualization of the overall business flow, it is possible to analyze the efficiency and effectiveness of various ongoing business activities, especially in the marketing distribution aspect.

Design

The practice of research design using the ERD system (entity relationship diagram). The design stage is the stage in conducting program preparation based on the roadmap and previous analysis. In this stage, the drafting team identifies stakeholders and the primary or secondary key in each process to be visualized through the coding stage. This stage aims to transform business requirements from the requirements analysis phase to the model system that will be built later. In other words, this phase answers questions about the use of technology (data, process, interface) that ensures usability, reliability, completeness, performance, and quality built into the system.

coding

Coding is the stage where the IT team performs activities to visualize the programming design that was conceptualized before into a programming language to produce output in the form of a system. In its implementation, the coding process is carried out using CSS (Cascading Style Sheet), HTML (Hypertext Markup Language), Java Script, J-query, and PHP (Hypertext Preprocessor) with the use of a framework called Larafell, which is a framework that can assist web developers in maximizing the use of PHP in the website development process, as well as the database used is My SQL which is conceptualized on a private page to then produce output in the form of a website-based system that is connected to a specific address.

Testing

The testing stage is a stage where the entire team conducts trials related to the implementation of the program made to check: 1) the suitability of the system made with the concept that was prepared previously, 2) error analysis when the application is run, 3) minimizing the existence of fraud so that it is accompanied by with the development of a security system and other considerations, and 4) smooth development of each stakeholder involved in the development of a system.

Delivery of Partially Incremented Software

The results of the trial process carried out previously, at this stage, were followed up with improvements and further evaluation of the system developed

Feedback from User

The question is whether the IT team has the same use as the function of each user; data collection is carried out in the form of percentages or questionnaires *to ensure there are benchmarks. In a business, the important thing in development is based on customer orientation. So it can be concluded that the customer has an essential role in developing a system; knowing the following, the IT team needs to provide an option or a form of system mechanism where the company can communicate directly with the customer or customer.

4. Results and Discussion

4.1 Historical System Changes through BPMN (Business Process Management Notation) analysis

BPMN provides a standardized visualization of the modeling of a business process so that the flow and schema of the business process, in general, can be more easily read and understood by all components involved in the business. The existing business processes at PT Sehat Selalu Banyak Rejeki include a series of activities that involve several business components within the company. The complexity of existing business processes has not yet been visualized in a model. Identifying and modeling business processes is one of the initial stages in building competitive advantage through business processes. Identifying and modeling ongoing business processes (As-Is Model) will assist management in identifying potential changes that will occur to support the efficiency and effectiveness of existing activities and ultimately improve business process performance. At PT Sehat Selalu Banyak Rejeki, one of the core processes in the running business is the distribution business scheme or sales implementation. In carrying out the process, PT Sehat Selalu Banyak Rejeki has undergone many system changes in the sales business process scheme, which consists of the stages which are visualized as follows:

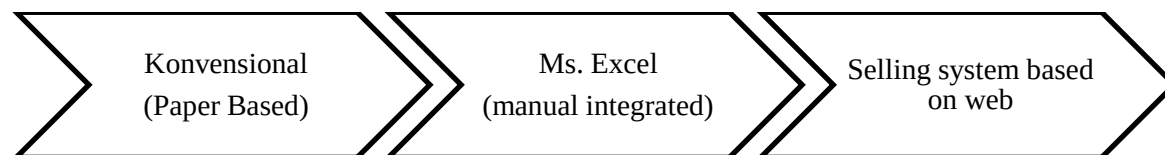


Figure 2. Historical Scheme of sales information system development at PT SSBR

So that in, the historical Scheme can be described in the visualization of BPMN as follows:
Conventional System (Paper-based)



Figure 3. PT SSBR Conventional System Semi-Automation (Ms. Excel Basic)

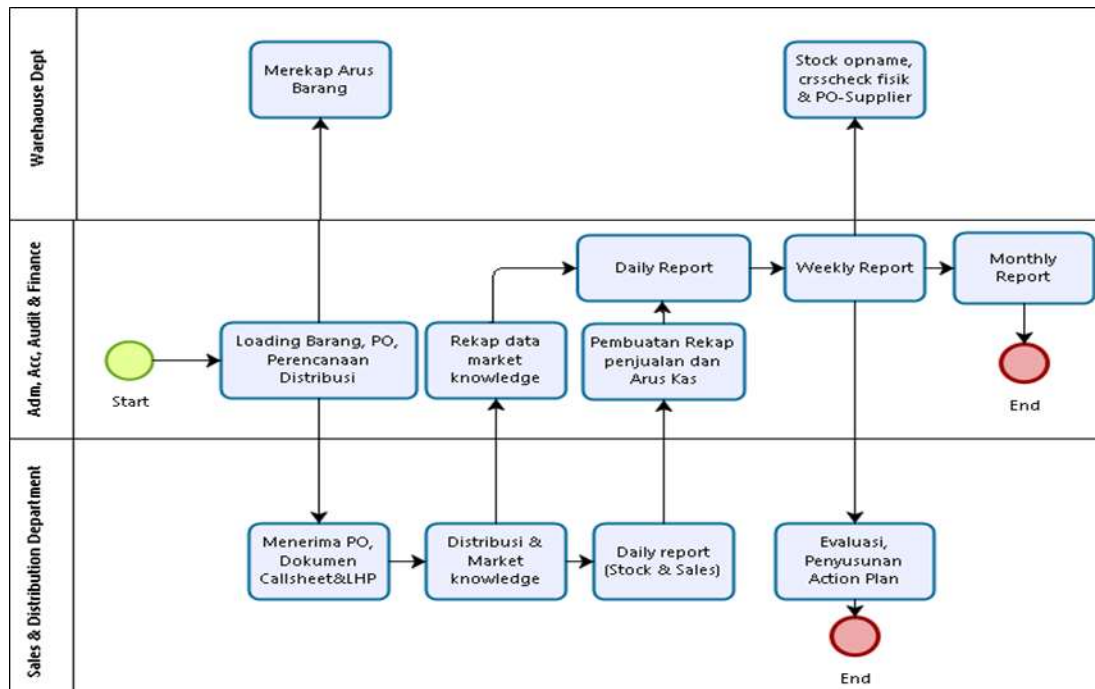


Figure 4. Semi-Automatic System (Ms. Excel Basic)

Automation (Application based on the Web)

The use of the Web in the sales information system development option is considered to know the facilities provided, such as 1) private Web and cloud so that company information can be kept confidential, 2) easy access through several devices, 3) customize which can be managed independently according to company needs. The following will be explained further in the sub-chapter of the development of the BPMN system, which should be able to support internal control and support the company's efforts to minimize fraud.

4.2 Implementation of Internal Control using the COSO framework

In research conducted at PT Sehat Selalu Banyak Rejeki. Internal control aims to optimize the automated sales system to minimize fraud and improve internal control in the company. This can be done by knowing the internal control by comparing the theory in the field at PT Sehat Selalu

Banyak Rejeki. According to the Committee of Sponsoring Organizations (COSO), the standard used is regarding the elements of internal control.

Table 2. Standard analysis used through the COSO framework

No.	Komponen	Prinsip	Point Of Focus
1	Kontrol Lingkungan	Organisasi menunjukkan dedikasi terhadap cita-cita etis dan integritas	a) <i>a) There are regulations in every company</i> b) <i>b) Setting the standard</i> c) <i>c) Evaluating compliance with behavioral standards</i> d) <i>d) Follow up on fraud committed in a timely manner..</i>
		Exercises on vision responsibility	a) <i>a) Assign supervisory responsibilities to the Business Owner</i> b) <i>b) Ownership of Business Owner expertise</i> c) <i>c) Independence of Business Owner</i> d) <i>d) Supervisor is responsible for all areas.</i>
		Create organizational structure, authority, and responsibility	a) <i>a) Creating an organizational structure</i> b) <i>b) Implementing the required reporting flow by establishing an organizational structure that pays attention to these aspects.</i> c) <i>c) Determination, granting, and limitation of Authorities and Responsibilities.</i>
		Demonstrate commitment related to competence	a) <i>a) Being in HR commitments and practices can build and retain employees</i> b) <i>b) Develop and prepare for succession</i>
		Enforce accountability	a) <i>a) Uphold accountability through accountability activities.</i> b) <i>b) Establish performance measures, incentives, and rewards</i> c) <i>c) Evaluate performance measurement, incentives, and</i>

No.	Komponen	Prinsip	Point Of Focus
			<i>rewards to maintain relevance</i> <i>d) , and d) Given excessive pressure.</i> <i>e) e) Evaluating Performance, rewarding and imposing penalties</i>
2	Risk Assessment	Determine appropriate objectives: Attributes related to operating objectives and external financial reporting objectives. Attributes related to external non-financial reporting purposes, Objectives of internal reporting (financial and non-financial), and Attributes related to compliance objectives	<i>a) a) It reflects the decisions made by management.</i> <i>b) b) Consider risk tolerance</i> <i>c) c) Knowing the objectives of operating and financial performance</i> <i>d) d) Make compliance from the ground up to allocate resources</i> <i>e) e) Comply with all applicable accounting rules</i> <i>f) f) Considering materiality</i> <i>g) g) Reflecting the activities of organizational entities</i> <i>h) h) Adhere to the standards and frameworks set by external parties</i> <i>i) i) Taking into account the level of precision expected</i> <i>j) j) Presenting the activities of the organization's needs</i> <i>k) k) Reflect on management choices</i> <i>l) l) Taking into account the expected level of precision</i> <i>m) m) Presenting the activities of the organization's needs</i> <i>n) n) Comply with all relevant laws and regulations</i> <i>o) o) Taking into account risk tolerance</i>
		Identify and analyze risks	<i>a) a) Covers the needs of the company, division, activity unit, and level of f</i> <i>b) b) Analyze internal and external factors</i> <i>c) c) Include participation from each appropriate level of management</i> <i>d) d) Estimating the significance of the identified risks</i>

No.	Komponen	Prinsip	Point Of Focus
			e) <i>e) Determine how the risk will be addressed.</i>
		Assess the risk of fraud or irregularities	a) <i>a) Consider various possible frauds</i> b) <i>b) Assess the drives and pressures that lead to fraud</i> c) <i>c) Assessing the possibility of fraud</i> d) <i>d) Assess behavior and reasons for its occurrence</i>
		Identify and analyze significant changes	a) <i>a) Assess changes in the environment outside the organization</i> b) <i>b) Assessing business model changes</i> c) <i>c) Assess leadership changes</i>
3	Control Activities	The company determines and develops control measures to reduce risk and achieve an acceptable level of objectives.	a) <i>a) Complete the risk assessment</i> b) <i>b) Taking into account entity-specific factors</i> c) <i>c) Define relevant business procedures</i> d) <i>d) Evaluate the type of control that has many properties</i> e) <i>e) Taking into account the degree to which the action is implemented</i> f) <i>f) Separation of responsibilities</i>
		Select and design general technology controls.	a) <i>a) Determine the relationship between the use of technology in business operations and overall technology control.</i> b) <i>b) Build technology infrastructure to coordinate relevant activities.</i> c) <i>c) Establish relevant security management process control measures, and</i> d) <i>d) Establish relevant process control measures for technology</i>
		Policies and procedures are used to disseminate	a) <i>a) Establish policies and implementation processes and directives from the Board of Directors,</i> b) <i>b) Establish responsibilities and accountability in implementing</i>

No.	Komponen	Prinsip	Point Of Focus
			policies and procedures, c) c) Personnel who have the competence to carry out control activities carefully and continuously focused, personnel who are responsible for carrying out control operations following the schedule of policies and procedures, d) d) Officers are tasked with investigating and taking appropriate action if certain circumstances arise due to the implementation of control and management activities e) e) Evaluate control measures regularly to determine their relevance and their application as needed
4	Informasi dan Komunikasi	The organization obtains or creates high-quality data and uses it to support internal controls	a) a) Identify the necessary information needs; data should be collected from internal and external sources, b) b) Processing into relatively relevant information, maintaining the quality of information while processing information by considering the cost-benefit analysis.
		Communicate internally	a) a) Communicating about internal control to the person in charge, b) b) Organizing effective communication lines between business owners and supervisors, c) c) Establish different communication channels for internal parties, such as whistleblowers d) d) Establish appropriate communication methods.
		Communicating	a) a) Communication from external, organizing internal communication

No.	Komponen	Prinsip	Point Of Focus
		externally	<i>of the organization, communication with business owners.</i> <i>b) b) Provide specific communication connections that are not shared with others and establish relevant communication methods</i>
5	Monitoring	To define separate organizational processing.	<i>a) a) Consider a combination of ongoing and separate evaluations taking into account the speed of change,</i> <i>b) b) Build a knowledge base utilizing experienced employees,</i> <i>c) c) Completing business processes,</i> <i>d) d) Adjusting the scope and frequency of work and evaluating objectively</i>
		If necessary, internal control issues are examined and brought to the attention of those responsible for corrective action, such as senior management and the board of directors.	<i>Checking results and issues reported to individuals.</i>

4.3 Analysis of strategic efforts to reduce fraud

Based on the problem analysis above, it is proposed to perform semi-automation in the PT SSBR system. This research plans to develop an integrated approach that involves three parts: Sales, Administration & Finance, and Warehousing. The following is a breakdown of the duties of each of these departments:

1. Administration & Finance

This system's administration and finance are the current flow's center point. This department is responsible for making purchase orders as sales targets for the Sales section, then authorizing the goods to be sent to sales. Then the Administration & Finance section is responsible for evaluating reports in the form of Daily, Weekly, Monthly, to Annual Reports.

2. Sales

The Sales Department in this system receives goods, performs product knowledge, and makes sales reports.

3. Warehousing

The Warehousing Department is responsible for preparing goods when there is a purchase order to control incoming and outgoing inventory.

Overall, the system created will integrate between existing departments. Then from the integration of the system, internal control in the company will lead to one department, Administration and Finance, then Administration and Finance will report to the company leadership. This system also makes it easy for leaders to see the ongoing flow of goods because it shows real-time data for the company. This system reduces the risk of unrecorded items and late reports because the system automatically generates reports.

4.4 Business Processes Model & Notation Design

PT SSBR's Business Processes Model & Notation (BPMN) was designed using the Bizagi Modeller media. There are developments from the previous conventional system. The following is BPMN's proposal for internal control of PT SSBR; on the diagram, it can be visualized in the form of financial reporting and conditions such as:

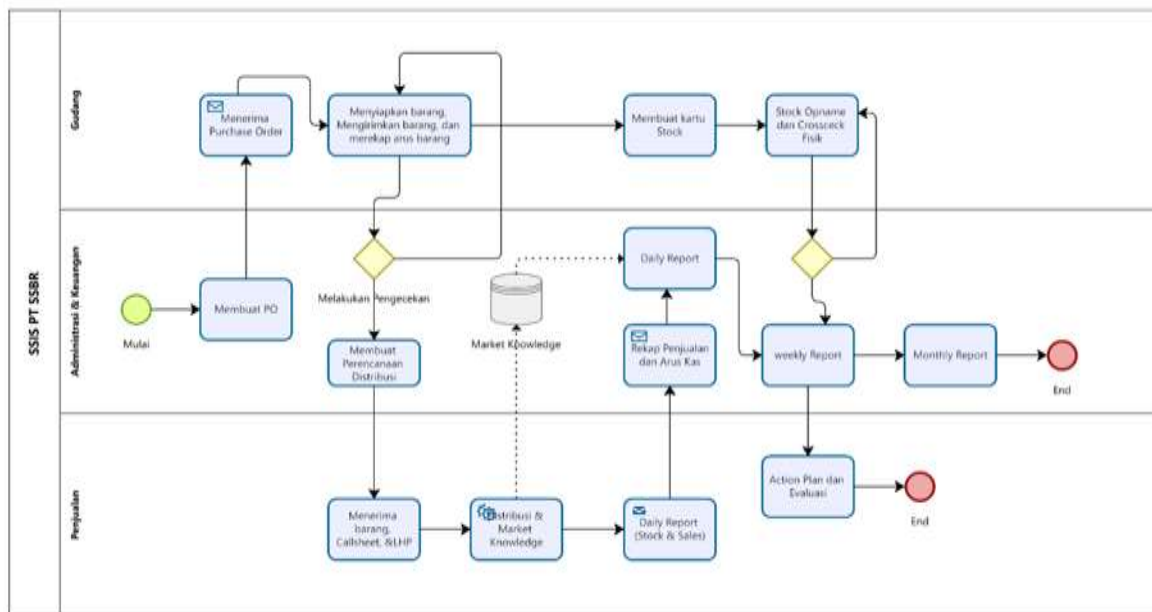


Figure 5. BPMN visualization after ISSS system implementation

The details are as follows:

1. Daily Sales Form is a form used to input daily sales results and costs incurred per sales unit. This form is a reference for the administration to carry out bookkeeping related to the amount of money deposited.
2. Daily Cash Flow is a breakdown related to how the cash flow runs for each day, which consists of the remaining cash on the previous day plus the receipts on the current day minus the

costs. Cash receipts in the present day are the correlation of any money received by sales on the sales report form. The function of this form, in addition to recapitulating cash activities on the current day, is to make it easier for the principal or owner to control what costs are incurred every day and how much income is received.

3. Monthly reports and expense details are an output report that recaps the results of transactions for the current month. Monthly reports are details of how much cash was received and for what purpose, then how much money remained in the current period. To support the detailed information in the monthly report, the cost details are used to show the costs' transparency. Information on all data in the report must be appropriate and in sync with each financial reporting (form), especially on sales details and daily cash flows.

The marketing evaluation analysis form correlates with the daily sales form. The function of this form is to identify sales developments per each unit related to sales progress (turnover) to become the basis for the personal evaluation process. It does not stop at global achievements; the evaluation of per team units is also carried out by identifying each product brand. This is to evaluate the distribution area and program planning.

5. Conclusion

The results of this study provide information that the implementation of an integrated web-based system which in this study is referred to as ISSS, can assist companies in improving internal control through the efficiency and effectiveness of business processes which are also visualized in the BPMN notation. This study also explains that implementing a web-based information system presented in the ISSS makes it easier for companies to minimize fraud to reduce material losses.

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Exploring Academic Staff Perception of Organizational Climate and Organizational Citizenship Behaviour: Lessons from Private Universities in Nigeria

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Abstract

This study explored academic staff perception of organisational climate and organizational citizenship behaviour private universities in Southeast, Nigeria. Five specific objectives, research questions and hypotheses were formulated with the decomposed variables of the study. The study was anchored on Social Exchange Theory (SET). A survey design was carried out using the sampled academic staff in the selected private universities. The study population was 4654 while the sample size was 355 arrived. Data were collected using self-administered questionnaire from the random sample of academic staff of the selected private universities in Southeast Nigeria. The data using descriptive statistics and inferential statistics were used in this study. The results revealed that there is a positive significant relationship between organizational climate and organizational citizenship behaviour. The results showed that there is a significant relationship between the organizational climate dimensions and organizational citizenship behaviour dimensions. This implied that the success of an institution is dependent upon the effective management of organisational climate, which is an important path to the success of employee's citizenship behaviour. The study recommended that equity and fairness should be entrenched during appointments and promotions so as to reduce incidence of service sabotage among academic staff of private universities. In the spirit of harmony, management of private universities should score collaborative works more than individual outputs in order to encourage teamwork among academic staff.

Key Words: Organizational Climate, Academic Staff, Organizational Citizenship Behaviour, Social Exchange Theory, University, Equity

JEL CODES: M, M1 & M16.

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1. Introduction

Organizational Climate (OC) is just like the personality of someone, which can be used to differentiate one person from another. OC is used most often to distinguish one organization from other organizations. Each firm has an OC that clearly differentiate it from other firms. It has to do with how employees perceive what is going on in the firm where they work. It reflects employees' awareness of the association to which they belong (Subramani, et al. 2015). In relation to different associations, OC illustrates how one association is distinct from the other (Neeraja & Pathak, 2020). Different organizations are associated with different kinds of environment, which could be called dimensions of OC. It could be the typical climate of teamwork in the organization or the justice system with regards to distributive or procedural justice. The climate could also be that of how responsibilities are given and how organizations support their employees and help them in their career. All these have implication on the act of the organization as captured by Haryono, et al. (2019) and Manuaba, et al. (2020), when they aver that OC is deemed by most scholars in this turf of research as having a passive impact on the employee performance. This positive effect could be calculated by the level to which the workers are willing to go over and beyond their statutory requirement into doing more, just to ensure that the institution (university) functions optimally. This is called, in organizational parlance, organizational citizenship behaviour (OCB).

Organizational citizenship behaviour (OCB) is behaviour of workers that goes further than their formal job necessity and that is not paid for or pleased by the organization. It consists of the behaviour that supports others, voluntarily doing extra jobs, obeying rules, and the office procedure (Nugroho, et al., 2020). Employees that engage in OCB do it not for pay since it is not formally recognized. They do it out of their own volition and need to ensure the accomplishment of their organization. Hence, for an organization to succeed, it needs some workers that are dedicated to go afar formally recognized and appreciated effort. Some researchers speculate that organizations cannot stay alive or prosper without employees exhibiting extra role behaviours as the survival of any organization is deeply influenced by it (Christiansen & Chandan, 2017; Organ, 2018). Organizations in their effort to remain in the market must ensure that employees display or exhibit positive behaviours or disposition that will position the organization for competitive advantage (Ojebola, et al., 2020).

The global universities are recognized as significant engines for socio-economic and political improvement (Okoli, 2018). Universities have grown to be a primary locus for modernization, and for the development of the team of high calibre manpower needed to tackle the challenges of under-development (Idumange & Major, 2005). The Nigerian university educational system, for the past years, has being going through sequence of reforms to expand access, quality and

encourage both internal and external effectiveness of the system (Okoli, et al., 2021; Adani, et al., 2022; Ajadi, 2010). As reports of National University Commission (NUC) (2008) stressed that while universities are escalating the numbers of experienced academia are not increasingly proportionately (Adeniji, 2011). This is even worse for private universities which are owned by private citizens, and most times, pays less and with less job security when compared with their state or federal counterparts (Adani, et al., 2022).

Private universities are always in competition with Federal and State Universities in Southeast Nigeria in terms of workforce. Due to some reasons including working state of affairs, stature, job security and pay, there has being massive turnover of employees' from private institutions to the more "prestigious" State or Federal Institutions (Adani, et al., 2022). This was supported by Monanu, et al. (2014) who explicate that there has being incessant labour turnover of highly experienced and gifted academia from private universities to Federal or State Universities. They continue to posit that some of these academia scarcely stay for long in private universities before moving to a better Federal or State Universities, hence, causing brain drain, which could be detrimental to the institutions.

To try to formulate the teachers work better and put in their best, OC can be explored through making it better, as Haritha & Subrahmanyam (2013) state that one of the ways to create an atmosphere of good performance and OCB is through OC. Pleasant OC supports the employee's willingness to perform better. Furthermore, the employee within an excellent OC would develop willingness for good behaviour to complete activities outside the main occupation (Widayati & Gunarto, 2017). In order to widen a tradition of willingness and commitment in an educational institution, it is essential to identify and promote the characteristics and actions that lead to OCB (Meniado, 2020). Hence, to fight the scourge of incessant turnover and poor performance, the principles of OC could be deployed.

Despite the importance of organizational climate and organizational citizenship behaviour, many universities can still not extract and share its benefits. This is so because, with research on OC and OCB, the private universities could have a clue as to how to make employees put in their best in the organization, as against what is reachable in the institutions as observed by the researcher. It was observed that the climate of support of lecturers by management is very minimal. The justice system also, in terms of distributive and bureaucratic justice seems to be suspect. There appeared to be little effort geared towards the career development of staff, while the teamwork spirit in the institutions appears not to be strong. All these could have implications for resolution to go beyond formally recognized duties and responsibilities, as they may not be open to put in their best, given the climate they work in. This may perhaps be fuelling turnover and dissatisfaction of employees if not handled properly. It is therefore, against the backdrop of these seeming issues that this work was necessitated to empirically look at them, with a view to find the associations involving the variables in the institutions and making recommendations that could help the institutions function better.

The study objective was to examine the affiliation linking the organizational climate (OC) along with organizational citizenship behaviour (OCB) among academic staff in selected private

universities in Southeast, Nigeria. The research questions were used as a guide in achieving the objectives of the study:

- a) What is the nature of relationship existing between organizational supports along with civic virtue in selected private universities?
- b) What nature of nexus exists concerning organizational justice with conscientiousness in selected private universities?
- c) To what extent does career development link with altruism in selected private universities?
- d) What nature of relationship exists between teamwork climate and sportsmanship in selected private universities?
- e) What is the nature of relationship existing between open communication climates along with courtesy in selected private universities?

2. Literature Review

2.1. Conceptual Review

2.1.1. Organizational climate

Organizational climate (OC) is a perception of the organization member, individually or groups that relate to the internal organization that influences the organization's attitude and behaviour (Wirawan, 2007). It is the perception of employees towards their workplace environments (James, et al., 2008). To Gerber (2003), OC is illustrative of organizational individuals' collective perceptions as well as emotions about the organization. He describes it as a shared perception of what an organization is like. Therefore, it is the individual perception toward a particular condition that shows the internal environment quality of the organization towards what they see and what they feel, and what the member of the organization thought (Nugroho, et al., 2020).

Organizational climate has the potential of influencing the performance and behaviour of employees. Bringing to the light the behaviour influencing angle of OC, Nugroho, et al. (2020) stated that it is the organizational internal environment quality that is ongoing, experienced by the member of the organization, and influence the behaviour. OC is a meaningful construct with significant implications for understanding human behaviour in organizations (Allen, 2003; Glission & James, 2002). Furthermore, Harmius, et al. (2021) point that it is a combination of various aspects of the work environment that is accepted and felt directly or indirectly by employees which will determine the employee's behaviour. OC can be viewed as an illustrative idea that mirrors the regular view and understanding of all individuals with respect to the different components of the organization, for example, structure, frameworks and practices (McMurray, 2003); organizational units' activities, strategies, processes, routines and rewards (Ali, et al, 2018); standard, responsibility, reward, support and employee commitment (Nugroho, et al, 2020); norms, values and culture (Haritha & Subrahmanyam, 2013).

2.1.2 Organizational citizenship behaviour

Organ (1988) defines OCB as individual behaviour that is discretionary, not directly or unequivocally recognized by the formal reward system, plus that in the collective promotes the

effectual functioning of the organization. With OCB, the emphasis is on the discretionary attitudes and behaviours of workers that are beyond the call of obligation (Podsakoff, et al, 2014). OCBs are the behaviours that are voluntary to employees which are not part of employees' prescribed functions (Oladipupo, 2016). Thus, the behaviour is rather a matter of personal choice, such that its omission is not generally understood as punishable nor rewarding (Ojebola, et al, 2020). They are discretionary, beyond-role behaviours and gestures that are not explicitly recognized by the formal reward system but are considered important in promoting organizational effectiveness (Organ, 2018).

It is informal; that is, it is not recognized by the formal structures of a firm, and hence, not rewarding, it is desirable for the firm to progress and make headway in the ever competitive business environment. Farooqui (2012) states that it is an informal kind of behaviour that is desirable by the organization. It promotes the goals of the organization by adding to its social along with psychological environment (Organ, 1997; Rotundo & Sackett, 2002). It serves to promote the general well-being of the organization (Kandeean, 2016). It contributes to the effective functioning of a firm (Nadim, et al., 2016). The consequences of OCB are found in the positive effects it has on the company's overall performance. Sridhar & Thiruvankadam (2014) aver that OCB is significant because it support the social, organizational and psychological components to accomplish both individual and organizational performance. It fosters cooperation among co-workers, work groups, firm's effectiveness, efficiency and overall performance of the organization (Akturan & Çekmecelioglu, 2016; Acaray & Akturan, 2015). It generally includes pro-social behaviours, including punctuality, helping others and innovating and volunteering (Organ, 1988).

2.1.3 Organizational support (OS) and civic virtue

Organizational Support (OS) has to do with the awareness of the human resources on how the organization along its leadership care about the employees; whether the management is looking out for them or not. David, et al. (2007) opine that OS guarantee employees that the organization is behind them when they face problems execute their job and handle stressful situations. A positive perception of OS by employees makes them feel that the firm is looking out for them and this could lead to the employees exhibiting healthy behaviour and having a good relationship with the firm. OS is employee's attitude that causes the good association among employees as well as their organization (Chiang & Hsieh, 2012).

Organizations need employees who will voluntarily choose to get involved in suggesting better ways for doing things. They need employees to get involved in brainstorming sessions without being asked, so as to come up with new ideas of doing old things or new things entirely. This is the purview of civic virtue. Afzal (2020) opine that acts of civic virtue may include gift suggestions for cost improvement or other resource saving ideas, which may directly be influencing efficiency. Organ (2018) stated that holistic interests with commitments to the organization are inclusive to achieve the organizational goal and development. Gabriel (2015) stated that it is the employee engrossment in the organizational activities and being consistent with sensitive issues of the firm. Based on these discussions, therefore the following hypothesis is proposed:

Ho1: There is no significant positive relationship connecting organizational support along with civic virtue in selected private universities.

2.1.4 Organizational justice (OJ) and conscientiousness

Organizational Justice has to do with the perception of employees about the fairness of the organization with her leaders. Justice by itself has to do with an action or decision that is morally and ethically right (Tabibnia, et al, 2008). It can be linked to religion, ethics, equity, and law. Bringing the idea of justice to organization, it could be seen in how issues related to pay, equal opportunities for promotion and employee selection processes are handled, whether it is done fairly or not (Tabibnia, et al, 2008). An employee positive or negative feeling about his job holistically refers to perception of OJ (Balogun, et al., 2012). Igbinomwanhia & Akinmayowa (2014) suggested that when an employee perceives that he/she is being fairly treated in the organization and self-assured that such fair treatment will continue, he/she will be motivated to return to the organization behaviours like extra role behaviour. This implies that, the positive or negative perception of employees about the OJ may have its impact on the individual motivation to go extra mile and impact firms' performance (Ojebola, et al., 2020).

Employees that are conscientious are willing to go beyond their normal required duties, even in the harshest of conditions. They are those that would avoid personal gains and adhere to organizational rules and guidelines. Conscientious employees, as well as those who avoid personal gain or other negative behaviours, demonstrate compliance with company policies and maintain predictable, consistent work schedules, increasing the reliability of the service (Afzal, 2020). Carrying out one's duties beyond the minimum requirements is part of being conscientious in organizations. It was formerly called generalized compliance, which refers to employees going beyond minimal requirements in carrying out their assigned tasks, even when the conditions are not so suiting to them (Subramani, et al, 2015). The main point of conscientious is not complaining much about conditions of service and trying to go beyond and above the call of duty in making sure that the organization succeeds and stay ahead of competition. Based on these discussions, the following hypothesis has been developed:

Ho2: There is no nexus between organizational justice and conscientiousness in selected private universities.

2.1.5 Career development and altruism

Armstrong (2001) stated that career development is of great importance to both the individual employee and the organization. Similarly, Jianwei (2010) avers that the organizational climate in career development of the employees is imperative for both the firm and the employee, because to perform better at work, providing necessary and related trainings are required. Career development has to do with improving on the skills and competences of the employees to be able to execute well in either a current job or a higher position. However, the major worry is on performing better in a higher rank or position. In relation to this, Agba, et al. (2010) point that career development includes concerted efforts directed towards assessing workers' potentials, identifying likely career paths for that employee and designing and implementing various forms of training and experience to prepare that person for more advanced job. It involves higher status and responsibilities which can take place in one organization or through movement between

organizations or a combination of both; it is the use of planned instruction activities to promote learning (Armstrong, 2006).

Altruism involves behaviours of helping co-workers (Meniado, 2020). These help an organization promote efficiency through reduced need for supervision, training, and crisis management costs (Pickford & Joy, 2016). Helping behaviour involves willingly assisting co-workers with or inhibiting the incidence of work related issues. It supports the idea that friendship and cooperation exist between workers (Organ, 1988). Altruism consists of flexible behaviours which are expected at helping explicit persons in an organizational setup (Subramani, et al, 2015). Altruism or helping co-workers make the work system extra productive; because one worker can exploit slack time to assist another on a more critical task (Afzal, 2020). Based on these discussions, the following hypothesis has been developed:

Ho3: Career development has no significant positive link with altruism in selected private universities.

2.1.6 Teamwork and sportsmanship

The process of group of persons working together for a common goal is regarded as teamwork. This was the position of Fauziah, et al. (2010) who posits that teamwork is a process of working collaboratively with a group of people, in order to achieve a goal. Also in line with this, Mba (2015) opines that teamwork is an umbrella term that depicts the degree of co-operation which exists in teams or between teams. Hence, collectivism is one of the measures of teamwork. Fajana (2002) asserts that teamwork is an incorporation of assets and inputs working in synchronization to achieve organizational goals, where roles are arranged for every organization member, challenges are equally faced along with incremental improvements are hunted continually. The more the team spirit, the more the employees will be predisposed to put in their best foot forward. If the teamwork atmosphere of climate is good, everyone will be striving for the betterment of the firm where they work. Working together encourages employees to use their knowledge, competencies, and abilities to collaborate with their colleagues to maximize the effectiveness of the overall organization (Adani, et al., 2022).

Sportsmanship has to do with not complaining much even when we are unflavored. In sports parlance, it is used to represent situations where even after a loss to opponents, both the winners and the defeated congratulate each other in good spirit. Sportsmanship refers to willingness to eschew minor inconveniences without request or protest (Pickford & Joy, 2016). It refers to employees' tolerance levels for environmental factors (Organ, 1988). Extant literature on sportsmanship observe that such behaviour positively relates to work group performance, and the more employees display this attitude, the less time and energy a manager wastes in getting their cooperation (Ibukunoluwa et al., 2015; Özdemir & Ergun, 2015). This implies that, the presence of sportsmanship allows managers to dedicate a substantial proportion of their time to productive activities like planning, organizing resources and monitoring performance. It allows organizations to sustain efficiency and effectiveness by focusing on more important job functions (Pickford & Joy, 2016). However, lack of sportsmanship behaviour as opine by Ibukunoluwa, et al. (2015) may lead to negative implication on group or team unity and make the work

environment un-conducive to attract or retain productive workers. Based on these discussions, therefore the following hypothesis is proposed:

Ho4: Teamwork climate and sportsmanship has no significant positive relationship in selected private universities.

2.1.1.7 Open communication and courtesy

The way information is shared in an organization forms part of the climate of an organization known as communication climate. Some organizations are known for being open and transparent when it comes to communication and informing people about what they need to know and what they need to do in order to grow, while some firms are notorious for keeping people at the dark with respect with what is being planned to be done, what is being done and what is expected of an employee to grow. Communication means giving or passing information from a sender to a receiver. This was the view of Fauziah, et al. (2010) when they posit that communication refers to the evoking of a shared or common meaning in another person. The climate of communication in organizations involves trust, openness, information adequacy, information quality, information flow, participative management and strengthening of good communiqué practices as well as shared responsibilities for making communication effective (Ijaduola, 2008).

Courtesy is considered as avoiding problems from occurs and taking required actions to reduce the impact of the problems in the future (Muthuraman and Al-Haziazi, 2017). Courtesy as a type of behaviour where the employees notify their colleagues about changes that may directly or indirectly affect their work thus, aids them in better preparing for future problems that may arise. This is directed towards participants giving advance notices, timely reminders and suitable information when needed are some examples of courtesy (Sharma & Jain, 2014). Podsakoff, et al. (2000) mentioned employees who implemented courtesy are having less intergroup conflict and time to deal with conflict management activities. Nevertheless, the employees with high courtesy will always show behaviour will prevent them from creating problems, thus with more mindful and cautious in engaging with any actions that can affect their co-workers. Lastly, according to Dimitriadis (2007), courtesy also contributes to OCB because it helps to avoid relationship problems at the workplace. Based on these discussions, therefore the following hypothesis is proposed:

Ho5: Open communication climate has no significant positive relationship with courtesy in selected private universities.

Conceptual Framework

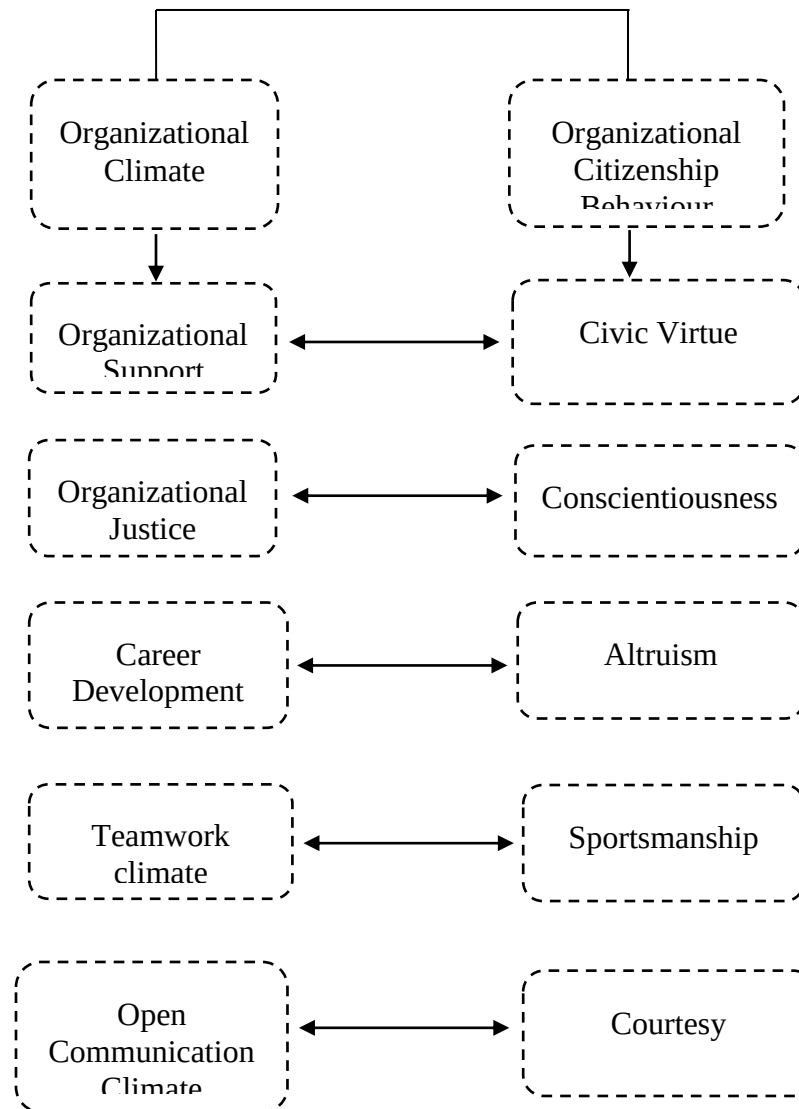


Figure 1: Conceptualization of Organizational Climate and Organizational Citizenship Behaviour
Source: (Researcher Field Work, 2022).

2.2. Theoretical Literature

This work is going to be anchored on Social Exchange Theory (SET), which is credited to the work of George Homans in 1958, a sociologist. This theory is said to be among one of the most

significant theories used in organizations to measure and predict behaviour of employees. Aligning with this position, Cropanzano & Mitchell (2005) aver that SET is one of the most influential conceptual paradigms in organizational behaviour.

The concept of “Social Exchange” will greatly help in the understanding of the combined concept or theory of Social Exchange. Among various definitions of social exchange, theorists have converged in accepting that social exchange has to do with a series of interactions that generate obligations (Emerson, 1976). It is a voluntary action of personalities that are motivated by the returns they are anticipated to bring and classically do in fact bring from others (Blau, 1964). The original definition given by the propounded of the theory (Homans, 1958), is that social exchange has to do with the swap of activity, tangible or intangible with more or less rewarding or costly, among at least two people. From the forgoing, it is seen that for an exchange to take place, it has to involve more than one person. That is, there must be a giver and a receiver, for an exchange to take place. It is however, important to note that the exchange as captured by Cropanzano & Mitchell (2005) must not involve something tangible, it could be perceptual. They posit that “exchanges between people are not limited to material goods like money or resources, but they also include symbolic values like respect or prestige”. The goal of such an exchange should be to better the lives of those involved. Holthausen (2013) captured it thus, whether the resources being exchanged are tangible or not, it must be between two parties, or groups, with the goal of improving, sustaining or terminating relations or relationship.

The principle of reciprocity and interrelationship between and amongst organizational member captures the tenets of SET properly. This was captured by Hopkins (2002) who states that SET is used to study the various levels and aspects of employee reciprocity in firms. Furthermore, Nammir, et al. (2012) opine that it is best understood as a frame for expounding exchanges of resources, in market conditions which are imperfect, between two parties or a network via a social process. Here, reciprocity captures the act of people feeling compelled to return a favour or act in a similarly way as someone. That is, people that are treated well in organizations feel compelled to also give back to the organization. This was succinctly encapsulated in what Cropanzano & Mitchell (2005) said as they opine that reciprocal interdependence emphasizes contingent interpersonal transactions, whereby, an action by one party leads to a reaction by another. On his part, Gergen (1969) point out that if a person supplies a benefit, the receiving party should respond in kind.

There is an atom of mutual relationship with social exchanges. In a completely interdependent system, all sub-criteria of the systems are mutually related, directly or indirectly (Yang, et al. 2008). Thus, human beings are attuned and mutually dependent on each other in relations amongst each other, where "gestures of goodwill" are exchanged amid employees with the organization and flanked by subordinates and their supervisors, when particular action warrants reciprocity. According to Helm, et al, (2006), the basic assumption of the theory is that human beings strive for a positive outcome when considering rewards and costs of a relationship. Furthermore, humans are rational beings; hence, they will attempt to control their environments to achieve specific objectives, in order to aim for a maximization of their own benefits (Gardner, et al, 1995). The SET starts with the premise that humans interact in social behaviour in order to make the most of benefits and diminish costs, which then leads to a positive result (Hutchison &

Charlesworth, 2003). The central message is that people weigh the pros and cons before making a decision. In economics, individuals can decide between costs and benefits before approving in an exchange (Okyere-Kwakye, et al, 2012).

The point of juncture connecting this theory and the study is the point of humans being rational and the point of the theory proposition reciprocity as its main tenet. Hence, perceived good environment based on the assumptions of the theory will lead to behaviours that are above the required formal tasks which is termed OCB. That is, when employees perceive that the support they are receiving from the firm is good, they would be obliged to show civic virtue. Also, when they see that the institutions and her management are just in their rewards and processes, they would have no option than to exhibit conscientiousness in the universities. Similarly, when the institutions actively seek to develop the career of their staff, then the staff would want to pay back by being altruistic. Same also goes to when the employees recognize that the teamwork is for their own benefit, that there is no unhealthy rivalry and bickering, then they will exhibit sportsmanship behaviour. All these will help the universities to perform better.

2.3. Empirical Literature

Nawawi, et al. (2022) analyzes the relationship of organizational citizenship behavior to the organizational climate among secondary school teachers in the state of Kelantan. The respondents for this study consisted of 422 teachers from secondary schools in the state of Kelantan. Data analysis was conducted using Descriptive Mean Test, t-Test, and One-Way ANOVA, and correlation values were analyzed using AMOS 23.0 software. The findings of the study found that there is a strong relationship between organizational citizenship behaviour with organizational climate. Harmius, et al. (2021) did a study to evaluate the effect of organizational climate with organizational commitment on organizational citizenship behaviour (OCB) in addition to its effect on employee performance. The population was all employees of Pidie Jaya regional secretariat office as one of the government institutions in Pidie Jaya district, Indonesia. Structural Equation Modelling (SEM) was used to examine the consequence of all the variables. The result showed that organizational climate affects organizational citizenship behaviour.

Almaqableh, et al. (2021) determined the computerized organizational climate (OC) and their relationship to civilizing the organizational citizenship behaviour with motivation as intervene of the employees of the Jordanian telecommunication companies. A questionnaire was organized and created to congregate data and determine the study variables in order to meet the study's objectives. SmartPLS (3.3.2) was used. 350 randomly selected respondents from three major telecommunication companies in Jordan were given the self-administered questionnaire. The study found the following direct effects are positive and significant namely, OC on OCB ($\beta=0.484$; $P = 0.000$), OC on motivation ($\beta=0.852$; $P = 0.000$), and motivation on OCB ($\beta=0.383$; $P = 0.013$). Fahim & Asadollahi (2021) examine the relationship among organizational climate with organizational citizenship behaviour of sports coaches in the Basij areas of Mashhad. The method is descriptive survey and data collection was done in the field. The results of this research stated that there is a positive and significant relationship amid organizational climate and its components (except the distance component) with the organizational citizenship behaviour of sports coaches in Basij areas of Mashhad and this relationship and level of

significance in the team spirit component was more than other components of organizational climate.

Shahnavazi, et al. (2021) examined the effect of perceived organizational climate on the performance of nurses in private hospitals. A descriptive survey design was employed. The population of the study is 112 nurses working in the pediatric ward of private hospitals in Rasht, including Golsar, Pars, Ghaem and Aria hospitals. The study found that there is a relationship between perceived organizational climate and nurses' job performance was statistically significant. Soetjipitoa, et al. (2021) analyzed the effect of organizational climate, organizational nationality behaviour and transformational leadership as an area that are foreseen to increase job satisfaction along with work morale. In examining the simulating consequences, the findings expressed that there were significant effects of organizational climate on work morale throughout job satisfaction ($t=2.492$; $p=0.015<0.05$), organizational citizenship behaviour on work morale with job satisfaction interventions ($t=2.311$; $p=0.023<0.05$). Isik (2021) investigated the factors distressing the organizational citizenship behaviour (OCB) of English teachers in Turkish state high schools contained by the framework of job satisfaction, emotional commitment, and demographic factors. The findings revealed that the English teachers' job satisfaction, emotional commitment, and OCB levels were above average. Moreover, job satisfaction and emotional commitment predicted OCB. No significant association was experienced among demographic factors and OCB. The findings observed a positive correlation among demographic factors with job satisfaction, as well as between demographic factors and emotional commitment.

Al-Zoubi & Alfandi (2021) examined the dimensions of Organizational Climate on employee's creativity in Jordanian Hotels. The study objective was to develop and test a conceptual framework which linked the creativeness of employees with four organizational climatic factors: the structure, obligation, rewards, and support, as well as the connection between creativity of employees and performance of employees. 432 employees in 18 luxury hotels in Jordan collected data. The quantitative study was all ears on an empirical exploratory factor, a basic linear regression analysis and the validity of the CFA factor solution. The outcome viewed that the affiliation within employee creativity and employee success affects the creativity of workers through different organizational factors. Nabilla & Riyanto (2020) measured and analyzed the impact of job satisfaction, perceived organizational support (POS), and organizational climate through OCB of the employee on employees in an outsourcing company Jakarta. The finding of was job satisfaction, POS, and organizational climate variables have important correlation to OCB. The research revealed the most variable that influencing OCB was job satisfaction.

Okoli (2018) examined the relationship within organizational climate and job satisfaction among academic staff in selected private universities in Southeast, Nigeria. The results revealed that there is a positive significant correlation among organizational climate with job satisfaction. The results further revealed that there is a significant relationship between the organizational climate dimensions (leadership style and academic freedom) with job satisfaction dimensions (satisfaction with administrative support and satisfaction with working conditions). Vasudevan & Iqbal (2018) determined whether there is a relationship among each of the three dimensions of organizational climate (supervisory support, autonomy, and goal direction), Organizational Citizenship Behaviour-Individual with Organizational Citizenship Behaviour-Organizational on

a non-supervisory staff of Bank Simpanan Nasional in Malaysia. This research exposed a significant association between organizational climate and organizational citizenship behaviour of non-supervisory employees of Bank Simpanan Nasional in Malaysia. The hypotheses exposed a significant positive association linking 2nd order construct of organizational climate and organizational citizenship behaviour. This study suggested that all banks' need to exhibit a positive organizational climate within employee's to increase organizational citizenship behaviour.

Dargahi (2016) inspect the relationship between organizational climate and organizational citizenship behaviours within employees of Tehran University of Medical Sciences. Between organizational climate and organizational citizenship behaviour and all its dimensions and there is a significant optimistic relationship. The organizational climate as much as 14% on organizational citizenship behaviour had an impact. The establishment of an appropriate climate and employee satisfaction on space and extra-role behaviour causes spontaneous organization of staff that will be ultimately can influence the accomplishment of an organization. Piotrowski, et al. (2020) determined the benefits of organizational climate, organizational support and citizenship behaviour in the Army; and how citizenship behaviours may be shaped in the Armed Forces. Findings showed that some of the OC parameters and POS, especially those coming from other soldiers were positively associated with OCB.

Pozveh & Karimi (2017) explore the relationship involving organizational climate and organizational citizenship behaviour (OCB) of the staff members in the Department of Education in Isfahan City. The research has been conducted through descriptive/correlation method. The findings of the research designate that there is a direct and significant relationship between organizational climate, its dimensions, and OCB. Of the dimensions of organizational climate, the goals of an organization, the role, rewards, procedures, and communications within an organization are able to forecast the OCB. The results of MANOVA suggest that there is a significant difference between the respondents' viewpoints about the organizational climate according to age and OCB according to education. Creating positive and good organizational climate requires a culture based on universal values, and employees can accept their work problems and their organizational citizenship behaviours are increased. Shbail & Shbail (2020) analysed the consequence of organizational climate on organizational citizenship behaviour (OCB), and the consequence of OCB on turnover intention. Strong organizational climate should be formed in Jordanian private universities since it improve and predict OCB. OCB will in turn cause turnover purpose to diminish among internal auditors.

Akanni & Ndubueze (2017) look into the relationship between organizational climate and organizational citizenship behaviour (OCB) between employees of preferred private companies in south-eastern Nigeria. It examined the relationship among each of the three dimensions of organizational climate (reflexivity, innovation and outward focus) and OCB. The research accomplished that organizational climate had a significant positive relationship with OCB within employees of private companies in Abia State. Mabekoje (2017) tested whether contextual factors of organizational climate and organizational health would significantly reckoning in teachers' organizational citizenship behaviour. Two hundred and seven (207) teachers randomly sampled from secondary schools in an education zone in Ogun State, Nigeria contribute in the

research. The study found that organizational climate and organizational health would significantly predict individual-based, organization-based and total organizational citizenship behaviour.

Obeng, et al. (2020) examined the moderating effect of perceived organizational support on the associations among organizational climate and organizational commitment, organizational commitment with employee performance. However, perceived organizational support had no moderation consequence on the relationship among organizational climate and organizational commitment. Damayanti & Dewi (2020) determined the effect of the organization, work motivation and organization justice on OCB. The research was conducted at the One-stop integrated service and capital investment official office, Gianyar Regency, Bali Province, Indonesia. The findings described the impact of organization climate, work motivation, and fairness of organizational variables was positive and significant on OCB.

Cek & Eyupoglu (2020) did a study to examine job satisfaction and organizational citizenship behaviour among teachers; and donate to the educational management prose by testing a model that binds the overall job satisfaction, intrinsic satisfaction, extrinsic satisfaction and organizational citizenship behaviour of high school teachers. The results show that teachers are more intrinsically fulfilled with their jobs when compared to extrinsic and overall job satisfaction, and that teachers exhibit a high degree of organizational citizenship deeds. The results further reveal that as hypothesized, teachers' job satisfaction (overall, intrinsic and extrinsic) positively influences organizational citizenship behaviour, and however intrinsic job satisfaction is the majority influential. Balyer & Özcan (2017) examined organizational climate at Primary Schools and its influences on Teachers Job Satisfaction. A descriptive quantitative study was carried out to discover if elements of organizational climate (structural, human resource, political, and symbolic frames) influence teachers' intrinsic and extrinsic job satisfaction. Results revealed that while male teachers perceive school environment more positively, female participants have higher intrinsic job satisfaction. While younger teachers distinguish all factors more positively, experienced teachers identify symbolic frame more positively.

2.4. Gap in Knowledge

A careful examination of related and previous studies revealed few empirical theoretical researches had been done in Nigeria that focused on educational institutions. Based on the literature review, it was discovered that some of the few studies conducted in Nigeria was done outside the Southeast geo-political region and the few that was done in the Southeast did not mention the sources of their measurement scale. They also failed to report the measurement scale validation process, if designed by them, which cast doubt on the potential of their measurement scale to measure what it was supposed to measure. There is also a lacuna in the proxies (variables) used in previous studies, as the independent variables (organizational support, organizational justice, career development, teamwork climate, and open communication climate) and dependent variable (civic virtue, conscientiousness, altruism, sportsmanship, and courtesy) applied in this study differ with those of previous studies. Furthermore, some of these empirical studies violated the assumption of regression analysis, which stated that all the variables should

be continuous. Nevertheless, the authors collected ordinal data using a five-point Likert scale. Based on these gaps identified, the study examined the effect of organizational climate on organizational citizenship behaviour among academic staff of private universities in Southeast Nigeria. The study also will employed validated psychometric scales that captured the two constructs adopted from previous research to ensure that the results from our study are valid for reliable prediction.

3. Research Method

The study has employed survey research design for this study. This research design is appropriate for the study as it aids in defining and describing phenomena by advancing an academic argument through the development of a research query or procedures by data gathering and tabulation of the data based on its interaction or frequencies. The study population from which the sample was drawn for the study consists of fourteen private universities in Southeast Nigeria. The questionnaire was administered to the academic staff ranging from Professors, Readers, Senior lecturers, Lecturers I, Lecturers II, Assistant lecturers, and Graduate Assistants. The total number of academic staff in the selected private universities is 4654 (Researcher's Field Survey Report, 2022). The questionnaire was administered to the academic staff ranging from Professors, Readers, Senior lecturers, Lecturers I, Lecturers II, Assistant lecturers, and Graduate Assistants. The sample size of the study was determined using Krejcie and Morgan (1970) sample size determination formula to arrive at three hundred and fifty five (355) academic staff. A stratified random sampling technique was employed to determine the number of participants in each stratum. Stratified random sampling was used because of the nature of the population of the study and the behavioural pattern of the profession.

The questionnaire was the major tool for data collection. The questionnaire which is tagged 'Organizational climate and Organizational Citizenship Behaviour Questionnaire (OCOCBQ)' was in two sections. Section (A) has questions on respondents' demographic details while section (B) contains questions on the organizational climate variables and organizational citizenship behaviour variables examined in the study using the close-ended type of questions. More specifically, the organizational climate construct was measured on five dimensions (organizational support, organizational justice, career development, teamwork climate, and open communication climate) and the organizational citizenship behaviour construct consists of five dimensions (civic virtue, conscientiousness, altruism, sportsmanship, and courtesy). The respondents were asked to indicate their agreement with each item on a five-point scale, ranging from 'strongly agree' with a score of 5 to 'strongly disagree' which scores 1.

To test the validity of the instrument, the Principal Component Analysis and test for commonalities and Varimax Rotation using the Extraction method was employed. The factor analysis procedure was applied to validate the instrument because the set of variables analyzed in the factor analysis extends beyond test data and since it utilizes rating and other criteria measured along with other tests to explore the factorial composition of a particular test and so define the common traits it measures hence, usually preferred in most construct validation exercises. A Principal Component Analysis (PCA) was conducted on the 22 items of the organizational climate questionnaire using Orthogonal Rotation (varimax). Similarly, the 21

items of the organizational citizenship behaviour questionnaire were subjected to factor analysis using a principal component analysis (PCA). An initial analysis will be run to obtain each component in the data. All factor loadings below 3.00 will be eliminated.

The reliability of the measuring instrument was tested using Cronbach Alpha. The table below indicated alpha coefficients for organizational support, organizational justice, career development, teamwork climate, open communication, civic virtue, conscientiousness, altruism, sportsmanship, and courtesy as 0. 978, 0.979, 0. 988, 0.991, 0.981, 0.977, 0.971, 0.970, 0.976, and 0.990, respectively. The data collected was analyzed using a combination of descriptive statistics (frequencies and percentages) and inferential statistics (correlation analysis and regression analysis). Hypotheses will be tested at a 5% significance level.

Table 1: Reliability Test

Variable	Number of items	Cronbach's Alpha
Organizational Support	4	0. 978
Organizational Justice	4	0.979
Career Development	4	0. 988
Teamwork Climate	4	0.991
Open Communication	6	0.981
Civic Virtue	4	0.977
Conscientiousness	4	0.971
Altruism	4	0.970
Sportsmanship	4	0.976
Courtesy	5	0.990

4. Result and Discussions

In all, 355 copies of questionnaires were administered to these selected private universities, and a total of 342 questionnaires were returned and appropriately filled. This represents a response rate of 96.34%. The respondents' response rate is presented in Table 2 below.

Table 2: Percentage of Questionnaire Distributed & Returned

Copies of questionnaire administered	355
Copies of questionnaire returned	342
Response rate	96.34%

4.1 Descriptive Statistics

The demographic profile of sampled respondents, showing the sample distributions in terms of gender, age, appointment status, rank, and work experience of the respondents are reported in the table 3 below.

Table 3: Analysis of Demographic Distribution of Respondents

	Frequency	Percentage (%)
Gender		
Male	208	60.8
Female	134	39.2
Total	342	100
Age		
18 - 27 years	52	15.2
28 - 37 years	79	23.1
38 - 47 years	82	24.0
48 - 57 years	72	21.1
58 years and above	57	16.7
Total	342	100
Appointment Status		
Permanent	225	65.8
Contract	44	12.9
Part-time	73	21.3
Total	342	100
Rank		
Graduate Assistant	58	17.0
Assistant Lecturer	55	16.1
Lecturer 11	68	19.9
Lecturer 1	39	11.4
Senior Lecturer	46	13.5
Reader	46	13.5
Professor	30	8.8
Total	342	100
Work Experience		
1 - 3 years	153	44.7
4 - 6 years	72	21.1
7 - 10 years	63	18.4
Above 10 years	54	15.8
Total	342	100

Table 3 recorded participation of 208 (60.8%) males and 134 (39.2%) of females. The research also showed that young adult participants (aged 18 – 47 years) out-numbered older academics (aged 48 years and above). 225 (65.8%) were permanent staff, 44 (12.9%) were on contract, whereas 73 (21.3%) were part-time lecturers. 58 (17%) of the research participants were Graduate Assistants, 55 (16.1%) were Assistant Lecturers, 68 (19.9%) were Lecturer 11, 39 (11.4%) were Lecturer 1, 46 (13.5%) were Senior Lecturers, 46 (13.5%) were Readers, whereas 30 (8.8%) were Professors. The survey further showed that 153 (44.7%) had worked between 1 - 3 years, 72 (21.1%) had worked for 4 – 6 years, 63 (18.4%) had worked for 7 – 10 years, whereas 54 (15.8%) had worked for a minimum of ten years. These reports indicated that the respondents were knowledgeable enough to participate in the research.

4.2 Test of Hypotheses

Hypothesis One: Organizational support does not significantly relate with civic virtue among academic staff of private universities in Southeast, Nigeria.

Table 4: Relationship between Organizational Support and Civic Virtue

		Organizational Support	Civic Virtue
Organizational Support	Pearson Correlation	1	.854**
	Sig. (2-tailed)		.000
	N	342	342
Civic Virtue	Pearson Correlation	.854**	1
	Sig. (2-tailed)	.000	
	N	342	342

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

The relationship between organizational support and civic virtue was investigated using Pearson product moment correlation coefficient. The result found a strong, positive correlation between organizational support and civic virtue among academic staff of private universities in Southeast, Nigeria, $r = .85$, $n = 342$, $p < 0.01$. Consequently, the null hypothesis was rejected. The result suggested that high level of organizational support was associated with higher civic virtue. It implies that high level of institutional support leads to greater level of civic virtue among private university lecturers. This suggests that academics would voluntarily and actively engage in providing lasting solutions to their university problems if they enjoyed the goodwill of their universities. The prior survey supported the result of this research (Harmius, et al., 2021; Piotrowski, et al., 2020; Obeng, et al., 2020; Nabilla and Riyanto, 2020); that perceived organizational support has recorded a positive, significant relationship with organizational citizenship behaviour in various work settings.

Hypothesis Two: There is no significant relationship between organizational justice and conscientiousness among academic staff of private universities in Southeast, Nigeria.

Table 5: Relationship between Organizational Justice and Conscientiousness

		Organizational Justice	Conscientiousness
Organizational Justice	Pearson Correlation	1	.958**
	Sig. (2-tailed)		.000
	N	342	342
Conscientiousness	Pearson Correlation	.958**	1
	Sig. (2-tailed)	.000	
	N	342	342

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

The nature of relationship between organizational justice and conscientiousness was examined using Pearson product-moment correlation coefficient. The research indicated a strong, positive relationship between organizational justice and conscientiousness among academic staff of private universities in Southeast, Nigeria, $r = .96$, $n = 342$, $p < 0.01$. Thus, the null hypothesis was rejected. The research established that organizational justice has statistical, significant relationship with conscientiousness. This implies that high level of institutional justice leads to greater level of conscientiousness among private university lecturers. It explains that academics would do extra job and avoid personal gains if they enjoyed fair treatment from their university leadership. A similar result was reported by prior researchers (Damayanti and Dewi, 2020; Piotrowski, et al., 2020). For instance, Damayanti and Dewi (2020) ascertained the influence of fairness on organizational citizenship behaviour in a service and capital investment company, Gianyar Regency, Bali Province, Indonesia. In addition, Piotrowski, et al., (2020) determined a significant statistical relationship between organizational climate and perceived organizational support in the Polish Army.

Hypothesis Three: Career development does not significantly influence altruism among academic staff of private universities in Southeast, Nigeria.

Table 6: The Extent to which Career development influence Altruism

Variable	Beta	t value	R Square	F value	Sig.
(Constant)		15.454			.000
Career Development	.985	103.532	.969	10718.950	.000

Dependent Variable: Altruism

The influence of career development on altruism was examined using linear regression. The result established that career development exerts significant statistical influence on altruism

among academic staff of private universities in Southeast, Nigeria ($\beta = 0.99$, $t = 103.53$, $r^2 = .969$, $F = 10718.950$, $p < .01$). Thus, the null hypothesis was rejected. This research indicated that career development was an important predictor of altruism among private university staff in Southeast, Nigeria. The result suggested that 97% change in altruism among academic staff was associated with proportionate change in their career development. It implies that academics who have achieved greater career development would likely offer greater level of assistance to co-workers in their workplace. Therefore, academics who had benefitted from the university career development programmes would reciprocate by assisting colleagues in work-related issues. This result was in line with previous studies (Cek and Eyupoglu, 2020; Balyer and Özcan, 2017). For example, Cek and Eyupoglu (2020) reported that teachers were more intrinsically satisfied with their jobs when compared to extrinsic and overall job satisfaction and that the teachers displayed a high level of organizational citizenship behaviour.

Hypothesis Four: Teamwork climate has no significant influence on sportsmanship among academic staff of private universities in Southeast, Nigeria.

Table 7: The Extent to which Teamwork Climate influence Sportsmanship

Variable	Beta	t value	R Square	F value	Sig.
(Constant)		9.176			.000
Teamwork Climate	.979	89.001	.959	7921.217	.000

Dependent Variable: Sportsmanship

The influence of teamwork climate on sportsmanship was investigated using linear regression. The result found that teamwork climate exerts high statistical, significant influence on sportsmanship among academic staff of private universities in Southeast, Nigeria ($\beta = 0.98$, $t = 89.00$, $r^2 = .959$, $F = 7921.217$, $p < .01$). Therefore, the null hypothesis was rejected. The research indicated that teamwork climate results to the spirit of sportsmanship among academic staff of private universities in Southeast, Nigeria. It is vital to note that 96% change in the spirit of sportsmanship was related to proportionate change in the teamwork climate among academic staff of private universities in Southeast, Nigeria. Teamwork climate increases the spirit of sportsmanship more than when it is lacking among academics in private universities. This explains that academic staff of private universities would often show high level of tolerance as long as they engage in collaborative works. Many past studies reported related findings (Almaqableh, et al., 2021; Fahim and Asadollahi, 2021; Harmius, et al., 2021; Nugroho, et al., 2020; Nabilla and Riyanto, 2020). For instance, research established that teamwork climate had a positive significant influence on organizational citizenship behaviour across industries and cultures.

Hypothesis Five: Open communication climate does not significantly influence employee commitment among academic staff of private universities in Southeast, Nigeria.

Table 8: The Extent to which Open Communication Climate influence Courtesy

Variable	Beta	t value	R Square	F value	Sig.
(Constant)		5.077			.000
Open Communication Climate	.425	8.655	.181	74.904	.000

Dependent Variable: Courtesy

The influence of the open climate on courtesy was examined using linear regression. The result ascertained a positive, statistical influence of open communication climate on courtesy among academic staff of private universities in Southeast, Nigeria ($\beta = 0.43$, $t = 8.66$, $r^2 = .181$, $F = 74.904$, $p < .01$). Hence, the null hypothesis was rejected. The research specified that an open communication climate exerted a minimal level of influence on courtesy among academic staff of private universities in Southeast, Nigeria. For example, an 18% change in courtesy was associated with a proportionate change in the open communication climate among academic staff of private universities in Southeast, Nigeria. Greater effective communication results in a higher level of courtesy and vice versa. Academic staff would stay committed and loyal to their universities if there were trust, openness, information adequacy, and participative management in the work area. The result was in line with those of Işık (2021), Obeng, et al. (2020), and Gheisari & Salajeghe (2014); which showed that emotional commitment was statistically related to organizational citizenship behaviour. Obeng, et al. (2020) reported that perceived organizational support significantly correlated with organizational commitment.

5. Conclusion

The study concluded that organizational climate (OC) has a significant positive relationship with organizational citizenship behaviour (OCB) among academics in private universities studied in Southeast, Nigeria. Therefore, the success of an institution is dependent upon the effective management of organizational climate, as one important path to this success is employee's citizenship behaviour. Private university academics that enjoyed organizational support tend to actively participate in the university welfare more than those who had not enjoyed similar benefit. Academics that enjoyed fair treatment would often do extra job and avoid personal gains more than those who were denied justice.

1. On the basis of the conclusion, the following recommendations were made:
2. Private universities should provide staff health insurance to encourage their active participation in the university sustainable development.
3. Equity and fairness should be entrenched during appointments and promotions so as to reduce incidence of service sabotage among academic staff of private universities.

4. Private universities should develop annual budget to partially or fully finance academic conferences and workshops in order to improve staff capacity.
5. Private universities should score collaborative works more than individual outputs in order to encourage teamwork among academic staff.
6. Efforts should be made to provide accurate, adequate, and timely information to academics so as to encourage active engagement.

The study provided valuable ideas, model, facts and figures that can be used by academics, university administrators, management practitioners and consultants in understanding the relationships and the various dimensions between organizational climate and organizational citizenship behaviour variables. This study was able to isolate the link between each component of organizational climate and each component of organizational citizenship behaviour. This made it possible to know where attention needs to be directed. Most studies emphasised global and composite organizational citizenship behaviour which obscures the specific areas for administrative attention. The study also provided insight into organizational factors that would likely impinge on organizational citizenship behaviour in a privatized environment using the selected universities as sample area.

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Application of Machine Learning in Predicting the Number of Bike Share Riders

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Abstract

This study aims to investigate the factors influencing the demand for bike sharing to identify the variables that significantly predict the need for shared bicycles. The study aims to create more in-depth knowledge about bike-sharing models to enhance the ideas on designing, developing, implementing and utilization of bike-sharing models. A multiple regression model was used to model the demand for 703 Capital Bikeshare's shared bikes in the USA. The variations in the need for the bikes were assessed based on certain variables, such as the total number of registered and unregistered bikers and renters. Linear regression analyses were conducted to determine the factors that statistically and significantly predict the number of bikes rented. Machine learning classifiers: Random Forest, Decision Trees, Nearest Neighbor and XGBoost were used to determine the most important predictors of bike demand and the data analyzed in SPSS V25, R and PYTHON. Increase in demand for shared bikes was attributed to factors such as increase in temperature ($p = 0.000$), days of the week except the first day of the week ($p < 0.05$), the month of September ($p = 0.036$), spring season ($p = 0.000$), fall seasons ($p = 0.001$) and humidity ($p = 0.000$). A significant decrease in the demand for shared bikes was observed on the first day of the week ($p = 0.218$) and days with strong winds ($p = 0.113$). More people are likely to rent shared bikes on hot days, in September, during spring and fall seasons, on humid days, and all days of the week except on the first day of the week.

Keywords: Bike-Sharing Programs, User-Type, Monitoring Systems, Analytics, Predictive Models, Historical Data

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1. Introduction

The objective of this paper is to highlight specific arguments along with ideas about designing, developing, and implementing bike-sharing models. The article further emphasizes understanding the aspects studied in the field, the weaknesses, and gaps or areas that need further study. Thus, the review focuses on demonstrating to the reader the reasons for conducting the research, including usefulness, necessity, importance, and validity. Bicycles are offered for rent across a city through public bicycle share programs (PBSP). In 2014, around 855 public bicycle-sharing programs were active in cities worldwide (Oppermann et al., 2018).

PBSPs are used for several purposes, including increasing cycling levels, facilitating the first and final kilometres of public transit trips, and reducing traffic congestion, to name a few (Ricci, 2015). These programs are used for both transit and leisure journeys, although they are primarily designed to make short trips (under 30 minutes) easier. Users of PBSPs are frequently charged an extra price for every journey that exceeds the prescribed time limit (usually 30 minutes). Increased bicycle availability for individuals who do not possess one, increased convenience of bicycling, and normalization of biking as a mode of transportation are all potential avenues for these initiatives to lead to increased population-level riding (Goodman et al., 2014). Bike-sharing systems (BSS) improve multimodality in transportation, urban accessibility, and mobility sustainability, more cities worldwide are implementing them to address increased air pollution, urban mobility, and changes in urban mobility patterns and behaviour, all of which have been aggravated by the recent pandemic crisis (Albuquerque et al., 2021). Shared bikes are gaining traction as an alternate mode of transportation that can address environmental issues, traffic congestion, and poor quality of life caused by car-oriented transportation systems while ensuring practical consequences (Gu et al., 2019).

Furthermore, shared bikes offer various advantages when constructing an integrated public transportation system with public buses and urban rail systems. To begin, a bike trip's typical mileage is roughly 3 to 5 km. However, it is feasible to travel more considerable distances using public transit. Second, the public transit catchment area may be expanded from an existing pedestrian area to a place that can be covered by bicycles. Third, highly requested shared bikes can accommodate leisure travel on existing transit at non-adjacent hours (save during rush hour, when traffic demand is concentrated during the day), potentially increasing the total utilization rate of public transportation. Bikes and walking or public transit are the most excellent way to achieve an integrated public transportation system (Böcker et al., 2020). Combining public transportation services, such as buses or metros, into high-capacity corridors where economies of scale can be built and strengthening cooperation with passages or feeders using bikes, an integrated public transportation system can increase the availability of public transportation (Gu et al., 2019). As a result, forecasting demand for shared bikes is critical for successfully implementing an integrated public transportation system that incorporates shared bikes.

In the data-driven business climate of the mobility sector, precisely predicting client demand is a critical component of success (Sohrabi et al., 2020). It is straightforward to identify global organizations that supply their varied services to clients based on demand forecast findings in the

data technology era. Companies have had short-term success because they have accurately forecasted demand based on internal and external factors. Most sectors throughout the globe are undergoing digital transformations based on machine learning and deep learning algorithms (Wang et al., 2019). Fast-growing start-ups, in particular, frequently rely on crucial business choices on data and algorithms rather than managerial expertise or intuition. The bike is an environmentally beneficial method of transportation that benefits individuals optimizing its exercise effects during the COVID-19 pandemic in a modern world where environmental concerns are becoming increasingly important. Since it was changed into a "shared" item a few years ago, the bike has received international notice. It is not only for recreational reasons but also for transportation (Gu et al., 2019).

When creating sustainable transportation systems, shared bike programs are seen as a way to respond to climate change and energy challenges in many places worldwide. A shared bike system is an essential and required tool for encouraging people to use bikes and advancing the implementation of an efficient urban transportation system. Despite its numerous benefits, many communities and organizations are hesitant to implement a shared bike program because of the drawbacks of high fixed expenses such as installation and operation. As a result, reliable demand forecasting is essential to keep a bike-sharing program running. The bike-sharing system was one of the first shared economy models in the transportation business. Capital Bikeshare, which started renting bikes in the Washington, D.C. region, held a data science competition on the Kaggle Competition platform to estimate consumer bike share demand (Fanaee-T & Gama, 2014). As a result, data scientists and analysts worldwide have attempted to forecast demand using various data mining approaches.

Much prior research has emphasized the relevance of model parameters, such as the distance between the rental and return locations (Younes et al., 2020; Ma et al., 2020). These works primarily focused on engineering feature approaches and statistical modelling within provided datasets. As a result, past research had model constraints since they only employed specific datasets. On the other hand, this research focuses on investigating a new characteristic from a live data source. Existing research has used statistical approaches to estimate bike demand, but few have used machine learning methodologies, which have recently come to the forefront. This research aims to offer a machine learning prediction model incorporating factors influencing shared bike demand. Furthermore, a predictive model that contains these factors is provided from the perspective of an integrated public transportation system.

The research paper focuses on discussing, understanding, and identifying the association between bike share (BS) riders and compelling parameters using a live data set. Through this study, more in-depth knowledge can be achieved on bike-sharing models, thereby enhancing future applications' design, implementation and utilization. Over the years, the concept of BS programs has increased globally. Thus, conducting this research paper has helped in understanding the arguments and theories which have been provided regarding the relationship between BS riders and compelling parameters. The research has also assisted in enhancing the developments made over the years on the selected topic and gaining insights regarding the gaps. Thus, understanding all these aspects will contribute to making a significant input in BS programming.

2. Literature Review

The literature review will cover the bike share programs worldwide, bike share models, methodologies used in previous literature and even gaps. The research strategy that yielded the information for this study was discussed in the first section of this review. A search of University student databases caused a flurry of results, including multiple articles about the Bike Share program. Following initial investigations through Academic Search Complete at the library, I discovered further particular subtopics, and the addition of healthcare-related databases revealed a wide range of relevant research. To find peer-reviewed online resources, the researcher will use government reports, Google Scholar, a literature matrix (created by the researcher to allow quick comparisons among publications to determine scope), and EBSCOhost. The search began with phrases and keywords such as Bike share, regression models, Nearest Neighbour, XGboost, Random Forest and Decision Trees. Using these keywords and *phrases* ensures a complete investigation of all aspects of Bike Share.

2.1 Bike Share Programs

According to Fishman (2015), BS has gained high and rapid popularity in the last decade. The concept of BS was introduced in the 1960s. However, the number of cities, which have been offering the service, has increased since the late 1990s. In this context, “Contemporary bike-share programs (BSPs) refer to the provision of bikes, which can be picked up and dropped off at self-serving docking stations. Typically, trips are of short duration (less than 30 min). The bicycles usually contain technologies allowing program operators to monitor activities in their respective docking station locations. Some are equipped with a global positioning system (GPS)” (Fishman, 2015, 2). Based on the study findings of Fishman, Washington, Haworth, and Watson (2015), the BS programs' key benefits include flexible mobility and physical activity benefits, emission reductions, reduced fuel use & congestion, financial savings, and multimodal transport connection support.

Additionally, one of the main benefits of BS is that bikes are perceived as a replacement car. On the other hand, the Institute for Transportation and Development (2018) found that in 2016, BS systems rider trips in the US accounted for over 28 million. Ridership, specifically in North America, has increased significantly since 2012 due to new BS systems every year. Since 2016, most new bike share systems operating in North America have used intelligent bikes. Furthermore, as BS continues to evolve, new operating systems across the US have emerged using dockless and stationless bikes. Additionally, in 2017, many dockless operators installed bikes in the US, Great Britain, China, Singapore, Australia, and Italy, among others. Correspondingly, ‘pedal assist e-bike share fleets’ have been launched in many North American cities since 2017.

Moreover, Campbell, Cherry, Ryerson, and Yang (2016) stated that in the present scenario, China is the leading nation in the world in terms of the growth of public BS along with the private electric bike. The current projections confirm the feasibility of implementing large-scale shared e-bike systems nationwide. Public BS systems can be one of the fastest-growing public transportation modes in the world. The industry has been growing at an average rate of 37% since 2009. In this context, “The current trajectory of bike share adoption, the popularity of e-

bikes, and the presence of e-bike-share pilot projects in other countries all support a future of e-bike sharing in China” (Campbell et al., 2016, 400). Given the rapid evolution of transportation in China, it is not well understood how such a system will differ from standard bike-share and how both types of shared bikes (hereafter “shared bike” is used to refer to both bike-share and e-bikeshare) systems can best address the needs of urban China” (Campbell et al., 2016, 400). Based on the study findings of Guo, Zhou, and Li (2017), bike-sharing growth is receiving attention as societies are becoming highly aware of the significance of ‘active non-motorized traffic modes. Since BS is perceived as a good transport system, it increases the use of a bicycle, especially in the circumstances providing different pick-up, drop-off locations, self-service, etc., thereby making it convenient for users.

Furthermore, bike-sharing offers an efficient solution to the transport system and thus can be perceived as an alternative to other transit systems. Additionally, Kim, Ghimire, Pant, and Yamashita (2021) asserted that it is essential for riders to use a helmet while using a bike. A survey conducted in the year 2013 under ‘New York City’s bike share program’ found that about 85.3% of the riders did not wear helmets. This raises an important question – whose liability is it? Even though there are no statistics available on BS riders’ accidents, a well-designed and comprehensive program should include access to helmets. The additional challenge is motivating riders to use these helmets. If current rider safety behaviour and awareness are any indications, there is a strong likelihood that most BS riders will use them. This is a challenge that policymakers need to consider and prioritize in their respective BS programs.

2.2 Bike Sharing Models (NTBR and EXPANDED)

Different bike-sharing models can be used to predict flows in every station. Contextually, Tran, Ovtrachta, and d'Arcier (2015), robust linear regression models are one such model that helps in predicting flows. The developed environment variables used in the model are often identified within a buffer zone (300 meters) in every bike-sharing station. Thus, linear regression can be used during the busiest time of a weekday to predict the bike-sharing flow. Integrating a robust linear regression method can help improve rider needs and program optimization in general.

Furthermore, the arrival and exit flow at the hourly level can be integrated into the regression model at each station. On the other hand, Yang, Li, and Zhou (2019) highlighted another bike-sharing model system dynamics simulation. In this context, the simulation method helps in modeling factors along with operations, processes, and policies to be considered in the dockless bike-sharing programs operations. It further helps assess sustainable strategies that enhance the overall system performance. Maintaining an adequate balance between expenditure and revenue is essential, especially in the sustainable development of dockless bike-sharing programs in a specific area. Thus, both the income and expense of the dockless bike-sharing programs need to be fully considered in the respective system. Additionally, the system model performs different simulations and further evaluates the dynamic behavior of the individual system.

The study findings of Ottomanellia (2013, 204) further stated that the main objective of a dynamic simulation model is that it helps "to minimize the vehicles repositioning costs for bike-sharing operators, aiming at a high-level users satisfaction and if it increases with the probability to find an available bike or a free docking point in any station at any time. The proposed model

considers the dynamic variation of the demand". Based on the study findings of Soriguera, Casadoa, and Jiménez (2018), docking stations along with bikes are passive agents, while the amount and location are perceived as inputs to the simulation. Thus, it indicates that the simulation depends on the higher-level model for establishing the optimality in the respective information. Furthermore, "users and repositioning trucks are the active agents who take decisions, which result in an efficient flow of bikes between stations" (Soriguera, Casadoa, & Jiménez, 2018, 140). For instance, the case study of Barcelona's Bicing can be considered, wherein a 24-hour simulation was performed with the inputs from a real case study. Bicing is a bike-sharing system in Barcelona, which was selected as a benchmark.

Additionally, "the open data policy of the Barcelona council, including Bicing's data, was decisive in such selection. The Bicing open data portal includes the real-time occupancy of every station with a one-minute update frequency. These data allow assessing some aspects of the simulator's performance" (Soriguera, Casadoa, & Jiménez, 2018, 142).

3. Methodologies Used in Previous Literature (NTBR and EXPANDED)

In the study by Tran, Ovtracht, and d'Arcier (2015), the data were obtained from the bike-sharing trips from JC Decaux, the administrator of the Lyon bike-sharing system. This included data for every station during the year 2011. In this context, each trip helped provide information regarding the departure, arrival station, date, time of check-in & check out, and the subscriber type. Correspondingly, regarding the subscribers, Tran, Ovtracht, and d'Arcier (2015) focused on analyzing two bikes sharing users, comprising short-term subscribers having a 'one-day bike sharing subscription' and long-term subscribers with a yearly 'bike sharing subscription.' On the other hand, the research conducted by Kim, Ghimire, Pant, and Yamashita (2021) used the data gathered in June 2019. The authors selected a total of 25 sites located in urban Honolulu. In this study, stratified simple random sampling was integrated for selecting street segments with high, medium, and low traffic volumes that differed in lane configurations. This included multi-use paths, protected bikes, and shared and dedicated bike lanes. Visitors, shopping centers, attractions, activity generators, and commercial offices were also mapped and integrated into the sampling process.

During the fourth industrial revolution, multinational corporations and start-ups experimented with the sharing economy idea, attempting to better fulfill consumer demand by incorporating demand forecast findings into their operations. Companies must enhance their prediction model to estimate client demand better to survive in today's harsh competition. Kim et al. (2021) investigated a novel bike-sharing demand prediction model feature, which enhanced the RMSLE score. The RMSLE score results increased by adding this new feature to the number of daily car accidents recorded in the Washington, DC region to the random forest, XGBoost, and LightGBM models.

Machine learning techniques were used by Ashqar et al. (2017) to estimate the availability of bikes at San Francisco Bay Area Bike Share stations. As univariate regression methods, Random Forest (RF) and Least-Squares Boosting (LSBoost) were utilized, while as a multivariate regression technique, Partial Least-Squares Regression (PLSR) was used. The number of available bikes at each station was modeled using univariate models. PLSR decreased the

number of necessary prediction models and represented the network stations' geographical correlation. The results suggest that univariate models predict errors more accurately than multivariate models. The results of the multivariate model, on the other hand, are plausible for networks with a large number of spatially associated stations. According to the findings, station neighbors and the forecast horizon time are also essential factors. Fifteen minutes was the most efficient forecast horizon period for minimizing prediction error.

Citizens have benefited from the bike-sharing program, which has functioned as a valuable addition to public transportation. Each docking station has a defined space to keep bikes for docked bike-sharing service, and the station may be empty or saturated at various times. Bike-sharing companies often move bikes between stations by driving trucks based on their previous experiences, which might result in wasting human resources. Accessing this service is inefficient for operators and cumbersome for users. As a result, operators and riders benefit from accurately forecasting the quantity of available bike share in the stations. B. Wang and Kim (2018) focused primarily on short-term docking station utilization predictions in Suzhou, China. With one-month historical data, two new and highly efficient models, LSTM and GRU, are used to forecast the short-term available number of bikes in docking stations. As a comparison, Random Forest is utilized as a baseline. According to the results, RNNs (LSTM and GRU) and Random Forest may achieve good performance with tolerable error and comparative accuracies. In terms of training time, random forest is preferable, while LSTM with complicated structures can predict better in the long run. The highest discrepancy between actual data and anticipated value is just one or two motorcycles, indicating that the created models are suitable for implementation.

Because the number of bicycles is essential to the long-term success of dockless PBS, this study used OFO bike operation data in Shenzhen to test the implementation of a machine-learning method for quantity management. Zhou et al. (2020) employed two clustering methods to identify the bicycle gathering area. The available bike number and coefficient of available bike number variation were evaluated in each type of cycling gathering area. Second, using 25 impact variables, five classification algorithms were assessed on their accuracy in classifying the kind of bicycle collecting locations. Finally, the use of information gleaned from current dockless bike operating data to influence the numbering and administration of public bicycles was investigated. According to the findings, 492 OFO bicycle collecting places were classified as highly inefficient, normal inefficient, highly efficient, and average efficient. Around 110,000 bikes with minimal utilization were gathered in the highly weak and standard inadequate zones. The accuracy of the categorization algorithm will be impacted when more types of bicycle collecting areas are added. In five classification methods, the random forest classification had the most outstanding performance in detecting bicycle gathering area kinds, with an accuracy of more than 75%. In four different types of bicycle gathering spaces, there were notable variances in the features of 25 impact elements. It is possible to estimate area types using these criteria to maximize the number of bicycles available, save operating costs, and enhance usage efficiency. Using a machine learning technique, this research aids operators and the government in understanding the features of dockless PBS and contributes to the system's long-term sustainability.

In recent years, bike-sharing systems have seen remarkable expansion and scholarly interest. The key drivers to this growth were environmental awareness, technological advancements, and the desire for socially appropriate transportation choices. However, as these systems expand, businesses must constantly rebalance them to satisfy rising demand. As a result, running organizations continuously look for the best methods for predicting flow. Hamad (2020) investigated three machine learning techniques, focusing on the overlooked topic of multiple seasonality in time-series models. The study's goal was to look at the link between bike sharing, the weather, and the people who utilize it. The four strategies are then constructed and assessed to select the best-performing algorithm and recommend other research topics in traditional time series models.

While the advantages of shared bicycle use in terms of greater mobility, accessibility, and urban environmental quality are well established, the effects of increased bicycling on traffic safety need to be evaluated and managed further. Helmet use and behaviors of bike-share users and other cyclists are contrasted based on observational studies in one of the nation's most extensive and successful bike-share programs (Honolulu, Hawaii). In 25 different places throughout the city, 5431 bicycles, mopeds, motorbikes, and other two-wheeled vehicles were spotted. To examine the links between helmet wear, bicyclist characteristics, roadway, traffic violations, location, and environmental factors, K. Kim et al. (2021) employed two logistic regression models. Bikeshare users, visitors, ladies, and those carrying earbuds are less likely than other categories to wear helmets. Bicyclists who ride during rush hour and on weekdays and those who depend on conventional road lanes are likelier to wear helmets. Bikeshare riders are also more prone to break the law than other bicyclists. In addition to raising awareness of the traffic safety issues connected with the growing popularity of biking and bike share, the report includes recommendations for enforcement, education, engineering, and risk management. There is a pressing need to boost helmet wear and overall cyclist safety.

Citizens have benefited from the bike-sharing service, which has functioned as a valuable supplement to public transportation. Each docking station has a defined location to keep bikes for docked bike-sharing service, and the station may be empty or saturated at different times. Bike-sharing companies typically move bikes between stations by driving trucks based on previous experiences, which could waste human resources. Accessing this service is inefficient for operators and inconvenient for users. As a result, both operators and riders benefit from accurately forecasting the number of available bikes in the stations. Wang & Kim (2018) primarily focus on short-term docking station usage predictions in Suzhou, China. With one-month historical data, two new and highly efficient models, LSTM and GRU, are used to forecast the short-term available number of bikes in docking stations. As a comparison, Random Forest is utilized as a baseline. According to the results, RNNs (LSTM and GRU) and Random Forest may achieve good performance with tolerable error and comparative accuracies. In terms of training time, random forest is preferable, while LSTM with complicated structures can predict better in the long run. The highest difference between actual data and anticipated value is just one or two motorcycles, indicating that the created models are ready for implementation.

3.1 Gaps (NTBR)

There is one significant gap in the research, as adequate information could not be found regarding the streamlining association between bike share riders and compelling parameters. To enhance the overall understanding and knowledge of these models, improved methodologies can be integrated, such as conducting interviews with bike-sharing operators. This is because it can help obtain insights from the participant, thereby enabling the understanding of the implicit relationship among different factors. Such a strategy, in addition to a more preliminary and comprehensively exhaustive analysis – addressing covariate independence, homoscedasticity, outliers, collinearity, and others – is this research's central theme and focus. The importance of model factors such as the distance between the rental and return sites have been highlighted in several previous studies (Younes et al., 2020; Ma et al., 2020). These papers mainly focused on the datasets' engineering feature methods and statistical modeling. As a result, previous research had model restrictions since it only used specific datasets.

On the other hand, this study looks at a novel characteristic derived from a live data source. Existing studies have utilized statistical methods to estimate bike demand, but just a few have incorporated machine learning procedures, which have recently gained popularity. This study aims to develop a machine learning prediction model that considers elements that impact demand for shared bikes.

3.2 Contribution to the Research Field NTBR)

This study's importance or contribution will help better understand the concepts associated with bike-sharing in the present scenario globally. This study will further enhance the knowledge regarding the potential challenges and can act as a source of information in the future. Using a machine learning technique, our work assists operators and the government in better understanding the characteristics of bike sharing and contributes to the system's long-term sustainability.

3.3 The Study Settings

3.3.1 Capital share

This study will be based on a US bike-sharing provider, Capital Bikeshare Company (CBC). A mountain bike guided tour and rental facilities are part of the business. The program is jointly owned and sponsored by the District of Columbia and Arlington County, VA, and operated by Alta Bicycle Share, Inc. Its coverage includes both regions (see figure 1)

CBC provides rides for people of all skill levels. They will range from easy family rides to intense, fast-paced expert rides. These tours might take anywhere from a few hours to a week to complete. The company offers a package deal that includes bikes, transportation to and from the trailhead, lunches, and a personal tour guide to show them around the trails and provide information about the area. It also offers a complete bike rental fleet. The bikes range in price from low-cost city cruisers to full-fledged mountain bikes with full suspension. Customers are not required to be on tour to hire bicycles from the company. The company has 4500 bicycles and 500 stations.

Due to the ongoing Corona pandemic, the company's revenues have recently dropped significantly. In the current market environment, the company is struggling to stay afloat. As a result, it has decided to develop a thoughtful business plan to increase revenue as soon as the current lockdown ends and the economy returns to a healthy position. CBC hopes to understand better people's demand for shared bikes after the present Covid-19-related complications end across the country. They planned this to position themselves to meet people's needs whenever the situation improves, differentiate themselves from other service providers, and profit handsomely. They want to know what factors influence the demand for these shared bikes in the United States.

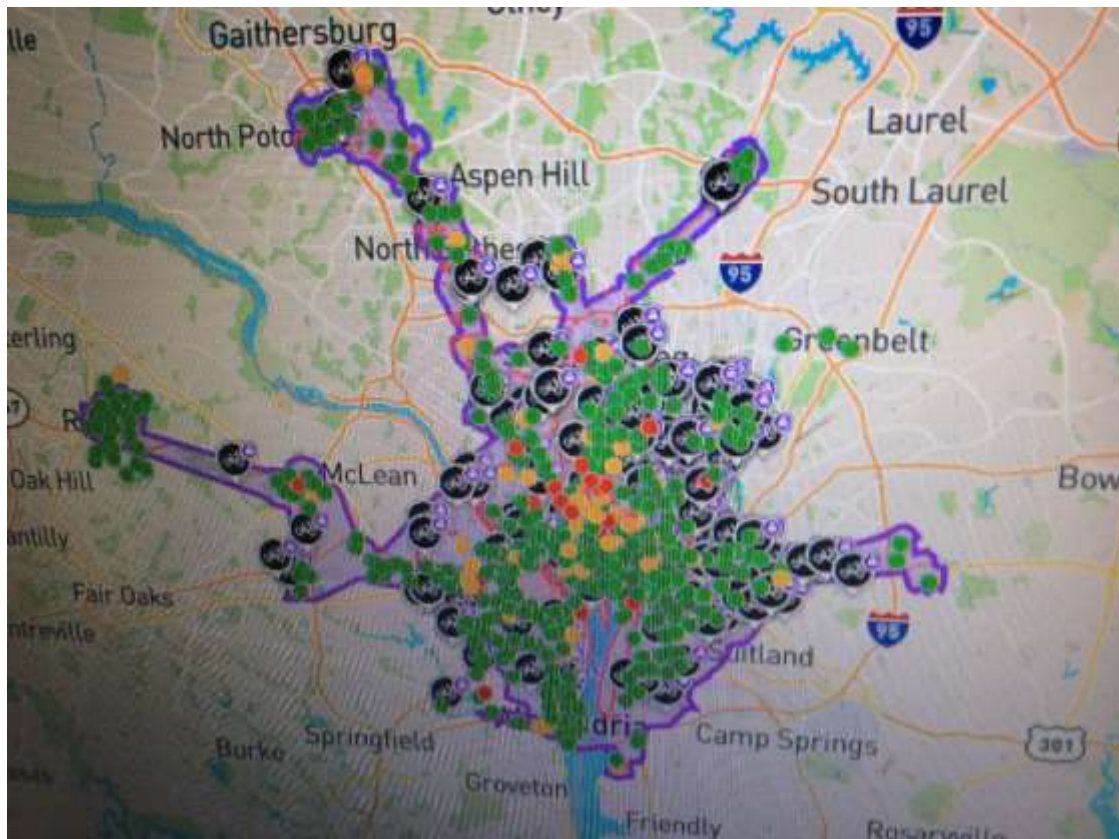


Figure 1: Capital Bikeshare (CB) Coverage: (Source: CB website)

3.3.2 Global distribution of bike sharing programs

The regional links are as follows:

[USA LINK](#) , [EUROPE LINK](#) , [ASIA LINK](#) , [CANADA LINK](#) , [S. AMERICA LINK](#), [AFRICA LINK](#)

3.4 Research limitations

In general, many scientific research studies are prone to different limitations. This one is no exception. The inexhaustive list of this study's shortcomings includes:

1. The study design is influenced by existing data sets.
2. Lack of a sampling protocol.
3. The data set is enhanced by a third party.
4. Inability to verify inconsistent data points – wrong data entry, recording errors, etc. – following on up outlier data.
5. Inadequate data cleaning
6. A limited number of cases, especially when divided into TRAINING (80 %) and TEST (20 %) Datasets
7. Model Replication only valid within the applied parameters

3.5 Data set

A bike-sharing system refers to a service that makes bikes accessible for shared use to individuals for a fee or free on a short-term basis. Such plans let users rent a bike from a "dock," which is frequently computer-controlled and where the user enters payment information, and the system unlocks the bike. After that, the bike can be returned to another dock in the same system. The original database has $N=731$ observations. These have been reduced to 703 cases after adjusting for deleted issues identified as outliers. Table 1 shows the data dictionary that details the data set attributes used in the study. The data used are free and publicly provided by BSC and Hadi Fanaee-T Laboratory of Artificial Intelligence and Decision Support (LIAAD), University of Porto: original data provider and data compiler, respectively. As indicated earlier, one database limitation has been the inability to include a comprehensive data-cleaning strategy during this process. Data collection for the study was conducted between 2011 and 2012 inclusive. In this dataset, there were no missing values.

Table 1. Study Database Dictionary (Source: Author) The dataset was split into 'Train' and 'Test' datasets in the ratio of 80% to 20%.

4. Result and Discussion

The researcher is motivated by my interest in learning more about the factors influencing demand for these shared bikes. I am interested in knowing what factors influence demand for these shared bikes. I want to identify the variables that significantly predict the need for shared bicycles. A multiple regression model is required to model the demand for shared bikes with the supplied independent variables. I will use it to determine how needs vary depending on the attributes. According to Uyanık & Güler (2013), when we wish to forecast the value of a variable based on the importance of two or more other variables, we utilize multiple regression. The dependent variable, the total number of registered & unregistered bikers: and renters, is the variable we want to forecast. In this study, a linear regression model was used to determine the factors that statistically significantly predict the number of bikes rented. Machine learning classifiers, namely; Random Forest, Decision Trees, Nearest Neighbor, and XGBoost, were

employed to determine the most critical predictors; the most accurate classifier was considered the best. The data was analyzed using SPSS V25, R, and PYTHON.

4.1 Preliminary Analysis

4.1.1 Visual representations (Include HISTOGRAMS and BOXPLOTS with NARRATIVES here)

To begin, we looked at the distribution of the response variable Total Bike Rentals (cnt). According to the histogram in figure 1, the total number of rental bikes appears to follow a relatively normal distribution. The distribution's mean and variance are the same, and when the mean grows more extensive, the distribution approaches a normal distribution.

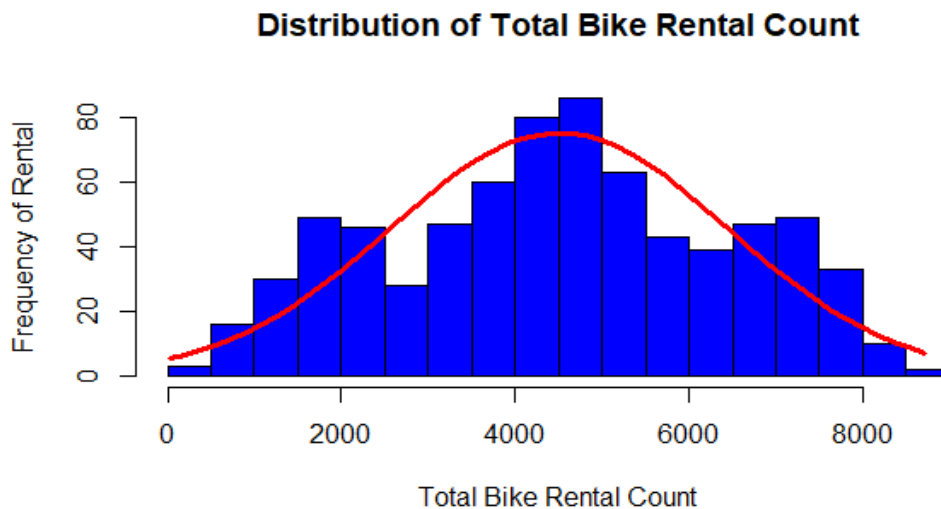


Figure 2: Normality test for bike rental count

To begin, we looked at the distribution of the response variable Total Bike Rentals (count). According to the histogram in figure 1, the total number of rental bikes appears to follow a relatively normal distribution. The distribution's mean and variance are the same, and when the mean grows more extensive, the distribution approaches a normal distribution.

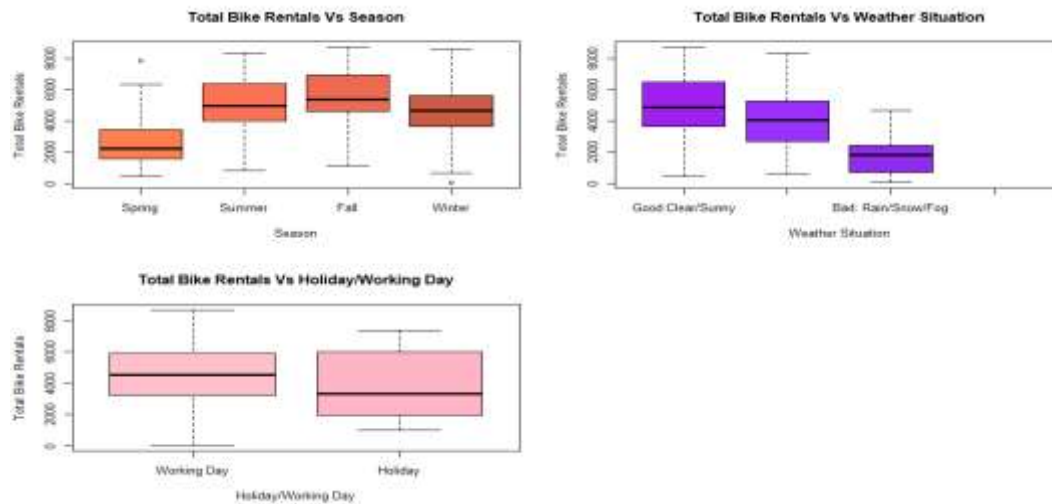


Figure 3: Bike rentals based on seasons

The graph depicts the association between the variable Total Bike Rentals(cnt) and the season. During the summer and fall, the average number of bike rentals is at its peak. The graph depicts the link between the variable Total Bike Rentals(cnt) and the holiday. We can see that the average number of bike rentals is more significant on weekdays than on weekends. The graph depicts the association between the variable Total Bike Rentals(cnt) and the weather. When the weather is terrible, bike rentals have a distinct downward tendency. The graph depicts the association between the variable Total Bike Rentals(cnt) and the year. We can see that the overall trend has risen during the two years. Moreover, there are many bike rentals each year during the summer and fall seasons.

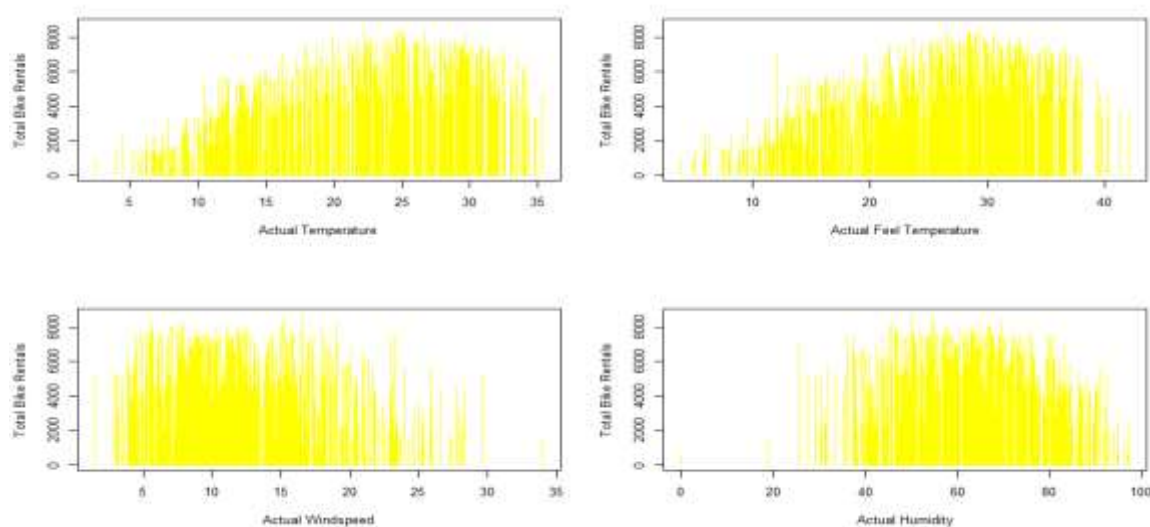


Figure 4: Descriptive statistics on bike rentals

These numerical variables appear to be distributed quite organically.

4.1.2 Descriptive Statistics

Table 1 shows the descriptive statistics: Mean, Median, Minimum, Maximum and Percentiles.

4.2 Verifying Regression Assumptions (NTBR accordingly)

When a researcher decides to use multiple regression to analyze data, one step in the process is to ensure that the data the researcher intends to analyze are compatible with various regression assumptions (Ernst & Albers, 2017). This is necessary because multiple regression can only be used if the data "passes" – the study's outcome - the assumptions required to get a valid result. The first assumption is that the dependent variable has to have a continuous or quantitative level of measurement. In this study, the dependent variable, the Total number of registered & unregistered bikers: renters (cnt), meets this criterion. The second assumption is that there should be more than one independent variable, which can be either continuous or categorical; the independent variables in this study meet the criterion. The third assumption is that a linear relationship between the dependent variable and every independent variable should be assessed using a scatterplot matrix. Dummy variables were generated from the categorical variables.

Figure 5 shows that the dependent variable only has a linear relationship with variables "temp and atemp"—figure 3 shows the relationship between the Response variable and the Categorical variables.

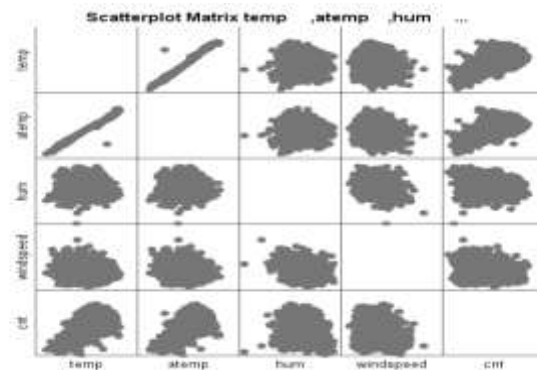


Figure 5: Scatter Plot with a linear correlation between (cnt) and two Explanatory (tempt & attempt) Variables

The fourth assumption is that there should be independent observations; this is checked using the Durbin-Watson statistic. The model shows the value of the Durbin-Watson statistic as 0.452. This implies a positive autocorrelation; this implies that the correlation between the data points is not modeled well enough. The fifth assumption is that the data should indicate homoscedasticity, which means that the variances remain similar as you move along the line of best fit. The scatterplots suggest some homoscedasticity; the points should be about the same Distance from the line. The sixth assumption is that there should not be multicollinearity; this occurs when there is a high correlation among independent variables - problem; this is assessed using the Variance

Inflation Factor (VIF) values. The acceptable values for VIF are those less than 10 (Hair et al., 2019). In this case, the independent variables with the highest values of VIF are; 'temp,' 'atemp,' and 'Winter.' The variables 'atemp' and 'Winter' will be excluded based on the high VIF values. The variable 'temp' will not be excluded despite having a high VIF value since, based on general knowledge, the temperature is likely to be an essential factor for bike rentals.

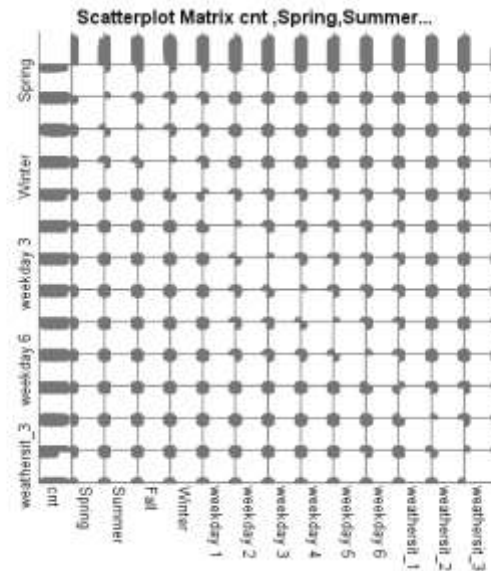


Figure 6: Linear relationship between the Response variable and the Categorical variables.

The seventh assumption is that there should not be outliers or points that are highly influential. Cook's Distance (see Table 1) was used to point out the influential data points; they were not included in the regression model because they have the propensity to reduce the predictive accuracy of the results and the statistical significance. Furthermore, David G. Keinbaum et al. also "measures the extent to which the estimates of the regression coefficients change when an observation is deleted from the analysis." The original data points were N=731; after removing the outliers, the number of observations included in the study reduced to N=703

Table 1: Outliers (Source: Author) OK

instant	Cook's distance
50	0.006915745
69	0.038708211
87	0.008525478
88	0.007635568
89	0.006170474

151	0.008282762
160	0.008569033
203	0.00941673
204	0.009301581
239	0.010159981
266	0.023678745
270	0.006406563
271	0.008344468
328	0.006543001
407	0.012217253
442	0.014635957
443	0.007062332
448	0.011428928
456	0.006164395
519	0.005926599
522	0.006122193
543	0.006580904
568	0.014896619
569	0.007468615
595	0.307200599
638	0.006708605
668	0.006884812
669	0.005721031

The eighth assumption is that the residuals should be approximately normally distributed (see figure 4).



Figure 7: Normal P-P plots that show that the residuals are approximately normally distributed.

Table 2 summarizes the statistics of all the variables used in the study. Table 3 shows the coefficients for the final regression model. The R Square shows how much of the total variation

in the dependent variable, the total number of registered & unregistered bikers: and renters (cnt), can be explained by the independent variables. In this case, 63.3 % can be explained. The F-statistic, $F(25,677) = 46.67$, $p < 0.05$, suggests that the regression model is a good fit for the model, that is, the regression model statistically significantly predicts the total number of registered & unregistered bikers: renters (cnt). Table 3 shows that the variables that significantly predict the total number of registered & unregistered bikers: renters (cnt) include Temperature, humidity, wind speed, the month of September, Spring, Fall, all weekdays except weekday one and weather situation 3 (Light Snow, Light Rain with Scattered Clouds), $p < 0.05$. Table 2 shows the descriptive statistics for both the dependent and the dependent variables.

Table 2: Descriptive statistics (Source: Author)

	N	Minimum	Maximum	Mean	Std. Deviation
Temp	703	.06	.86	.4936	.1831
Atemp	703	.08	.83	.4734	.1627
Hum	703	.25	.97	.6279	.1380
Windspeed	703	.02	.44	.1899	.0765
Cnt	703	431.00	8714.00	4516.4780	1902.2299
Jan	703	.00	1.00	NA (Not Appbl)	NA
Feb	703	.00	1.00	NA	NA
March	703	.00	1.00	NA	NA
April	703	.00	1.00	NA	NA
May	703	.00	1.00	NA	NA
June	703	.00	1.00	NA	NA
July	703	.00	1.00	NA	NA
Aug	703	.00	1.00	NA	NA
Sept	703	.00	1.00	NA	NA
Oct	703	.00	1.00	NA	NA
Nov	703	.00	1.00	NA	NA
Dec	703	.00	1.00	NA	NA
Spring	703	.00	1.00	NA	NA
Summer	703	.00	1.00	NA	NA
Fall	703	.00	1.00	NA	NA

Winter	703	.00	1.00	NA	NA
weekday 1	703	.00	1.00	NA	NA
weekday 2	703	.00	1.00	NA	NA
weekday 3	703	.00	1.00	NA	NA
weekday 4	703	.00	1.00	NA	NA
weekday 5	703	.00	1.00	NA	NA
weekday 6	703	.00	1.00	NA	NA
weathersit_1	703	.00	1.00	NA	NA
weathersit_2	703	.00	1.00	NA	NA
weathersit_3	703	.00	1.00	NA	NA

Table 3: Coefficients of Regression (Source: Author)

Model	Unstandardized Coefficients (Response Variable = cnt)			
	B	Std. Error	t	Sig.
1 (Constant)	4567.157	406.058	11.248	.000
temp	7031.969	648.074	10.851	.000
Hum	-3563.312	473.934	-7.519	.000
windspeed	-3471.414	640.650	-5.419	.000
Jan	235.395	279.960	.841	.401
Feb	210.804	283.372	.744	.457
March	352.045	288.488	1.220	.223
April	-11.964	387.999	-.031	.975
May	153.040	410.860	.372	.710
June	-470.427	421.167	-1.117	.264
July	-759.841	449.189	-1.692	.091
Aug	-164.138	429.240	-.382	.702

Sept	751.276	358.066	2.098	.036
Oct	286.497	253.176	1.132	.258
Nov	-179.087	237.306	-.755	.451
Spring	-1688.589	280.589	-6.018	.000
Summer	-651.577	344.391	-1.892	.059
Fall	-1089.325	319.478	-3.410	.001
weekday 1	202.147	164.052	1.232	.218
weekday 2	368.900	167.036	2.209	.028
weekday 3	445.015	165.848	2.683	.007
weekday 4	420.350	165.636	2.538	.011
weekday 5	420.175	166.046	2.530	.012
weekday 6	386.971	167.072	2.316	.021
weathersit_2	-192.036	121.059	-1.586	.113
weathersit_3	-1891.411	339.817	-5.566	.000

4.3. Machine Learning Results

4.3.1. Introduction

We claimed that no single learning algorithm could consistently outperform others across all data sets. As a result, we used an empirical approach to determine the accuracy of the candidate algorithms for the problem and then choose the one with the best accuracy in machine learning; a classifier is an algorithm that sorts or categorizes data into one or more of a set of "classes" automatically. A classifier is an algorithm - the principles that robots use to categorize data. On the other hand, the end product of your classifier's machine learning is a classification model. The classifier is used to train the model, and the model is then used to classify your data. Both supervised and unsupervised classifiers are available. Unsupervised machine learning classifiers are fed just unlabeled datasets, which they sort into categories based on data structures, pattern recognition, and anomalies. Training datasets are provided to supervised and semi-supervised classifiers, which teach them to categorize data into specified categories. Classification is a type of supervised learning in which the input data is also delivered to the objectives. Classification has numerous uses in various fields, including medical diagnosis, credit approval, and target marketing.

4.3.2. Types of Classifiers

The classifiers that were used in this study include; Random Forest, Decision Trees, Nearest Neighbor and XGBoost.

4.4. *Number of Clasifiers used*

4.4.1. Random Forest

A random forest is a machine-learning technique for solving classification and regression problems. It uses ensemble learning to solve complex problems by combining multiple classifiers. Many decision trees make up a random forest algorithm. Bagging or bootstrap aggregation is used to train the 'forest' formed by the random forest method. Bagging is a meta-algorithm that increases the accuracy of machine learning methods by grouping them. The random forest method determines the outcome based on decision tree forecasts. It forecasts by averaging or averaging the output of various trees. The precision of the result improves as the number of trees grows. A random forest method overcomes the drawbacks of a decision tree algorithm. It reduces dataset overfitting and improves precision.

A random forest algorithm's building component is decision trees. A decision tree is a decision-making tool with a tree-like structure. A basic understanding of decision trees will aid our understanding of random forest algorithms. There are three parts to a decision tree: decision nodes, leaf nodes, and root nodes. A decision tree method separates a training dataset into branches, each further divided into branches. This pattern repeats until a leaf node is reached. There is no way to separate the leaf node any farther. The nodes in the decision tree represent the attributes utilized to forecast the outcome. The leaves are connected to the decision nodes. The fundamental distinction between the decision tree and the random forest algorithms is that the latter randomly establishes root nodes and segregates nodes. The bagging method is used by the random forest to generate the required forecast. Rather than using a single sample of data, bagging includes using many samples (training data). These outputs will be ranked, and the one with the best score will be chosen as the final product. Random forest classification uses an ensemble methodology to achieve the desired result. Various decision trees are trained using the training data. This dataset contains observations and features that will be chosen at random when nodes are split (Sarica et al., 2017). Various decision trees are used in a rain forest system. There are three types of nodes in a decision tree: decision nodes, leaf nodes, and the root node. Each tree's leaf node represents the final output produced by that particular decision tree.

The other duty that a random forest algorithm does is regression. The principle of simple regression is followed by a random forest regression. In the random forest model, the values of dependent (features) and independent variables are passed. In terms of data extrapolation, random forest regression isn't ideal (Ren et al., 2017). Unlike linear regression, which uses present data points to estimate values outside of the observation range, nonlinear regression employs existing observations to estimate values outside of the observation range. This explains why the majority of random forest applications are related to classification. When the data is sparse, random forest does not generate good results. In this situation, the bootstrapped sample

and the subset of features will result in an invariant space. This will result in ineffective divides, which will have an impact on the outcome.

In our analysis, the variance explained is 85.15%, this implies that the out-of-bag predictions explain 85.15% of the target variance of the training set.

Table 4: Variable Importance

	IncNodePurity
yr	602435623.9
mnth	111016434.8
holiday	8734000.2
weekday	57549945.5
workingday	4866579
temp	724260733.4
atemp	290195256
hum	134594085.5
windspeed	57851177.8
season_2	3542049.4
season_3	788345.5
season_4	78673546.9
weathersit_2	11980229.5
weathersit_3	25934755.2
weathersit_4	0

According to the Random Forest model, the five most important variables are year, month, whether the day is a holiday or not, the day of the week and whether the day is a working day or not. The algorithm was then tested for negative values. The sum of the negative values is zero implying that the algorithm is not predicting any negative values

Table 5. Variable Importance

RMSE_Dectree1	MAD_De ctree1	MAPE_ Dectree1	RMSE_t rain_rf1	MAD_tr ain_rf1	MAPE_tr ain_rf1
854.6789	1566.626	19.99539	306.4635	1461.862	22.57648

The MAPE is 22.58, this implies that the Random Forest model has an accuracy of 77.43%.

4.5. Decision Trees

Decision Tree Analysis is a general-purpose predictive modeling tool with a wide range of applications. In general, decision trees are built using an algorithm that finds different ways to split a data set based on various conditions. It's one of the most popular and practical supervised learning methodologies (Patel & Prajapati, 2018). Decision Trees are a non-parametric supervised learning technique that can be used for regression and classification. The objective is to generate a model that predicts the values of targeted variables using simple decision rules inferred. A decision tree is a tree-like graph with nodes indicating the point at which we select an attribute, edges representing the responses to the query, and leaves represent the actual output. With a simple linear decision surface, they are employed in non-linear decision making (Zhang et al., 2020). The examples are classified using decision trees by sorting them along the tree from the root to a leaf node, with the leaf node supplying the classification to the example. Each node in the tree represents a test case for an attribute, with each edge descending from that node representing one of the test case's possible solutions. This is a cyclical procedure that occurs for each subtree rooted at the new nodes.

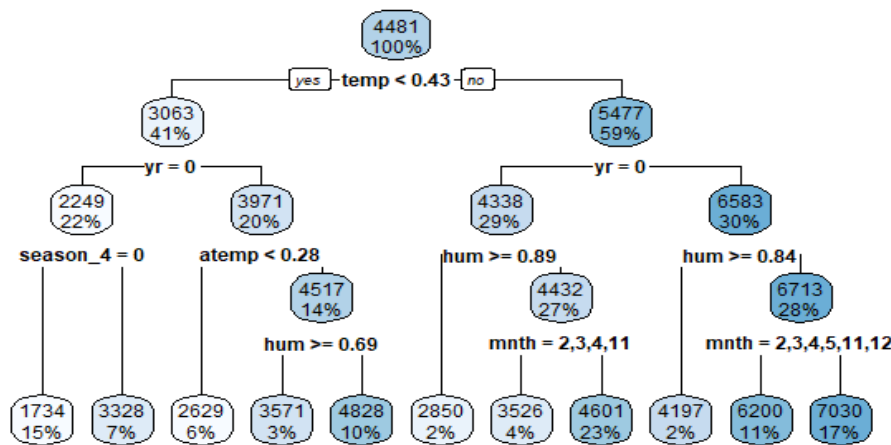


Figure 8: The Decision Tree

The Figure shows a decision tree that shows that the most important variables that predict the number of bikes rented are temperature, Year, Winter (season 4), humidity and the months of February, March, April and November. The algorithm was then tested for negative values. The sum of the negative values is zero implying that the algorithm is not predicting any negative values. The RMSE (Root Mean Square Error), MAD (Mean Absolute Deviation) and MAPE (Mean Absolute Percentage Error) are then calculated.

Table 6: Decision Tree Analysis of MAD, MAPE and RMSE

RMSE_Dectree1	MAD_Dectree1	MAPE_Dectree1
854.6789	1566.626	19.99539

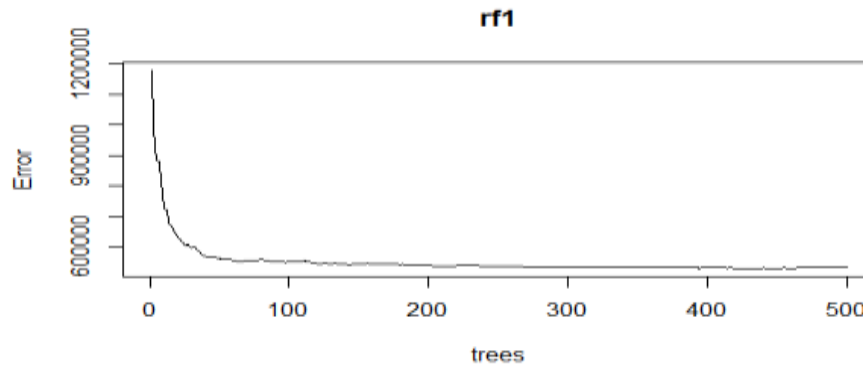


Figure 9: Accuracy Assessment of the Decision Tree

The plot shows that after 100 trees, the Error is stable, with no further drops in the error value. Let's fine-tune the model to determine the values of m_{try} . In the `tuneRF` function, set `ntreeTry = 100`.

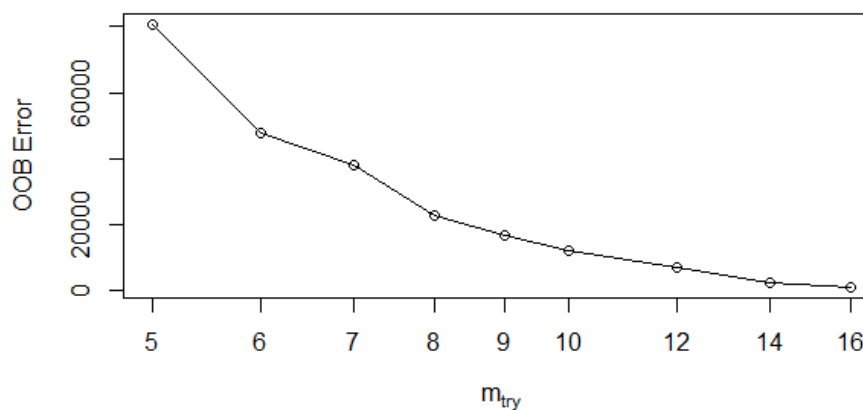


Figure 10: Accuracy Assessment of the Decision Tree

The suggested mtry value after tweaking these parameters is 12. Put these values in our model (mtry = 12 and ntreeTry = 100) and run it again. After fine-tuning, the variance explained is 85.12%, this implies that the out-of-bag predictions explain 85.12% of the target variance of the training set.

Table 8: Variable of Importance

Table 8: Variable of Importance

	%IncMSE	IncNodePurity
yr	1942636.02	592357292
mnth	267405.897	117574875
holiday	4272.415	7034547
weekday	42281.421	54917750
workingday	9532.101	6223112
temp	1921256.69	695179159
atemp	853648.574	339750731
hum	347429.819	126627480
windspeed	64558.113	60497177
season_2	8858.832	3215250
season_3	2331.159	1220109
season_4	174573.072	77609422
weathersit_2	39579.963	11856902
weathersit_3	58312.936	31275631
weathersit_4	0	0

After fine tuning the Random Forest model, the five most important variables are year, month, whether the day is a holiday or not, the day of the week and whether the day is a working day or not.

Nearest Neighbor and Deep Learning?

Because of its simplicity, ease of implementation, and efficacy, KNN (k-nearest neighbor) is a widely used classification technique. It is one of the top 10 data mining algorithms and has a wide range of applications. KNN has a few flaws that impair its categorization accuracy. It has a lot of memory requirements and a lot of time complexity (Taneja et al., 2014). The value of k must be chosen carefully in order for KNN to work. In real-world data sets, certain classes have more data points than others. In most circumstances, if k is a fixed, user-defined value, the result will be biased towards the majority class. Dynamic KNN is another good method for learning the best k value during training period (DKNN). It is based on the leave-one-out cross-validation method, which is a hybrid of eager and lazy learning (Gupta, 2012).

The similarity or difference between the training and test instances is measured by KNN using standard Euclidean distance. It takes into account the equal participation of all of the instance's

qualities, whether or not they are significant. As a result, when there are a high number of irrelevant qualities, the distance function's value becomes erroneous, which is referred to as the Curse of Dimensionality (GV, 2020). To solve this problem, assign varying degrees of priority to each attribute and weight each attribute differently when computing distance between two instances.

If $k=3$, the k nearest neighbor procedure is used to find the nearest neighbor of a new data item. If $k=3$, the three closest neighbors are verified, and the most common data item class is assigned to the new data item. This is a discussion of the KNN algorithm. So, how do we figure out the distance between k and the new data item? We can use Euclidean distance to calculate the distance between k and the new data point. For the KNN method, we may also use the hamming distance and Manhattan distance formulas to determine distance.

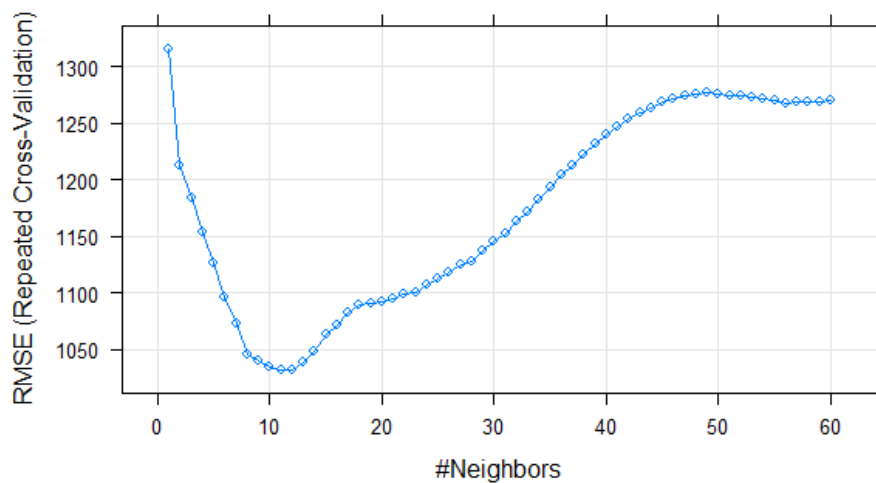


Figure 11: RMSE Analysis

RMSE was used to select the optimal model using the smallest value. The final value used for the model was $k=12$. The algorithm was then tested for negative values. The sum of the negative values is zero implying that the algorithm is not predicting any negative values.

Table 9: Varriables Analysis

Rsquared	Overall
atemp	100
temp	99.6821
yr	66.3144
season_3	24.6839
Hum	15.4853

Mnth	14.7678
Windspeed	14.6566
weathersit_3	13.4499
weathersit_2	4.5263
season_2	4.4449
Workingday	0.8906
Holiday	0.3038
Weekday	0.2115
season_4	0

According to the KNN algorithm, the five most important variables are temperature, year, fall, humidity and windspeed.

Table 10: Varriables Analysis based on KNN Model

RMSE_train_knn	RMSE_test_kn	MAD_train_knn1	MAD_test_knn	MAPE_test_kn
1	n1		1	n1
955.9719	977.7355	1129.86	1241.963	26.94667

The MAPE is 31.84, this implies that the KNN model has an accuracy of 68.16%.

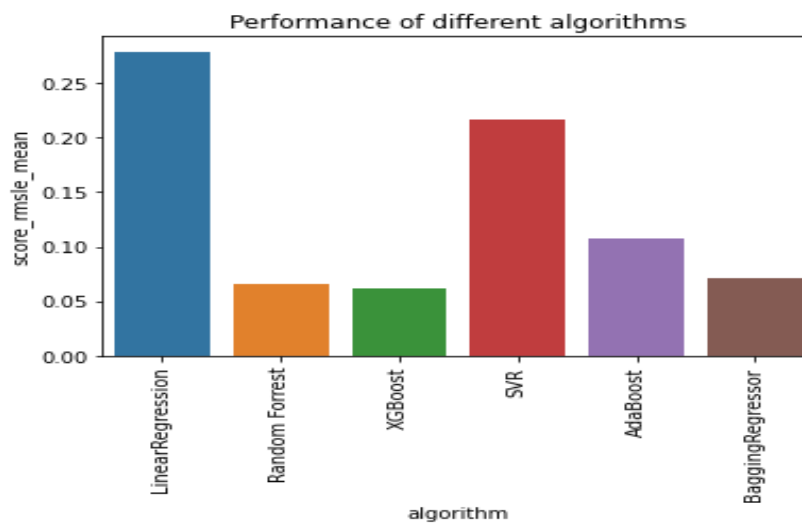
model comparison

A model comparison algorithm ran in Python generated the comparison below

Table 11: Python Model Comparison

	algorithm	score_rmsle_mean	score_std	time
0	LinearRegression	0.2787	0.1099	1.477
1	Random Forrest	0.0662	0.0407	2.716
2	XGBoost	0.0618	0.0248	1.747
3	SVR	0.2160	0.1017	0.210
4	AdaBoost	0.1076	0.0401	1.084
5	BaggingRegressor	0.0711	0.0482	0.414

Figure 12: Performance of various algorithms



Model comparison shows that XGBOOST is the best model based on rmsle

XGBoost

The XGBoost classifier is a machine learning technique that may be used to classify both structured and tabular data. XGBoost is a high-speed and high-performance implementation of gradient boosted decision trees. XGBoost is a gradient boost technique with high gradients. As a result, it's a large Machine Learning algorithm with a lot of moving pieces. XGBoost is capable of handling huge, complex datasets. XGBoost is a strategy for ensemble modeling. XGBoost is a method of ensemble learning. It may not always be enough to rely on the outcomes of a single machine learning model. Ensemble learning is a method for combining the predictive abilities of numerous learners in a systematic way. The end result is a single model that combines the outputs of numerous models. The foundation learners, or models that make up the ensemble, could be from the same learning algorithm or from distinct learning algorithms. The most extensively used ensemble learning models are bagging, boosting, stack generalization, and expert mixtures. Bagging and boosting, on the other hand, are two highly appreciated ensemble learners. Though these two strategies can be applied to a variety of statistical models, decision trees have been the most popular. In this study, XGBoost was selected as the best model.

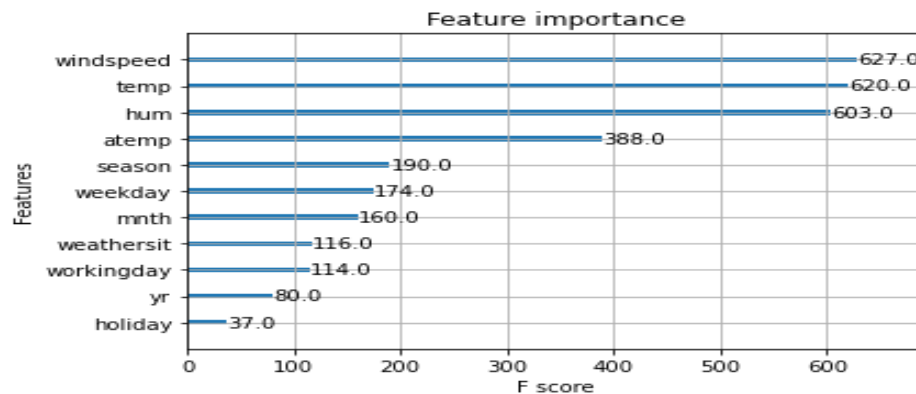


Figure 13: Model comparison of XGBOOST

The most important predictors according to the XGBoost algorithm are; Windspeed, Temperature, Humidity, Seasons, Whether it was a weekday or not, month of the year, weather situation, whether it was a working day or not, year and whether it is a holiday or not.

Discussion

The analysis revealed that an increase in temperature by 10 Celsius will lead to an increase in the number of renters by 7032; it also revealed that an increase in humidity by one unit leads to a decrease in the number of renters by 3564. The analysis also revealed that an increase in wind speed by one unit will decrease the number of renters by 3471; this is consistent with Nosal and Miranda-Moreno (2014). They used hourly data collected from induction loop counters on cycle lanes to evaluate the impact of weather on cycling in multiple North American cities. They established that temperature and humidity have significant impacts. The analysis also revealed that Spring and Fall seasons have a statistically significant effect on the number of bike renters; this is consistent with Lyu et al. (2021), who determined that factors like spring festival significantly affect biking. According to the researchers, these temporal characteristics suggest that the bike turnover rate could rise even higher if the efficiency of the bike supply is increased by proper bike relocation and location.

The analysis also revealed that the month of September had a significant effect on the number of bikers. It was also established that all the days of the week had a significant effect on the number of renters except the first day of the week; this is consistent with Lyu et al. (2021), who established that different days of the week attract different numbers of bikers, for instance in Ningbo, China, the weekends register between 20%-30% lower rental numbers than the weekdays. The analysis also revealed that weather situation 3 (Light Snow, Light Rain with Scattered Clouds) had a statistically significant effect on the bike rentals.

5. Conclusion (NTBR and EXPANDED accordingly)

Bike-sharing systems have become popular in recent years all around the world. Although this trend has resulted in many studies on public cycling systems, there have been few previous studies on the factors influencing public bicycle travel behaviour. A bike-sharing system is a

service in which individuals can borrow bikes for a fee or free for a limited period of time. Many bike share programs allow users to borrow a bike from a system, which is usually computer-controlled. The user enters payment information, and the system unlocks the bike. After that, the bike can be returned to a system-wide dock. The study's goal is to figure out how much demand there is for shared bikes across the country based on compelling parameter estimates. Rental firms arrange this to position themselves to meet people's requirements whenever the situation improves overall, allowing them to stand out from other service providers and earn handsomely. My focus is to discover which variables are essential in predicting shared bike demand. How well those variables accurately characterize the bike's requirements The service provider organization has amassed a vast dataset on daily bike requests across the market based on some parameters which can reliably be applied in predicting potential demand.

The regression analysis carried out determined that the variables that significantly predict the total number of registered & unregistered bikers: renters (cnt) include Temperature, humidity, wind speed, the month of September, Spring, Fall, all weekdays except weekday one and weather situation 3 (Light Snow, Light Rain with Scattered Clouds). Comprehending the temporal features of bike-sharing usage may aid service providers and policymakers in improving bike-sharing services. The study also employed machine learning algorithms to determine the most important predictors of the number of bikes rented, the XGBoost was identified as the best algorithm in terms of accuracy, the algorithm determined that the most important predictors include; Windspeed, Temperature, Humidity, Seasons, Whether it was a weekday or not, month of the year, weather situation, whether it was a working day or not, year and whether it is a holiday or not.

Bike sharing programs (BSP) continue to evolve and expand at a rapid pace. Many countries have implemented various BSP concepts and techniques since the 1960s. There are a variety of versions available, ranging from dockless to electronic real-time monitoring systems. Recreation, errands, work, and other activities may all be done with these BSP. And all signs point to the introduction of more complex and inventive rider-friendly technology in the future. The goal of this article is to examine current variables established by various operators and streamline them using analytics to discover the most appealing ones. There is a lack of standardization and a single criterion on what is required and what is not, given the contents of existing data sets. There appear to be two elements in common: user type and device type (registered and unregistered, and duration of each trip). This article is based on historical data provided by a single operator in the Washington, District of Columbia, United States. Several variables were tested, including categorical and continuous data types. Eight of the 18 were deemed acceptable and contributed significantly to the development of usable and reliable predictive model. Bike-sharing systems have grown in popularity around the world in recent years. Despite the fact that this trend has resulted in a slew of studies on public bicycle systems, there have been few studies on the factors that influence public bicycle travel behavior. Bike-sharing is a computer-controlled system that allows people to rent bikes for a price or for free for a limited time.

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The Influence of Work Discipline, Organizational Culture and Competence on Employee Performance (Study on Bukit Asam Tbk. Company Kertapati Pier Unit, South Sumatera)

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Abstract

This research discusses the influence of work discipline, organizational culture and competence on employee performance in Bukit Asam, Tbk Company, Kertapati Pier Unit, South Sumatera. This type of research is associative. The population in this study were all employees of PT. Bukit Asam Tbk. Kertapati Jetty Unit, South Sumatra, totalling 113 employees, and the samples taken in this study were 84 respondents with the sampling technique of proportionate stratified random sampling. The analytical method used is qualitative, which is then quantified. The data analysis technique used in this research is multiple linear regression analysis, F test, t-test and coefficient of Determination. The data used in this study is primary data collected through the Kuesioner method. Data analysis techniques are performed with multiple linear regression. The Results showed that (1). there is a significant influence on work discipline (X1), organizational culture (X2) and competence (X3) on employee performance (Y) of PT. Both simultaneously and partially, Bukit Asam Tbk Company, Kertapati Pier Unit, South Sumatera. (2). The results of Multiple Linear Regression show that Work Discipline, Organizational Culture and Competence have a positive relationship direction for employee performance in Bukit Asam Tbk company, Kertapati pier unit, South Sumatera (3). The results of the coefficient of Determination of work discipline, organizational culture and competence can only contribute to changes that occur in employee performance with a significant contribution of 79.5%.

Keyword: Work Discipline, Organizational Culture, Competence, Employee Performance.

JEL Codes: C12, C30, C83

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1. Introduction

1.1 Problem Background

The human resource management function consists of planning, organizing, directing, controlling, procurement, development, compensation, integrating, maintenance, discipline, and dismissal. Given the vital role of human resources, it is appropriate for a company to pay attention to aspects of work related to human resources. Whether a company succeeds or not depends largely on its employees. So it is not surprising that most companies pay more attention to their employees. For this reason, the company must be able to build and improve performance in its environment, then it can be said that the company is successful. Good employees will make a good contribution in terms of achieving productivity and improving quality, achieving the company's vision and mission. Therefore, the existence of human resources in a company is very important considering that employees are the spearhead in the success of a company.

According to Ali chaerudin, et al (2020: 28) Employee Performance is the result of work both in quantity and quality achieved by an employee in carrying out their duties in accordance with the responsibilities given by the business owner. Performance is the level of success of an employee as a whole over a certain period in carrying out his duties compared to various possibilities, such as standards of work results, targets or criteria that have been determined in advance and have been mutually agreed upon

There are many factors that can affect individual performance in an organization including: Leadership style, work discipline, organizational culture, competence, work stress and so on (Kasmir, 2016:189). An ideal leader must have the right leadership style so that it can improve the performance of its employees. Furthermore, regarding the factors that affect employee performance, discipline is the will and willingness of employees to fulfill and obey all applicable rules and regulations, both written and unwritten. By having high work discipline, the tasks and work given by the company will be completed quickly and well. Discipline also reflects the magnitude of a person's sense of responsibility to the duties assigned to him. Work discipline will be good if employees can maintain and foster discipline in carrying out tasks related to work results. The better the work results, the better the employee performance. According to Afandi (2018:11) work discipline is a rule made by the management of an organization, endorsed by the board of commissioners or owners of capital, agreed upon by the trade union known by the labor service and the people who join the company are subject to the existing rules of order with a sense of pleasure, so that it is created and formed through the process of a series of behaviors that show the values of obedience, regularity and order

Organizational culture is a system of values, assumptions, beliefs, philosophies and organizational habits that exist in an organization. Corporate or organizational culture is a pattern of basic assumptions that are determined or developed by a group of people when they learn to overcome problems of external adaptation and internal integration that have worked well so that it is considered legitimate to be taught to new members as the right way to think, see, feel and solve the problem (Afandi 2018: 99). While competence according to Spencer in Moehariono (2014:6) is an underlying characteristic of people related to the effectiveness of individual performance in his work. Factors that affect employee competence are motives, traits and self-concept. The phenomenon of competency indicators is work standards, productivity and work behavior. The influence of competence on employee performance, the higher the competence possessed by employees and in accordance with the demands of job roles, employee performance will increase. While the effect of employee

performance on competence, the higher the employee's performance, the competence will also increase.

Bukit Asam, Tbk Company is one of the State-Owned Enterprises engaged in coal mining. Bukit Asam, Tbk Company has two main production units, namely the Coal Mining Unit in Tanjung Enim and the Kertapati Pier Unit, South Sumatra. In this case, this research was carried out specifically for the kertapati unit located in the Kertapati district of Palembang city, South Sumatra. The coal from tanjung Enim mining is transported by train to the special coal pier of Tarahan, South Lampung and Kertapati Pier to be further sent to industrial consumers. Special coal dock activities of Bukit Asam, Tbk company is specifically for loading coal onto ships and is a control check for the final stage of the coal transportation flow from the mine as well as being the last quality control place for coal so that it really needs qualified and reliable employees considering that coal quality control at a special dock is very important because coal from the mine site is Raw material that requires special treatment and handling (Crushing and Blending) to meet the quality specifications desired by consumers.

The following table is shown the achievements of the production results of Bukit Asam, Tbk Company:

Table 1. Bukit Asam, Company – Production Result 2016 until 2020

Year	Targeted	Achievement	Percentage of Achievemen
2016	70,000,000 Ton	56,081,000 Ton	84.40%
2017	70,000,000 Ton	52,961,000 Ton	75.59%
2018	70,000,000 Ton	53,127,000 Ton	75.89%
2019	70,000,000 Ton	58,127,000 Ton	87.84%
2020	70,000,000 Ton	54,720,000 Ton	82.31%

The table data above shows that the results achieved by PT. Bukit Asam Tbk. Kertapati Pier Unit of South Sumatra in 2016-2020 is still not in accordance with the targeted number, it is indicated that employee performance is also not optimal so that what is targeted has not been able to be fulfilled. Factors of discipline, organizational culture and competence are indicated to be factors that affect the achievement of production targets and reflect the performance of employees who are not optimal.

The formulation of the problem in this study is how the influence of work disciplines and organizational culture and competence on employee performance at PT. Bukit Asam Tbk. Kertapati jetty unit, south Sumatra. This study formulates the problem is there any influence of work discipline organizational culture and competence on employee performance of Bukit Asam Tbk company, Kertapati Pier Unit, South Sumatra? At the same time, it aims to determine the influence of Work Discipline, organizational culture and Competence on employees of PT Bukit Asam, Tbk, Kertapati Pier Unit, South Sumatera.

2. Literature Review

According to Pandi Afandi (2017:84) Performance is the extent to which a person has played his part in implementing organizational strategies, both in achieving specific goals related to individual roles and or demonstrating competencies that are declared relevant to the organization. Similarly, Hasibuan's opinion (2012:14) states that in simple terms, performance is what employees do or do not do. Performance is a result of work achieved by

a person in carrying out the tasks charged to him which is based on proficiency, experience, and earnestness and time.

1. The factors that affect performance according to Kasmir (2016:189-193) are as follows:
2. Abilities and expertise: abilities and skills that a person has in doing a job.
3. Knowledge of work.
4. Work design: a job design that will make it easier for employees to achieve their goals.
5. Personality: the personality of a person or the character that a person has.
6. Work motivation: the impetus for a person to do work.
7. Leadership: the behavior of a leader in organizing, managing and commanding his subordinates to teach something the duties and responsibilities he gives.
8. Leadership style: the style or attitude of a person's leader in facing or commanding his subordinates.
9. Organizational culture: habits or norms that apply and are owned by an organization or company.
10. Job satisfaction: feelings of pleasure or joy, or feelings of liking someone before and after doing a job.
11. Work environment: atmosphere or conditions around the work location.
12. Loyalty: loyalty of employees to keep working and defend the company where they work.
13. Commitment: compliance of employees to carry out company policies or regulations in working.
14. Work Discipline: the efforts of employees to carry out their work activities seriously.

To measure performance achievements, according to Wibowo (2017: 86-88) there are several indicators used, namely as follows:

1. Purpose: Goals are different circumstances that are actively sought by an individual or organization to be achieved. A goal is a better situation to be achieved in the future.
2. Standard: A standard is a measure of whether the desired goal can be achieved. Without standards, it cannot be known when a goal is achieved.
3. Feedback: Feedback is input that is used to measure performance progress, performance standards, and goal achievement. With feedback, an evaluation of performance is carried out and as a result performance improvements can be made
4. Tools or Means: Tools or means are resources that can be used to help complete goals successfully. Tools or means are factualr supporting the achievement of goals.
5. Competence: Competence is the ability possessed by a person to carry out the work given to him well
6. Motive: Motive is an excuse or impetus for someone to do something
7. Chance: Workers need to get the opportunity to show their work achievements. There are two factors that contribute to the lack of opportunities to excel, namely the availability of time and the ability to qualify

Pandi Afandi (2017:11) states that work discipline is a code of order or regulation made by the management of an organization, ratified by the board of commissioners or owners of capital, agreed upon by the trade union and known by the labor service and then the people who are members of the organization are subject to the existing rules of order with pleasure, until it is created and formed through the process of a series of behaviors that show the values of obedience, observance of order and order. Meanwhile, according to Singodimedjo

(2002:86) said discipline is an attitude of a person's willingness and willingness to obey and obey the norms of the regulations that apply around him. Good employee discipline will accelerate company goals, while declining discipline will become a hindrance and hinder the achievement of company goals.

Robbins (2012:40) says that Organizational culture is norms and habits that are accepted as a truth by everyone in the organization. Organizational culture becomes a common reference among humans in interacting in the organization. If people join an organization, they bring the values and beliefs that have been taught to them, employees who will be offered jobs, employees who will be judged to have high performance, and employees who will get promotions, all of which are greatly influenced by the suitability between individuals and the organization, that is, whether the attitudes and behaviors of those employees are in accordance with the organizational culture. Organizational resources have a number of important characteristics as indicators of organizational culture, including the following:

1. tolerate members or employees in order to act aggressively and innovatively to advance the organization or company and dare to take risks against what it does.
2. Briefing. The extent to which the organization can clearly create the desired goals and expectations, so that employees can understand them and all activities carried out by employees lead to the achievement of organizational goals. These goals and expectations are clearly stated in the vision, mission, and objectives of the organization.
3. Integration. The degree to which the organization or company can encourage organizational units to work in a coordinated manner
4. Management Support. The extent to which managers can provide communication or direction, assistance and clear support to subordinates. This support can be in the form of efforts to develop the abilities of employees such as conducting training.
5. Control, namely the supervision carried out in the organization on the behavior of employees in the performance of their duties using regulations that have been established for the sake of organizational operations.
6. Identity. The extent to which the members of an organization can identify themselves as a unit within the organization and not as a specific working group or professional expertise.
7. Reward System. The extent to which the allocation of rewards (salary increases, promotions and so on) is based on the employee's work performance, not based on seniority, favoritism and so on.
8. Conflict Tolerance. The extent to which employees are encouraged to express conflict or criticism openly. Dissent is a phenomenon that often occurs in an organization. However, such differences of opinion and criticism can be used to make improvements or changes in strategies to achieve organizational goals.
9. Communication Patterns. The extent to which communication is limited by a formal hierarchy of authority. Sometimes the hierarchy of authority can hinder the occurrence of communication patterns between superiors and subordinates or between employees themselves.

Research using similar variables has been recorded by various researchers, including those used as references in this study are:

1. Windy J. Sumaki, Rita N. Taroreh, Djurwati Soepeno (2015) in her research entitled the influence of work discipline, organizational culture, and communication on the performance of PT employees. PLN (Persero) suluttenggo area Manado Area. This

study used a sample of 51 employees using multiple linear regression analysis techniques. The results showed that simultaneously Work Discipline, Organizational Culture, and Communication influenced Employee Performance. Partially, Work Discipline and Communication do not affect Employee Performance, but Organizational Culture has a positive effect on Employee Performance.

2. Mardi Astutik (2016) with the title of research on the influence of work discipline and organizational culture on the performance of employees of the Secretariat of the Regional People's Representative Council of Jombang Regency. This study concluded that work discipline (X_1) and organizational culture (X_2) have a positive and significant effect on employee performance (Y), both partially and together. The results of this study also explained that the contribution of the Variables of Work Discipline and Organizational Culture included in the regression equation to the Employee Performance variable (Y) was 84.8%, while the remaining 15.2% was contributed by other variables that were not included in this study.
3. Budi Poniman and Endang Saryanti (2017) in a study entitled the influence of discipline, organizational culture and competence on the motivation and performance of employees of the Regional Company of the City Warehousing Center "Pedaringan" Surakarta. The collected data were tested with validity, reliability, and linearity tests, as well as analysis tests using the regression equation of the t test, F test, coefficient of determination test (R^2), correlation analysis, direct influence test and indirect influence test. The results of the study can be concluded that together the variables of Discipline, Organizational Culture, Competence and Motivation affect the Performance of Employees of Regional Companies of the Surakarta City Warehousing Center "Pedaringan". Adjusted R Square (R^2) in this study is 0.803 this means that the Performance of Employees of Perusda "Pedaringan" Surakarta is explained by the variables discipline, organizational culture, competence and motivation of 80.3% and the remaining 17% is influenced by other variables that were not studied.

3. Research Method

This research departs from the hypothetical thinking:

- H_0 : There is no influence of Work discipline, Organizational Culture and Competence simultaneously on the performance of Bukit Asam Tbk, Company, Kertapati Pier Unit, South Sumatra.
- H_a : There is an influence of Work discipline, Organizational Culture and Competence simultaneously on the performance of Bukit Asam Tbk, Company, Kertapati Pier Unit, South Sumatra.

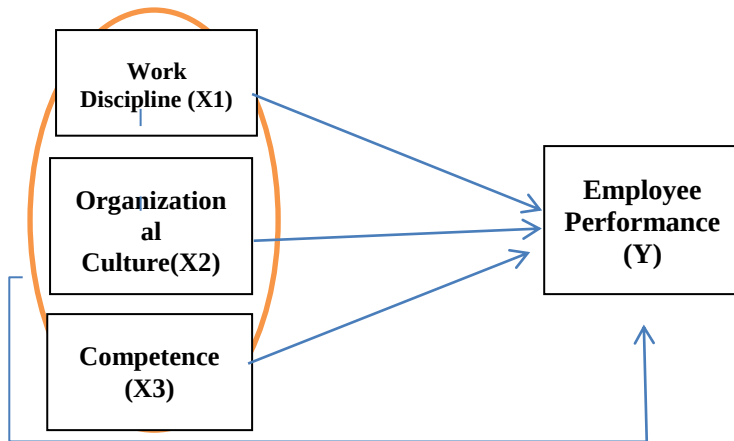


Figure 1. Thinking Framework

This research is an associative research with variables consisting of :

1. Variable Y: Employee Performance
Indicators: Purpose, Standards, Tools and means
2. Variable X1 : Work Discipline
Indicators : Work On Time, Mobey All Regulations, Target Work
3. Variable X2 : Organizational Culture
Indicators: Implementation of Norms, Implementation of Values, Implementation
4. Of Codes Ethics
- Variable X3 : Competence
5. Indicators: Work Standards, Productivity, Harmonizing work behavior

This research was conducted in Kertapati Pier Unit of Bukit Asam Tbk Company in South Sumatra. A descriptive research survey design was adopted in this study. This research design shows the state of affairs as it exists at the present. The choice of this research design was motivated by the suitability of the instrument to collect a large amount of data. The researcher appointed a research assistants who were engaged in distribution the administration of the questionnaires. A self-designed questionnaire that entailed structured and unstructured questions was administered to all the respondents. Whereas definite responses were obtained from the structured questions, the unstructured questions allowed the respondents to express themselves.

The study involved all employees totaling 113 employees as the population and take 84 samples determined using Isaac and Michael's formula, with an error rate of 5. Sample determination using techniques *proportionate stratified random sampling* with the following details:

Table 2. Population and Sample Distribution

Employee Education Level	Number of Employees	Proportion	Number of Samples
SLTA	34	$34/113 \times 84$	25
DIII	26	$26/113 \times 84$	19
S1	35	$35/113 \times 84$	26
S2	19	$19/113 \times 84$	14
Jumlah	113		84

The data used are primary data obtained through questionnaires distributed to respondents in Bukit Asam Tbk Company, Kertapati Pier Unit. Data analysis was carried out using multiple linear regression analysis. Tests were carried out in the following stages:

Testing the variables X1, X2, X3 simultaneously against Y

Testing the variables X1, X2, X3 partially against Y

4. Research Results And Discussion

4.1 Research Results

4.1.1 Instrument test

1. Validity test

all construct indicators are declared valid because the loading factor value generated for all indicators is 0.50 or t-value 1.96, except for indicators that have a loading factor value 0.5 or t-value 1.96, so it must be removed for further data analysis.

2. Reliability Test

Reliability (reliability test) shows the extent to which a measuring instrument can provide relatively the same results when repeated measurements are made on the same subject. The level of reliability that is accepted is if the construct reliability value is 0.70.

4.1.2 Testing Process

1. Coefficient of Determination

Table 3. Coefficient of Determination

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.896 ^a	.802	.795	.442

Referring to table a, it can be seen that the Adjusted R Square value .795 indicates that the contribution of work discipline, organizational culture and competence is 79.5% and the remaining 21.5% is influenced by other variables that are not included in this research

2. Regression Testing

Table 4. Coefficients of Multiple Linear Regression

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.794	.14		5.671	0.000
1 Work Discipline	.222	.111	.276	2.009	0.048
Organizational Culture	.217	.092	.271	2.356	0.021
Competence	.309	.09	.387	3.426	0.001

from Table 4 it can be expressed into multiple linear regression equations as follows:

$$Y = 0.794 + 0.222X_1 + 0.217X_2 + 0.309X_3$$

The coefficient value of each variable X indicates that the variables of work discipline, organizational culture and competence both have a positive relationship direction to employee performance. That is, if there is an increase in the variables of work discipline, organizational culture and competence, the variables of employee performance will also increase, and vice versa, if the variables of work discipline, organizational culture and competence decrease, employee performance will also decrease.

The value of the Y constant of 0.794 is positively marked, meaning that it indicates a unidirectional influence between the independent variable and the dependent variable. if all independent variables including Work discipline (X1), Organizational culture (X2 and Competence (X3) are valued at 0 percent or have not changed, then the Employee Performance value is 0.794

3. F test

Table 5 F Test

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	63,203	3	21,068	107,992	,000 ^a
Residual	15,607	80	0,195		
Total	78,810	83			

Table 5 shows that from the calculated value of F (107.992) > F_{of the table} (2.72) that is previously determined with a confidence level of 95%. This value is strengthened by the significance of F 0.000 < 0.05 which is proven to be significant, it can be concluded that there is a simultaneous influence of work discipline, organizational culture and competence on the performance of employees of Bukit Asam, Tbk company, Kertapati Pier Unit, South Sumatra.

4.2 Discussion

1. Based on the results of multiple linear regression analysis, and the results of simultaneous hypothesis tests with a 95% confidence level, it shows that there is a significant influence of work discipline variables and organizational culture as well as competence on the employee performance of Bukit Asam Tbk Unit of Kertapati Pier, South Sumatra. This means that work discipline and organizational culture and competence are interrelated in contributing to the employee performance. This is also proven through the coefficient of determination which shows the contribution of variables of work discipline and organizational culture as well as competence to employee performance by 95% proving the theory stated by Kasmir (2016: 182) that work discipline, organizational culture and low competence will have an impact on reducing employee performance and vice versa if work discipline, organizational culture and employee competence increase, performance will also increase.
2. Likewise, the results of partial hypothesis testing show that work discipline, organizational culture and competence are also proven to affect employee performance. This also proves the suitability of the theory. Organizational culture is believed to be the main determining factor towards the success of organizational performance. The success of an organization to implement aspects or values of its

organizational culture can encourage the organization to grow and develop sustainably. In terms of competence, employees who have high competence will be able to improve the performance of the employees themselves. Employees who have work competence tend to have good abilities in carrying out work and have the skills to be able to complete work based on work targets given by the company

3. The results of this study not only prove the theory proposed by Kasmir (2018) but also in line with the results of research conducted by Windy J. Sumaki, Rita N. Taroreh, Djurwati Soepeno (2015) at PT. PLN (Persero) suluttenggo area manado area, Mardik Astutik (2016) at the Secretariat of the Regional People's Representative Council of Jombang Regency and Budi Poniman and Endang Saryanti (2017) at the Regional Company of the City Warehousing Center "Pedaringan" Surakarta show that Work Discipline, Organizational Culture, and Communication affect on Employee Performance both simultaneously and partially.

From a series of discussions on the results of the analysis providing answers there is an influence of work discipline variables and organizational culture as well as competence on the employee performance of PT. Bukit Asam Tbk Unit of Kertapati Pier, South Sumatra. This shows that the hypothesis (H_a) is proven and can be accepted.

5. Conclusion

Based on the results of research and discussion, it can be concluded that Employee discipline, organizational culture and competence are proven both simultaneously and partially affect employee performance of Bukit Asam Tbk Unit of Kertapati Pier, South Sumatra. This conclusions obtained from the results of the analysis, can bring benefits for Bukit Asam Company to pay more attention to Discipline as well as to improve employee performance so as to foster loyalty and good and positive culture that have an impact on the performance of employee which in turn can strengthen the existence and reputation of organization and increase the competitiveness. Employees will provide a comfortable and conducive atmosphere in work process so more comfortable and enthusiastic in working and will be satisfied in work, so as to bring a good organization's value and reputation in the future.

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The Mediating Effect of Disaster Recovery Plan on the Relationship Between Critical Personnel And Business Continuity Management

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Abstract

The aim of this paper is to investigate the mediating effect of disaster recovery plan on the relationship between critical personnel and business continuity management. The study applied cross sectional quantitative survey approach to collect data using 326 questionnaires from Abu Dhabi municipalities' employees. 281 responses were retrieved and analysed for descriptive and inferential statistics. The result shows that the relationship between critical personnel and BCM, as well as critical personnel and DRP were negative. But the DRP → BCM relationship was found to be positively significant. However, the mediating effect of DRP on critical personnel and BCM relationship was negatively significant against the positive significant mediation posited in the study. Implications, limitations and future study areas have been illustrated in the study.

Keywords: Critical Personnel, Disaster Recovery Plan, Business Continuity Management

JEL Codes: L52, M1

How to Cite:

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1. Introduction

Business Continuity Management (BCM) process has now become a necessity for business operation in all the levels of management and commercial actions. However, BCM application and popularity varies between countries, while BCM has been popular in some countries, it was found to be at infancy in other countries (Sawalha, 2020). For instance, a notable business information service provider “ZAWYA” situated in Dubai, UAE conducted a survey and found that 70% of businesses in Saudi Arabia, UAE, Qatar, Bahrain, Kuwait and Oman are lacking robust BCM programs (Zawya, 2009). Notwithstanding its importance, the level of BCM awareness and implementation in UAE is still at its infancy across various industries. Herbane (2010) deliberated the growths in the area of BCM and noted that

additional research efforts are still required on the utilization and practice of BCM as a business process.

In addition, the 2019 Business Continuity Benchmark Survey revealed that merely 9% of respondents specified their BCM programs as “very mature,” 27% believed BCM program in their institutions was “mature” and 33% believed it to be “reasonably mature,” this indicates that their BCM approach differed in relations to sound implementation and therefore echoed on the process outcomes. The study also revealed that poor executive support was a challenge that portrayed weakness at the primary phases of BCM program instigation, which is project’s planning (Continuity Central, 2019). Thus, one of the broader aspects of great concern and source of problems in implementing business continuity management is managerial capacity. The managerial capacity within the organization refers to all the processes that are implemented to enhance the success and sustainability of the organization, which heavily depends on the critical personnel factors.

At the individual level, we all aim to minimize or avert loss or damage of our private properties by taking a combination of measures such as alarms, physical security, adequate insurance cover, and vigilance (Herbane, Elliott & Swartz, 2004). In the organizational setting, BCM has advanced into a process of identifying the exposure of organizations to both external and internal threats and synthesizing all the necessary assets to provide effective prevention and reclamation (Herbane et al., 2004). Therefore, BCM is considered as the nervous system for business development, which ensures the ease of responding to external and internal variables in and adapts to them to ensure the continuity of providing important activities in all circumstances. This was clear and evident in the Covid 19 pandemic, where many parties were affected by the pandemic and poor service delivery. For example, some inspection work in the municipality stopped at the beginning of the pandemic, which led to the interruption of some work, such as the issuance of agricultural permits for homes, in order to avoid contact with homeowners. Andrea (2016) showed that the period from 2010 to 2016 witnessed a failure in business continuity in many parties, in sporadic events such as the tsunami in Japan 2011 and Hurricane Sandy in the United States 2012.

The most recent ISO 22301:2019 highlighted the significant enduring changes and advances that are happening in the field of BCM and targeted at conveying additional value to users through best practices that are necessary to support organizations to effectively react and recover from interruptions (ISO, 2019). The ISO 22301 latest version also stresses that BCM is pertinent to all organizations, irrespective of sector or size of organization. Yet, many researchers emphasized that, there is still a paucity of “empirical” research on BCM implementation and effectiveness in some countries and business sectors, which prompts the need for additional research (Azadegan et al., 2020; Ferguson, 2019).

Several reasons can obstruct the application of effective BCM program; effective BCM approach relies on a sum of activities that need to be sequentially performed. It is also dependent on the degree to which these activities intensify enterprises’ BCM awareness and expedite embedding it in the organizational culture (Sawalha, 2020). Based on the available literature, critical employee factors can influence BCM (Abdullah, Noor & Ibrahim, 2015), which will be studied in depth to clarify the extent of its impact on ensuring BCM and their contribution to the successful implementation of the program.

Critical employees are important in the success of BCM application. Essential to the realization of BCM is a detailed understanding of the internal and external threats and

recognizing that an effective response will be driven by employees' behavior during the business recovery process (Herbane et al., 2004). Every organization has a group of important employees who are considered important for the effective implementation of various programs of the institution. Critical employees refer to a group of employees who possess important information related to the operations of an organization. Thus, critical employees must be involved in BCM activities (Herbane et al., 2004). The core employees within the organization represent many of the senior operations managers, such as the Chief Financial Officers CFO and other employees of the same level. These employees have a great contribution to BCM and organizational development in general.

DRP is also directly related to the success of BCM implementation in organizations. DRP is considered the safety valve of organizations, and it will be difficult for organizations to maintain BCM in the absence of it, which may in turn lead to failure in the application of BCM. For effective operation of organizations, there must be an effective DRP to help the organization recover from unforeseen vulnerabilities. Thus, effective implementation of the DRP will promote a sound BCM (Sahebjamnia, Torabi, & Mansouri, 2015).

The development of DRP and BCM improvement requires effective implementation of planning, process flow, resource planning, as well as a competent management team. As a complex process DRP is however influenced by the critical employees (Hoong & Marthandan, 2014). Thus, critical employees are linked to DRP which help organizations to recover from unforeseen catastrophes. Critical individuals are the most important functions that could reactivate and operate organization systems according to target times to restore services.

Based on the literature, the relationship between critical employees and BCM, critical employees and DRP, as well as DRP – BCM relationship has been established. Hence, the condition for testing the mediating effect of DRP on the critical employees and BCM relationship have been satisfied (Baron & Kenny, 1986; Hayes, 2009). This study applies the quantitative approach to examine the mediating effect of DRP on the relationship between critical employees and BCM implementation in UAE.

2. Literature Review

2.1 Relationship between Critical Personnel/Employees and BCM

Woodman (2008) investigated three activities relating to critical employees, i.e., formation of teams, allocating roles and responsibilities, training and updating the plans. It was found that, 47% of the respondents reported the formation of teams and roles and responsibilities allocation for BCM implementation is the responsibility of senior management. Likewise, critical employees across diverse business units such as IT teams, security, human resources, risk and facilities management, finance, public relations, marketing, sales, etc. are widely engaged in BCM implementation. However, Goodwin (2006) deliberated BCM approach based on the “Scottish Power” case, which is one of the major utility firms in the world, as it decided to implement BCM. The firm began with the project planning, creation of senior teams, appointment of team leaders and the hiring of BCM advisers. The risk assessment and business impact analysis were held across critical business functions, and BCM plans were then developed alongside the recovery plans. This specifies the importance of critical employees across business units for effective BCM approach (Sawalha, 2020).

Moreover, training and awareness is another crucial thought for BCM effectiveness. According to Clark (2015) training process is an important segment for BCM implementation which should not be ignored as it engrains BCM consciousness. Awareness and training provide the required confidence to internal and external stakeholders for the organization's disaster recovery ability (Khanna, 2008). The entire staff of the organization from rank and file employees to the executive must be conscious of their expected roles and responsibilities in reaction to disaster recovery efforts to avert palpable resource waste (Muparadzi & Rodze, 2021). In a Malaysian study, Abdullah, Noor and Ibrahim (2015) showed that people/employees factor is significantly and positively correlated with BCM implementation in the Public Sector. Therefore;

H1: There is a significant relationship between critical employees dimension and BCM implementation

2.2 Relationship between Critical Employees and DRP

Contemporary organizations appreciate the fact that business success is increasingly contingent on their ability to convey the required services to customers and other stakeholders on demand (Omar, Alijani & Mason, 2011). Most essentially, getting the business functioning as usual after a disruptive incident is the foremost goal of all top level managements (Smith et al., 2019). Moore (2008) stated that the commitment of senior management is a precondition for DRP. Precisely, at the early phases of DRP, senior management support is indispensable (Chow, 2000). Senior management must also assign accountability, roles and ownership, as well as a damage assessment team for effective DRP (Moore and Lakha, 2006). Concurrently, functional area managers should create their functional teams to develop and file a comprehensive recovery and recommencement processes for their business areas (Sawalha, 2021).

Critical employees are thus, very important in the effort to guaranty uninterrupted operations through effective DRP. A thorough DRP project will be incomplete without the critical employees that will work it effectively. During disaster periods, critical employees are the ones to reclaim operations by working the DRP procedures accordingly. The sustained operations of an organization relies on critical employee's consciousness of potential disasters, ability to plan the procedures to reduce disruptions and expedite convenient and successful recovery (Omar et al., 2011). Therefore;

H2: There is a significant relationship between critical employees dimension and DRP

2.3 Relationship between DRP and BCM

DRP and BCM are closely related programs that guarantee sustained operations of organizations after the occurrence of a disaster (Barnett-Quaicoo & Ahmadu, 2020). The DRP approach accentuates on disaster recovery rather than prevention because disasters are in most cases beyond human control (Quarantelli, 1988). Founding a reliable DRP is crucial to organizational survival during and after disastrous events (Omar et al., 2011). In both theory and practice, DRP has been associated with BCM (Herbane et al., 2004). Cervone (2017) found that DRP implementation can help to guarantee the emergence and viability of BCM within an organization. Since DRP is believed to support organizations in reinstating their operations after a substantial disruption with a minimal time lag, effective DRP will significantly influence the BCM of organizations (Omar et al., 2011). Therefore;

H3: There is a significant relationship between DRP and BCM implementation

2.4 Mediating effect of DRP on the Relationship between Critical Employees and BCM

DRP entails the processes and policies that are put in place to recover the critical operations of a business, in reaction to any disaster (Hoong & Marthandan, 2011). According to Hoong and Marthandan (2011) DRP is an important subset of BCM. Moreover, DRP is indispensable for organizations to remain steadfast in the event of disasters and disruptions (Sawalha, 2021). Horney et al. (2016) showed that an increasing number of businesses and governments are adopting DRP to assist in the recovery processes. Relying on the literature and the hypothesized relationships between critical employees and BCM, critical employees and DRP, as well as the hypothesized relationship between DRP and BCM; the requirements for the introduction of DRP as a mediator on the relationships between critical employees and BCM have been satisfied (Baron & Kenny, 1986). Therefore, the following mediation hypothesis is postulated:

H4: DRP will significantly mediate the relationship between critical employees and BCM implementation

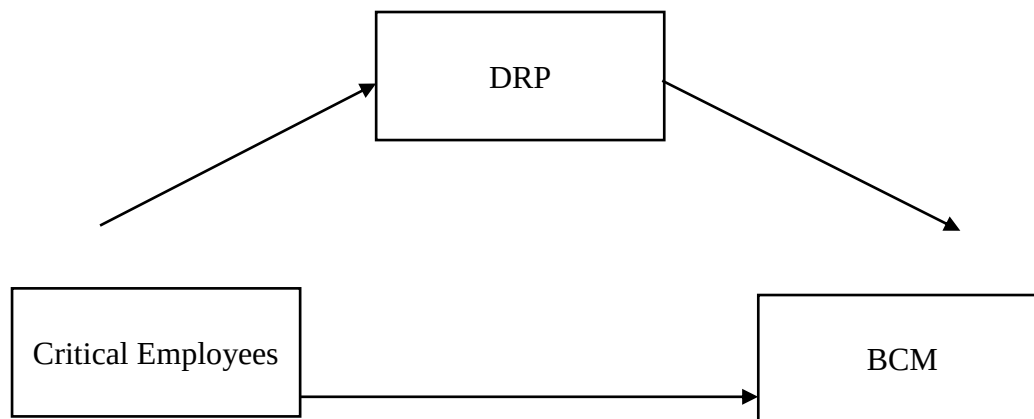


Figure 1: Research Framework

3. Methodology

Cross-sectional survey data collection method was used to collect the research data via questionnaire. However, quantitative method of data analysis was used to analyse the study results. The research population consists 2152 employees of Department of Municipalities and Transport in UAE (DMT). DMT is chosen because it is the supervision authority of municipalities in the capital of UAE, which consist so many various organizations and employees that will give a wider coverage and serve the purpose of this study. As per Krejcie and Morgan (1970) formula, the representative sample for the research is 326 of the total population, which will be further subdivided into subgroups known as strata i.e. stratified sampling. The essence of using stratified sampling is to ensure that all the population has been adequately represented. Finally, the Statistical Package for Social Science (SPSS) version 21 and Partial Least Square - Structural Equation Model software PLS-SEM 3.2.7 was used for the analysis of data.

3.1 Measurement of Variables

The measurement items for the three variables in this study were adopted from previous similar researches using a 5 point Likert scale questionnaire that ranges from 1- strongly disagree to 5- strongly agree. The first part of the questionnaire consist of the demographic background, the second part consists the measurements of dependent variable i.e. BCM which has six items adapted from Kato and Charoenrat, (2017).

The third part of the questionnaire consists the measurements for DRP (mediating variable) which entails nine items adapted from Mathenge, (2011) and Byadigera (2019).

The fourth part of the questionnaire consists the measurement of independent variable i.e. the critical employee variable which has eight items that were drawn from two dimensions; Subjective norms (4 items) and Hedonistic drives (4 items) which were all adapted from Awa et al. (2017). The first four items reflect subjective norms while the four last items reflect hedonistic drives. All the items for BCM, DRP and CP were described in appendix A.

4.0 Data Analysis and Results

4.1 Rate of Response

A total of 326 questionnaires were distributed through online and hand delivery methods. A follow up for the return of the questionnaires have been used to attain greater response rates (Sekaran, 2003). This results in a total of 281 retrieved questionnaires, from the 326 distributed questionnaires i.e. 86% rate of responses. All the 281 responses were found to be usable for multivariate analysis. The rate of response in this research is adequate for the final analysis, because Sekaran (2003) suggests the sufficiency of an aggregate of 30% rate of response for survey researches.

4.2 Data Screening and Preliminary Analysis

Prior to any multivariate analysis, data screening must be conducted to help the researcher in satisfying the basic assumptions of multivariate analysis (Hair et al., 2007). The preliminary analysis will help researchers to identify any possible violation in the assumptions of multivariate analysis. After the data input and coding, the following preliminary analyses were performed: (a) missing data values analysis (b) outlier response analysis, (c) normality of data test, and (d) multicollinearity assessment test (Hair Jr., Black, Babin, & Anderson, 2010; Tabachnick & Fidell, 2007). All the basic assumptions of multivariate analysis were found to be satisfied.

4.3 Demographic Profile of Respondents

The observed demographic profile of the respondents in this study covers gender, age, study qualification, years in service, years in present position and industrial sector (see Table 1).

Table 1 Respondent's Demographic Features

S/No.	Items	Frequency	Percent (%)
1	Gender		
	Male	243	86.5
	Female	38	13.5

Table 1 Respondent's Demographic Features (continue)

S/No.	Items	Frequency	Percent (%)
2	Age		
	25 years and below	11	3.9
	26-35 years	89	31.7
	36-45 years	135	48.0
	46-55 years	39	13.9
	56 years and above	7	2.5
3	Educational Qualification		
	Primary Education Certificate	2	0.7
	Secondary School Certificate	29	10.3
	Diploma Certificate	24	8.5
	Bachelor's Degree/HND Certificate	93	33.1
	Postgraduate Education Certificate	128	45.6
	Any other Qualification	5	1.8
4	Position of respondents		
	Executive Manager	64	22.8
	Middle Manager	150	53.4
	Low level Manager	63	22.4
	Others	4	1.4
5	Years in Service		
	Less than 10 years	65	23.1
	11-20 years	121	43.1
	21 years and above	95	33.8
6	Years in current position		
	Less than 5 years	112	39.9
	6-10 years	83	29.5
	11 years and above	86	30.6
7	Industrial Sector of the Firm		
	Agricultural Sector	5	1.8
	Service Sector	230	81.9
	Manufacturing Sector	31	11.0
	Oil Sector	13	4.6
	Building and Construction	2	0.7

*HND = Higher National Diploma

4.4 Assessment of PLS-SEM Path Model Results

PLS-SEM analysis is a two-step structural process (Henseler, Ringle & Sinkovics, 2009) and these two steps were computed and reported in this study. The first step assesses and reports the measurement model assessment, whereas the second step evaluates and report the assessment structural model as represented in Figure 4.1 (Hair et al., 2014; Henseler et al., 2009).

4.4.1 Measurement model assessment

The assessment of measurement model includes establishing the individual items internal consistency, construct reliability, content validity, convergent validity and discriminant

validity (Hair et al., 2014; Henseler et al., 2009). Figure 2 depicts the measurement model of this study.

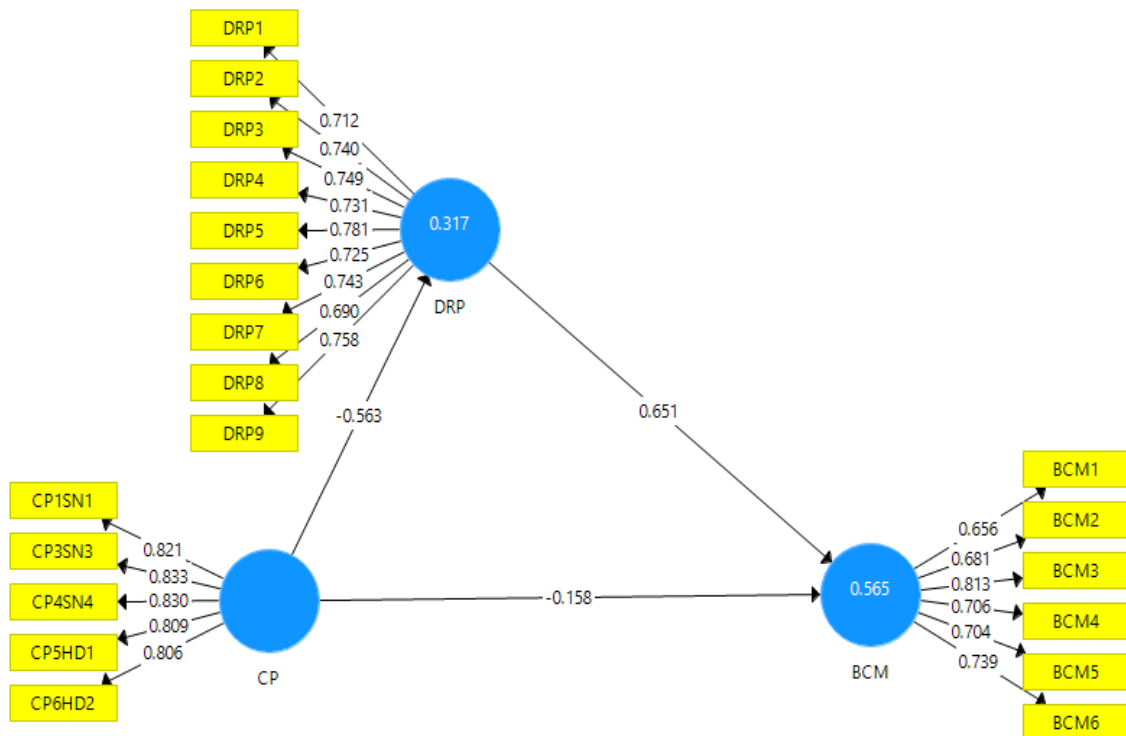


Figure 2: Measurement Model

Figure 2 above shows the loadings of items for each of the variables, and the contribution of the CP variable on both DRP ($R^2=0.317$) and BCM ($R^2=0.565$). The measurement model outer loadings for all the items depicted are between the range of 0.659 and 0.833. Thus, these items are accepted and retained since they are within the standard threshold of 0.40 and above (Hair et al., 2014; 2017). However, 3 items representing the CP variable (i.e. CP1SN2, CP7HD3 and CP8HD4) were deleted for recording item loadings below the recommended 0.40. Therefore, the measurement model portrayed in figure 2 is satisfactory.

4.4.2 Individual item reliability

The evaluation of individual items reliability was observed by computing the outer loadings of each item for each of the study constructs (Duarte & Raposo, 2010; Hulland, 1999). The measurement model outer loadings is accepted when it is ≥ 0.70 which is the standard threshold (Hair et al., 2017). However, indicators that have between .40 and .70 loadings may be retained if their deletion will not lead to an increase in content validity (Hair et al., 2014; 2017). Consequently, 3 items were removed out of the 23 items of the study. The complete model therefore reserved 20 items that have loadings between 0.656 and 0.833.

Table 2 Construct Reliability and Validity

Constructs	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
BCM	0.811	0.864	0.516
DRP	0.895	0.914	0.543
CP	0.878	0.911	0.672

CP= Critical Personnel, BCM= Business Continuity Management and DRP= Disaster Recovery Plan.

4.4.3 Internal consistency reliability

Internal consistency is the degree to which all indicators/items are capable to measure the same construct on a definite scale (Sun et al., 2007). The Cronbach's alpha or composite reliability coefficients are the most common techniques for evaluating instrument's reliability in organizational studies (Mahmoud, Ahmad & Poespowidjojo, 2022, 2021, 2018; Peterson & Kim, 2013). Both techniques i.e. Cronbach's alpha and composite reliability coefficients were engaged in this study.

Among the two popular techniques, the use Cronbach's alpha coefficient has been more prevalent, which is sometimes complemented by the composite reliability technique as it is in this study. There are two main reasons in doing that: first, the composite reliability provides reliability coefficient values that are substantially less biased compared to Cronbach's alpha coefficients because the later postulates all items/indicators contribute equally to a construct without regard to the actual impact of individual loadings (Gotz, Liehr-Gobbers, & Krafft, 2010). The second reason is, the Cronbach's alpha underestimates the reliability coefficients of scales. But, the composite reliability coefficient considers the item indicators to have divergent loadings which might be interpreted in the same way as Cronbach's alpha. The internal consistency threshold values for both Cronbach's alpha and composite reliability must be at least ≥ 0.70 (Bagozzi & Yi, 1988; Hair et al., 2011). The results (see table 2) indicates that the internal consistency for all the constructs in this study are satisfactory.

4.4.4 Convergent validity

Convergent validity is the degree to which items of a research questionnaire is representing the constructs it is intended to study correctly and truly correlate with other indicators of the corresponding construct (Hair, Black, Babin, Anderson, & Tatham, 2006). To scrutinize the convergent validity for this study, the Average Variance Extracted (AVE) was computed for each of the constructs in this study (Fornell & Larcker, 1981). The AVE threshold for each construct is acceptable when it is above 0.50 and that is when a satisfactory convergent validity can be declared (Chin, 1998). This study shows that a satisfactory level of convergent validity has been achieved for each construct, since all AVE values are beyond 0.50 for each of the constructs in this study (see Table 2).

4.4.5 Discriminant validity

Discriminant validity is the degree to which a particular construct deviates from another is (Duarte & Raposo, 2010). While the Fornell-Larcker discriminant validity criterion has been very popular, it has been criticized for performing poorly in discriminant validity assessment particularly when constructs only differ slightly (Henseler et al., 2015). Therefore, Henseler et al. (2015) suggests the use of heterotrait-monotrait ratio (HTMT) assessment of

correlations. Consequently, HTMT technique was employed to establish the discriminant validity for this study (Henseler et al., 2015). The conservative threshold for HTMT ratio is 0.85 and 0.90 for the most liberal. Any HTMT ratio that is below 0.85 (conservative) or below 0.90 (liberal) suggests a satisfactory discriminant validity result for the study constructs. The HTMT ratio values for constructs portrayed in Table 3 are less than the liberal threshold of 0.90 which shows a satisfactory discriminant validity.

Table 3 Heterotrait-Monotrait Ratio (HTMT ratio)

Constructs	BCM	CP	DRP
BCM			
CP	0.613		
DRP	0.858	0.629	

4.4.6 Assessment of significance of the structural model

Subsequent to the measurement model analysis, the structural model is evaluated. The structural model is computed based on the standard bootstrapping method using 5000 bootstrap samples as recommended by Hair et al. (2017) to gauge the path coefficients significance for the 281 data responses. Figure 3 and Table 4 depicts the structural model estimates for the complete model include both direct and indirect relationships i.e. the mediator variable.

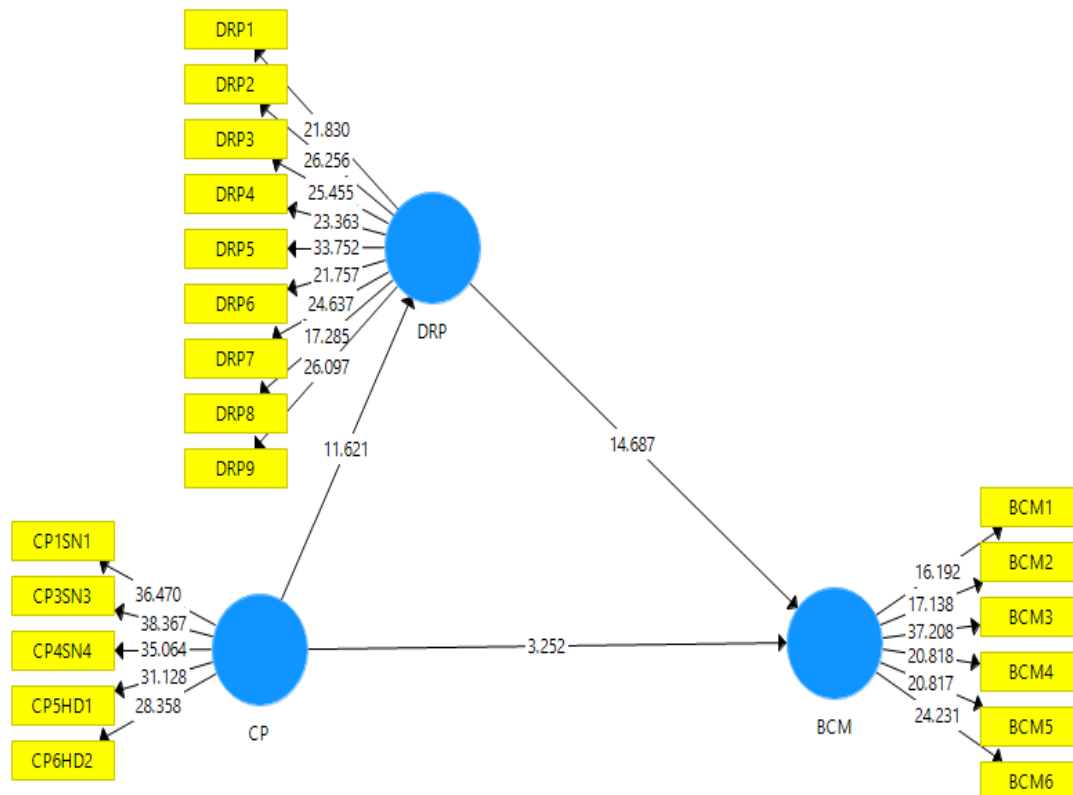


Figure 3: PLS-SEM bootstrapping (full model)

Figure 3 above shows the full model PLS-SEM bootstrapping results; which shows the t values for each of the direct hypothesized relationships. CP-BCM relationship shows that $t=3.252$, CP-DRP shows that $t=11.621$ where as DRP-BCM relationship shows $t=14.687$. Among these relationships, only DRP-BCM hypothesized relationship shows a significant t value that has a prospect to be accepted.

Table 4 Structural Model Assessment

Hypothesized Relationships	Sample Mean Beta (β)	Standard Deviation (STDEV)	T Statistics	P Values	Decision
H1: CP -> BCM	-0.158	0.049	3.252	0.001	Reject
H2: CP -> DRP	-0.566	0.048	11.621	0.000	Reject
H3: DRP -> BCM	0.653	0.044	14.687	0.000	Accept
H4: CP -> DRP -> BCM	-0.369	0.037	10.029	0.000	Reject

The first hypothesis (H1) which suggests a positive significant relationship between Critical Personnel and BCM is not supported. H4 results shows that p value is significant but the result is negative ($\beta = -0.158$, $t = 3.252$, $p = 0.001$). This indicates that the more critical employee efforts the lesser the BCM. In the same notion, the relationship between critical personnel and DRP proposed in H2 shows a negative significant relationship ($\beta = -0.566$, $t = 11.621$, $p = 0.000$). Therefore, H2 is also rejected, as it indicates an increase in critical personnel activities will decrease the DRP. However, the DRP -> BCM relationship was found to be positively significant ($\beta = 0.653$, $t = 14.687$, $p = 0.000$) as proposed in H3. This indicates that an increase in DRP will increase the level of BCM in organizations. Finally, the mediating effect of DRP on the relationship between critical personnel and BCM that is proposed in hypothesis four (H4) is significant but not supported because the direction of the relationship is negative ($\beta = -0.369$, $t = 10.029$, $p = 0.000$), which is contrary to the hypothesized relationship.

4.5 Assessment of Coefficient of Determination (R^2)

An important criterion for assessing PLS-SEM structural model is the R^2 , (Henseler et al., 2009). The coefficient of R^2 represents the proportion of variation in the dependent variable that is explained by predicting variables in a model (Hair et al., 2010). The R^2 values of 0.67, 0.33 and 0.19 are assumed to be substantial, moderate, and weak, respectively (Chin, 1998). Table 5 represents the R^2 values of the complete model in this study.

Table 5 Variance Explained in the Endogenous Latent Variables

	R Square
BCM	0.565
DRP	0.317

As represented in Table 5, the study model explains 56.5% of the overall variance in BCM and 31.7% of the overall variance in DRP. This suggests that critical personnel and DRP

collectively explained 56.5% and critical personnel explained 31.7% of the variance of DRP. Thus, the R^2 values for this study are moderate and adequately acceptable (Chin 1998).

4.6. Discussion of Results

The first hypothesis (H1), suggests a significant relationship between critical employees dimension and BCM implementation. The implementation of BCM is a broad concept that must involve the commitment of critical people, which include competency consisting of attitudes, skills, knowledge, roles and responsibilities of critical employees in the organization (Yang, Wu, Shu, & Yang, 2006). Contrary to the study proposition, the result of this study did not support H4, as it portrays a negative significant relationship with BCM implementation. This means that an increase in critical personnel will decrease BCM implementation, this finding may be shaped by other factors such as contextual and cultural factors. The role of critical personnel may also be limited due to the size of firms involved in the study; smaller firms tend to inhibit the role of critical employees because owner managers are the alpha and omega and may not be willing to allow critical employees to perform independently. When the critical personnel have the attitudes, skills, knowledge to promote but feel inhibited by their superiors such attitudes will easily turn to frustrations that could even become negatively related to BCM implementation. However, in a collectivist society like UAE, group norms are valued more compared to independence which could also hinder the role of critical employees in promoting BCM implementation.

However, hypothesis two (H2) result shows that the relationship between critical employees dimension and DRP is also negatively significant. This specifies that an increase in critical personnel attitude and motivation will be detrimental to DRP. Thus, some other factors such as personal differences and culture could be behind this negative relationship. In a nutshell, the relationship between critical personnel and BCM may require a moderating factor to redirect this relationship.

On the other hand, hypothesis three (H3) shows that the relationship between DRP and BCM are positively significantly. This illuminates that the more DRP implementation by an organization, the greater their BCM will be. DRP and BCM are closely related structures that guarantee sustained operations of organizations in the event of catastrophic occurrences (Barnett-Quaico & Ahmadu, 2020). Therefore, a reliable DRP program is crucial for organizational survival during and after disastrous events, effective DRP will therefore, significantly influence BCM (Omar, Alijani & Mason, 2011). Hence, organizations must be acquainted with DRP implementation processes since it is contingent to BCM.

Finally, H4 shows that DRP negatively mediate the relationship between critical employees and BCM implementation. This is contrary to the proposed positive DRP mediation on the relationship between critical employees and BCM implementation. This result explicates that critical personnel attitudes decrease the ability of organizations to promote DRP which will subsequently decrease BCM implementation. The finding therefore, suggests that critical personnel factors if not carefully managed could hamper both DRP and BCM implementation among firms in Abu Dhabi, UAE.

4.7. Implications of the Study

Based on the result, this study revealed an important theoretical implication that DRP will only negatively mediate the relationship between critical personnel variable and BCM implementation in the context of this study. Practical implications also indicates that critical

personnel is detrimental to both DRP and BCM implementation if other moderating are not included to redirect the relationship. However, organizations can positively promote BCM through an increase in DRP. Moreover, the methodological implication affirmed the cultural validity of the critical personnel, DRP and BCM measurements that were initially developed in western cultures. These measurements were refined and tested in the context of UAE, which is an important methodological contribution.

4.8. Limitations of the Study

This study identified some limitations. For instance, the cross-sectional design used for data collection does not allow causal conclusions, some important information may be missed with one-off data collection approach. Likewise, the self-report measures used to measure the study variables are associated with common method bias (Podsakoff et al., 2003) and social desirability bias (Podsakoff & Organ, 1986). Objective measures could have been better for the study. Finally, subjects of the study are principally concentrated in Abu Dhabi which is just a state in UAE; this may limit the result generalizability.

4.9. Directions for Further Research

Upcoming studies should consider longitudinal data collection approach to assess the theoretical concepts and ratify the findings of this study. Objective measurements could also tackle social desirability and common method bias limitations. Future studies can also replicate the model of this study in a wider context across UAE using the same measurements to enhance the generalizability of findings. Forthcoming researches should also consider moderating variables that could redirect the negative relationship between critical personnel and BCM, as well as critical personnel and DRP relationship. Other variables should also be augmented in the model to explain the remaining variance in DRP and BCM implementation.

5. Conclusion

This study further contribute to the evolving theoretical and empirical literature on the relationship between critical personnel, DRP and BCM. It also revealed the mediating position of DRP implementation on critical personnel and BCM implementation relationship. In precise, the paper attends to the objectives of this study, and revealed the limitations found in the study. This paper bridged the prevailing theoretical gaps by integrating the critical personnel, DRP and BCM implementation variables in a single framework, which contributes to both DRP and BCM literature.

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Appendix A

Business Continuity Management (BCM)

Items	Questions	Scale
BCM1	My organization made lists of emergency contact information of local government agencies responsible for disaster management/response	1 2 3 4 5
BCM2	My organization developed procedures to tackle problems of a disruption of public utility (e.g., water, electricity)	1 2 3 4 5
BCM3	My organization established ways to communicate during a disruption	1 2 3 4 5
BCM4	My organization backed up significant/essential information	1 2 3 4 5
BCM5	My organization purchased disaster (risk) insurance	1 2 3 4 5
BCM6	My organization identified sources of financial aid for disaster recovery	1 2 3 4 5

Disaster Recovery Plan (DRP)

Items	Questions	Scale
DRP1	My organization designate a location of backup activities	1 2 3 4 5
DRP2	My organization documents emergency response procedures to occur during and after an emergency	1 2 3 4 5
DRP3	My organization has a formal system backup policy and schedule	1 2 3 4 5
DRP4	My organization has inventory of assets needed for offsite recovery (example: backup tapes, operating system software, etc.)	1 2 3 4 5
DRP5	My organization has a defined call tree for notifying staff when a disaster is declared	1 2 3 4 5
DRP6	My organization has a list of detailed tasks needed for offsite recovery	1 2 3 4 5
DRP7	My organization measures to manage contingency processes	1 2 3 4 5

	while all systems are being recovered	
DRP8	My organization investigate new advanced technologies that can reduce downtime	1 2 3 4 5
DRP9	My organization developed a disaster organization chart that defines recovery teams	1 2 3 4 5

Critical People (CP)

Items	Questions	Scale
CP1-SN1	The adoption of disaster recovery plan by critical employees is greatly influenced by others	1 2 3 4 5
CP2-SN2	Disaster recovery plan is adopted by critical employees because of group cohesiveness	1 2 3 4 5
CP3-SN3	Disaster recovery plan is adopted by critical employees because of the strong belief in group norms	1 2 3 4 5
CP4-SN4	Disaster recovery plan is adopted by critical employees because of the fear of group penalty	1 2 3 4 5
CP5-HD1	As a critical employee, I adopted disaster recovery plan because of my personal interest to it	1 2 3 4 5
CP6-HD2	As a critical employee, I adopted disaster recovery plan because of my egoistic mindedness	1 2 3 4 5
CP7-HD3	As a critical employee, I adopted disaster recovery plan for Pleasure seeking	1 2 3 4 5
CP8-HD4	As a critical employee, I adopted disaster recovery plan to meet social demands	1 2 3 4 5

Analysis of the Effect of Motivation Factors and Hygiene Factors on Employee Performance with Job Satisfaction as a Mediation Factor

(Study on Employees PT. Bank Rakyat Indonesia (Persero) Tbk.

Bandar Lampung Regional Office)

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Abstract

Human resources are a crucial aspect that determines the effectiveness of an organization. Therefore, the organization always needs to invest in recruiting, selecting and retaining its human resources not to impact turnover. To maintain and improve employee performance, it is necessary to ensure the fulfilment of motivational and hygiene factors and job satisfaction. This study aimed to determine the influence of motivational and hygiene factors on employees' functioning and job satisfaction as intermediaries (PT. Bank Rakyat Indonesia (Persero) Tbk Regional Office Bandar Lampung. Study participants were recruited from 470 BRI employees using proportionally stratified random and probability sampling. The data used in this study is primary data in the form of survey data. The data analysis method used is Structural Equation Model Analysis (SEM) with data-driven covariance. The results show that motivational factors have a positive and significant influence on employees' work performance. In contrast, hygiene factors positively and significantly influence work results and employee satisfaction. Average job satisfaction on performance between hygiene factors and employee job performance

Keywords: Employee Job Satisfaction, Employee Performance, Hygiene Factor, Motivation Factor

JEL Codes: A1, M0, M5

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1. Introduction

A company is where the money it owns is processed into products or services that consumers want. The purpose of this activity is not only to produce goods and services that consumers want, but also to generate profit for the company. As stated in Pasal 1 (b) of Undang-Undang No. 3, 1982 on compulsory company registration, it is defined as follows: Any company is long-lived, permanent, established and engaged in any type of business. It is located in the territory of the Republic of Indonesia.

Companies need to make the right strategy to be able to generate optimal profits, one of which is by collaborating several elements that play a role in the company's business processes, namely human resources, technology, structure and social environment. Through good human resource management, companies can provide workforce development efforts in an ethically, strategically and socially responsible manner. That way, the human resources in the company can develop more and make a productive contribution so that the company's goals can be achieved immediately.

Human resources are a crucial aspect that determines the effectiveness of an organization. Therefore, organizations always need to invest in recruiting, selecting and retaining their human resources. Every organization will strive to maintain potential resources so as not to have an impact on turnover. According to research from Dalton and Todor (2003) a high turnover rate will have a negative impact on the organization, such as creating stability in labor conditions and increasing human resource costs. This makes the organization ineffective because the company loses experienced employees and needs to retrain new employees.

However, the problem that arises lies in how to keep employees able to work according to existing demands, and always be enthusiastic in every job. One of the causes that occur is related to employee job satisfaction. If employees are satisfied with their field of work, work productivity will tend to increase as well. However, if employees are not satisfied with their work, the company's progress will also be hampered. BRI Bandar Lampung Regional Office currently has 3,872 employees spread across the working areas of Lampung and Bengkulu Provinces with various corporate titles. However, from 2017 to December 2021 there were 883 employees who stopped working in the supervision area of the BRI Bandar Lampung Regional Office for various reasons. Details of the number of workers who stopped working are presented in the following Table.

Table 1 Reasons for BRI Bandar Lampung Regional Office Employees Quitting Work in 2017-2021

No	PHK Information	Total Employee
1	Resignation at the request of workers	597
2	Accepted to work in other companies/agencies	46
3	Skipping/not coming to work without permission	45
4	Continuing college/school	14
5	Health reasons	18
6	Other	163
	Total	883

Source: BRI Regional Office Human Capital Bandar Lampung, 2021

Based on Table 1 above, it can be seen that there are several reasons why BRI employees at the Bandar Lampung Regional Office stopped working during 2017-2021. The most common reason (up to 597 employees) is layoffs at the request of employees, characterized by factors that make employees dissatisfied with their jobs, affect their productivity and the decision to continue or stop working.

Several things have been done by the management of PT. Bank Rakyat Indonesia (Persero), Tbk central and regional Bandar Lampung to maintain the level of employee satisfaction and reduce turnover are as follows:

- Motivational factors: determination of realistic key performance indicators (kpi) with the provision of clear tools, recognition of employee performance achievements by implementing a transparent performance management system, presence of a talent pool that facilitates employees choosing jobs according to their interests, fair and clear performance evaluation so that every employee can be responsible for each of his work, as well as a clear and transparent level of promotion.
- Hygiene factor: periodic salary increases and adjusted to peers, giving annual and quarterly bonuses based on performance results, creating a conducive work environment by facilitating the needs of workers such as worker buses, sports facilities in the office area, and organizational clubs based on employee hobbies, policies/administration companies that are transparent and can be monitored through the application, as well as creating security to work with health insurance coverage without any ceiling restrictions.

With the support from the management, the performance of Bank Rakyat Indonesia (Persero), Tbk particularly in the port area of Lampung, currently ranks third in the country after Pekanbaru and Palembang. This is certainly supported by 77% who are satisfied and in line with the improved performance of Lampung Port staff in the BRI region. Herzberg's two-factor theory approach was used to measure job satisfaction and its impact on employee performance. The applied work environment theory discusses the motivational factors that encourage employees to perform well at work and the health factors that make employees unhappy in the work environment, ultimately affecting job satisfaction, employee satisfaction, and productivity.

2. Literature Review

2.1 Work Satisfaction

Job satisfaction is a complex phenomenon with many components that influence different cultural systems and values and cause some contradictions. The review identified predictors of job satisfaction that need further testing and validation by interventional and longitudinal studies (Lu Hong et al., 2019). Job satisfaction is a personal matter. As defined by Kreitner and Nicki (2005), each person is satisfied in a different way; Job satisfaction is an emotional response to various aspects of performance or work. This definition suggests that job satisfaction is not a single concept in the sense that an individual may be relatively satisfied with one aspect of the job and dissatisfied with one or more aspects of the job.

In his two-factor theory, Herzberg claims that job satisfaction and dissatisfaction are two different things, and that job satisfaction and dissatisfaction are not continuous variables. Based on his own research, Herzberg divided the situations that affect a person's attitude towards their own work into two groups: satisfied and dissatisfied. Satisfiers or motivators are

factors or situations that have been shown to be sources of job satisfaction, including achievement, recognition, independence, responsibility, and promotion.

Meanwhile, according to the study of Alrawahi et al. (2020), the reported job dissatisfaction is due to the lack of hygiene factors and various motivational factors according to Herzberg's theory; Herzberg's theory. Theory of increased motivation and job satisfaction.

Factors affecting job satisfaction Factors affecting job satisfaction can be identified by looking at different things that cause and promote job satisfaction. According to Khanna (2017), there are 11 factors that influence job satisfaction and have an impact on employee performance in the education/academic sector in North India. These factors fall into two main parts according to Herzberg's theory:

- Motivational factors: success, recognition, type of work, responsibilities, opportunities for growth and advancement
- Hygiene factors: salary/compensation, working conditions, company policies/administration, relations with colleagues, relations with superiors, and job security.

2.2 Employee Performance

Employee performance has a major impact on a company's success. The results of employee performance can be evaluated in terms of quality, quantity, working hours, as well as cooperation in achieving the goals set by the company. According to Gibson (2003), performance is the result of work performance, productivity, and other performance related to organizational goals. It is also said that a person's success is a combination of ability, strength, and opportunity, which can be measured by the results of their work. Performance appraisal is a system used to assess and find out whether an employee has carried out his work in an organization through performance appraisal instruments. In essence, performance appraisal is an evaluation of the work performance of individuals (personnel) and compares it with standard performance standards.

According to Shaikh (2019), employee performance is influenced by employee job satisfaction in an organization or company. Job satisfaction can also increase company productivity, profits, and reduce costs and employee turnover. In addition, job satisfaction can also improve working conditions, provide opportunities for advancement, improve individual personality, create positive relationships with colleagues and improve work quality with performance in the banking industry.

2.3 Hypothesis

According to Borishade et al (2021), student satisfaction is a mediating factor for service quality and affects student loyalty and productivity. According to Singh and Bhattacharjee (2019), motivational factors and hygiene factors were found to be positively and significantly related to academic job satisfaction and both can increase job satisfaction and achievement in academic work. Proposing hypotheses in research PT. Bank Rakyat Indonesia (Persero), Regional Office Tbk Bandar Lampung as follows:

H1: Motivational factors have a positive impact on employee performance.

H2: Hygiene factors have a positive impact on employee performance.

H3: Job satisfaction mediates the influence between motivational factors and employee performance.

H4: Job satisfaction mediates the influence between hygiene factors and employee performance.

2.4 Previous Research

Here are several international journals that discuss Herzberg's two-factor theory and its effect on employee satisfaction and performance in a company. Discussions related to previous research journals are intended to be a reference for researchers and help facilitate the preparation of this research.

Table 2. Previous Research Summary

No	Author	Research Title	Method	Result
1	Alrawahi et al. (2020)	Application of Herzberg's Two Factor Motivation Theory to Job Satisfaction in Clinical Laboratories in Oman Hospitals	In FGD, documents are analyzed using oriented content analysis method and the frequency of statements about factors is calculated to compare with Herzberg's theory.	According to Herzberg's theory, job dissatisfaction is caused by poor hygiene factors and certain motives. Hospital managers should consider these factors to increase motivation and job satisfaction.
2	Sobaih A.E. & Hasanein A.M. (2020)	Herzberg's theory of motivation and job satisfaction: Does it work for the hospitality industry in developing countries?	Analysis of the questionnaire data using the Software Computer Package for Social Sciences (SPSS 25). Hypothesis testing using multiple regression analysis	The results show that hygienic factors have a positive effect on job satisfaction, while motivational factors have a negative effect and cause dissatisfaction. The results point to another factor that mediates the relationship between motivation and job satisfaction, namely work commitment. These results confirm that Herzberg's

				theory is not true for all organizations and all employees in all countries.
3	Shaikh, S.H. (2019)	The Impact of Job Satisfaction and Job Dissatisfaction on Herzberg's Theory: Case Studies of Meezan Bank Limited and National Bank Limited	Reliability test, Analysis of Variance (ANOVA), t test and multiple regression techniques were used for data analysis.	The results show that job satisfaction has a positive effect on employee performance and job dissatisfaction has a negative effect on employee performance. The Job Satisfaction Factor improves employee performance at Meezan Bank Limited and National Bank Limited based on their organization's reputation and contribution to economic growth.

3. Research Method

The method used in this study is a survey method combined with quantitative methods. Using this method of quantitative analysis is well suited to other types of research that focus on real problems and events at the time in the form of meaningful numbers. The target group of this study is employees PT. Bank Rakyat Indonesia (Persero), Tbk. The regional offices of Bandar Lampung are scattered in the working areas of Lampung and Bengkulu in 2021. When conducting research, the role of data as the main analysis tool is needed to explain and support previously developed and defined questions. The data used in this study is primary data. Methods of collecting data for this study using a questionnaire. Recruitment survey PT. Bank Rakyat Indonesia (Persero), Tbk. The Bandar Lampung district office, which has been

operating for about a year, employs 3,872 people. According to Sugiyono (2017), when the population is large, the number of samples is also large. Therefore, a suitable sampling method is needed in this study. According to Hair and Joseph (2014), finding a suitable sample is difficult when the sample size is too large and a suitable sample size of 100-200 respondents must be used to evaluate the structural interpretation. Equation modeling (SEM). Therefore, the number of samples is determined based on the results of the calculation of the minimum number of samples, the maximum sample size of this study is 470 samples. The research was conducted using the Probabilistic Sampling method and the Stratified Random Sampling technique. This method is used when people are heterogeneous and disproportionate, dividing the population moderately and randomly into populations/classes. Proportionally Stratified Random Sampling collects information about the number of employees in each industry and determines how many samples are needed for each industry. The rating scale used in this study is the Likert scale. The Likert scale is a survey scale used to measure attitudes and opinions. This Likert scale required participants to fill out a questionnaire in which they had to accept a few questions. The questions or statements used in this research are commonly referred to as research variables and are considered by the researcher. This research uses analytical tests, namely validity and reliability tests, using AMOS SEM (Structural Equation Modelling) data analysis which consists of confirmatory analysis factor (CFA) and model feasibility tests. In addition, the hypothesis test used in this study used the Sobel test to see the effect of mediation on the variables.

Table 3. Operational Definition of Research Variables

No	Variables	Operational Definition	Indicator
1	Motivational Factor (X1)	Factors that can encourage people to be able to meet their top level needs and are the cause of people being satisfied with their work (Herzberg, 2017).	• Achievement • Recognition/award • Type of work • Responsibility • Growth and opportunities for promotion
2	Hygiene Factor (X2)	Hygiene Factor are the factors that cause a sense of dissatisfaction in employees. Lack of these factors will cause dissatisfaction, but it does not mean that the fulfillment of these factors will guarantee the emergence of work motivation (Herzberg, 2017).	• Salary/compensation • Working conditions • Policy and administration • Relations with colleagues • Relations with superiors • Work safety
3	Employee performance (Y)	Performance is the result of considering business goals, productivity and other results of operational efficiency. One's success is said to be a combination of talent,	• Quality • Quantity • Punctuality • Effectiveness

		effort and opportunity, which can be judged by the results of their hard work. (Gibson, 2003).	• Independence
4	Employee Job Satisfaction (Z)	Job satisfaction is the process of a person feeling good and relaxed about their tasks and their job performance (Herzberg, 2017).	• Job suitability • Appropriate salary • Challenging jobs • Fun coworkers • Supportive working conditions

4. Findings and Discussions

The distribution of the questionnaires was carried out online through the google form link which was distributed via whatsapp and telegram which was carried out on June 01 – July 30, 2022. The distribution of the questionnaires used a proportional stratified random sampling technique and 470 respondents answered. The data obtained were edited and coded for each item to make it easier to tabulate the data and then process the data.

Characteristics of respondents are what criteria will be given to research subjects so that sources of information on research can be directed appropriately and as expected. A total of 73.40% of research respondents were male and spread across the working age range of 21-56 years with the largest composition in the productive age range of 21-40 years (21-40 years as many as 20.43% and 31-40 years as many as 69 years). ,15%). The age range of 21-40 is the age range that is considered very productive for the workforce, because if the age is below 20 years, the average individual still does not have sufficient skill maturity and is still in the educational process. Meanwhile, at the age of 40 years, there is a decline in physical abilities for individuals (Priyono and Yasin, 2016). Most of the respondents' education is Bachelor (D4/S1), as many as 372 respondents (79.15%), with the largest average income in the range > Rp. 5,000,000 – Rp. 10,000,000, which is 305 respondents (64.89 %). Bank BRI employees are required to have a minimum of D4/S1 education so that the distribution of education of their workers is mostly at that level of education. The largest length of work was in the tenure of >5-10 years, as many as 276 respondents (58.72%). The period of service has a significant effect on the amount of income earned by BRI employees who are respondents, where the tenure of employment is < 5 years, the income range is < Rp. 5,000,000, of course, this factor is also influenced by the position of the respondent. Grade is a classification system for workers level at PT. Bank Rakyat Indonesia (Persero), Tbk which are grouped based on the level of employee position. The largest grade of workers who became respondents was in the range of 4-5 as many as 305 respondents (64.89%) with the highest status of workers being permanent workers, which was 374 respondents (79.57%). The grade 4-5 level consists of employees with Mantri (Marketing Personnel) positions whose national composition at BRI currently reaches 23.33%.

4.1 Validity test

A validity test is a test that determines whether the clock used is valid (valid) or invalid. The author uses the Pearson product moment correlation coefficient test using the SPSS program. The results of the validation test show that all indicators for $r_{count} > r_{table}$ are valid. That all questions in this research questionnaire be validated and followed up in a more in-depth study. Thus, all measures of each variable in this study meet the requirements for subsequent trials. In addition, it should be noted that the results of the analysis testing the validity of all statements were considered satisfactory, as their significance level was less than 5%.

4.2 Reliability Test

To assess the reliability of the questionnaire used in this study, the reliability test is based on Cronbach's alpha channel, which is commonly used for questionnaire testing in social science research. This analysis interprets the relationship between the created measure and the existing change measure, allowing you to see to what extent your measurement results are likely to remain statistically consistent. The results described in Table 4 indicate that the instrument is highly effective in this study, as the alpha value exceeds 0.60 (Hair et al., 2014).

Tabel 4 Reliability Test

Variable	Cronbach's Alpha	Information
Motivation Factors (X1)	0,933	Reliable
Hygiene Factors (X2)	0,955	Reliable
Work Satisfaction (Z)	0,939	Reliable
Employee performance (Y)	0,948	Reliable

Source: Processed Data

4.3 Structural Equation Modeling (SEM)

Structural equation modeling is a second-generation multivariate analysis method that allows researchers to study relationships between repeated and non-repeated complex variables (Ghozali, 2015). Structural equation modeling (SEM) was performed using the AMOS program. The AMOS program presents measurement and design problems and is used to analyze and test hypothetical models.

The model used in this study is a cause and effect model and the analytical method used to test the proposed hypothesis is SEM (Structural Equation Modeling). The SEM analysis method is used because SEM determines the scale of the structure and can measure the influence or relationship between the defined scaling factors (Ferdinand, AT, 2011).

4.4 Confirmatory Factor Analysis

The measurement step of the indicators representing the latent variables in the research model is carried out by confirmatory factor analysis (CFA). DFA is one of the prerequisites for SEM and model analysis. The technique used is DFA. The latent variables or constructs used in this research model are two exogenous variables; It includes one endogenous and one intermediate

and a total of 47 indicators. With AMOS SEM, the high and low validity of the questionnaire can be determined using the stress coefficient with a stress coefficient value > 0.50 . The results of data processing for confirmatory factor analysis of all constructs in this study are presented as follows in Figure 1.

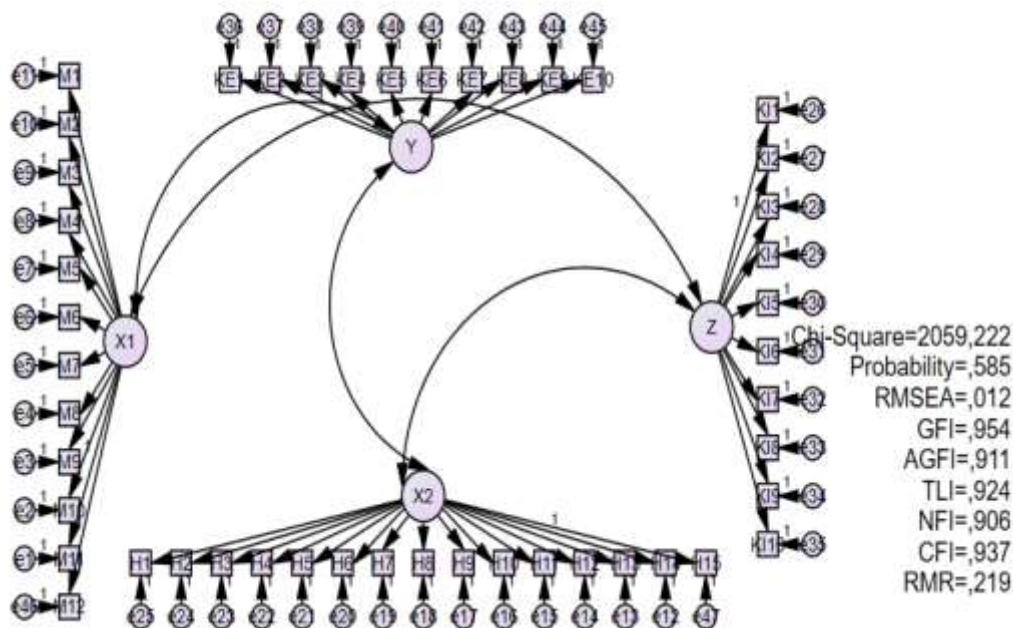


Figure 1 Construct Confirmatory Factor Analysis (Source: Processed Data, 2022)

Figure 1 is the result of data processing for confirmatory factor analysis of all constructs in this study involving motivation factors, hygiene factors, employee performance and employee job satisfaction as a mediation. Furthermore, the loading factor that represents the contribution of each indicator to the variable it represents shows that none of the loading factor values has a value of < 0.50 . Hair et al (2014), stated that if the loading factor value is below 0.5, it indicates that the indicator is very weak in describing the factor, so it must be removed from the model. All coefficient values meet the requirements, where the best loading model value that meets the standard is (> 0.5). This indicates that this model has good validity and reliability. The value of validity is seen based on the value of the loading factor whether it is greater than 0.5.

4.5 Goodness of Fit

Goodness of fit test is used to test the model used in the study. In SEM analysis, there are no statistical test tools to measure or test model hypotheses. According to (Ghojali, 2015), the SEM analysis technique used various statistical tests to test the hypotheses of the developed model. After the assumptions in SEM are met, a statistical test is used to measure the fit of the model to the study.

Table 5 The Goodness of Fit Test

Criteria	Goodness of Fit	Cut-off Value	Model Evaluation
Chi Square	2059,222	$\leq 2,00$	Fit
CMIN/DF	1,030	$< 2,00$	Fit
RMSEA	0,012	$< 0,08$	Fit
GFI	0,954	$> 0,90$	Fit
AGFI	0,911	$> 0,90$	Fit
TLI	0,924	$> 0,90$	Fit
NFI	0,906	$> 0,90$	Fit
CFI	0,937	$> 0,90$	Fit
RMR	0,219	$< 0,50$	Fit

Table 5 shows that there are 9 criteria that meet the criteria, e.g. The results of the Hypothesis evaluation represent a good model that shows that the model used in the study provides the expected prediction. Therefore, this model is an accurate and appropriate model for explaining the relationships between variables in a model.

4.6 Hypothesis testing

After testing the model, the next step may be to test the hypothesis. The basis for the decision to test the hypothesis is to compare the size of p with the 5% significance level ($\alpha = 0.05$), the null hypothesis (H_0) is not supported if p is less than alpha, and the null hypothesis (H_0) is supported when p is greater than alpha. The results of the hypothesis can be seen in Table 6 as follows:

Table 6 Standardized Regression Weight Structural Equational Model

	Estimate	S.E.	C.R.	P	R-Square
X1 <--> Y	,409	,009	5,406	0,000	0,735
X2 <--> Y	,370	,030	12,507	0,000	0,809

Information:

X1: Motivation Factor; X2: Hygiene Factor

Y: Employee Performance

Based on Table 6 obtained:

Employee Performance = 0.409 Motivation + 0.370 Hygiene

Based on Table 4, the value of R square for the influence of motivational factors on employee performance is 0.735. This shows that together the motivational factor variables are able to explain the employee performance variable by 73.5%, while the rest is explained by other

variables outside the study.

The value of R square for the influence of hygiene factors on employee performance is 0.809. This shows that the hygiene factor variables together are able to explain the employee performance variable by 80.9%, while the rest is explained by other variables outside the study.

4.7 The Influence of Motivation Factors on Employee Performance

The influence of motivational factors has a positive and significant effect on employee performance, this is known from the p-value < 0.05 , namely the p-value of 0.000 while of 0.05 and obtaining a CR value of 5.406 with an estimate value of 0.409, which has a large motivational influence. on employee performance by 40.9%.

4.8 Effect of Hygiene Factors on Employee Performance

The influence of hygiene factors has a positive and significant effect on employee performance. This is known from the p-value < 0.05 , namely the p-value of 0.000 while is 0.05. and obtained a CR value of 12,507 with an estimate value of 0.370, which has a large influence of hygiene factors on employee performance by 37%.

Table 7. Job Satisfaction Mediates the Influence Between Motivation and Performance Factors

	Input		Test statistic	Std. Error	p- value
a	0.793	Sobel test	11.02926209	0.04414638	0.000
b	0.614	Aroian test	11.02541709	0.04416178	0.000
s_a	0.022	Goodman test	11.03311111	0.04413098	0.000
s_b	0.053				

Based on the results of Sobel test calculations, the results are 11.029 and significance = 0.000. Thus, job satisfaction plays a mediating role between motivational factors and work productivity. Job satisfaction has a significant influence and acts as a mediating variable, motivational factors directly affect employee performance, so that the role of job satisfaction in moderating the relationship between motivational factors and employee performance is completely intermediate.

Tabel 8. Job Satisfaction Mediates the Influence Between Hygiene and Performance Factors

	Input		Test statistic	Std. Error	p- value
a	0.570	Sobel test	11.20054184	0.0312467	0.000
b	0.614	Aroian test	11.19781989	0.0312543	0.000
s_a	0.013	Goodman test	11.20326578	0.03123911	0.000
s_b	0.053				

Based on the calculation results of the Sobel test, the result is 11,200 and significant = 0.000. Thus, job satisfaction serves as an intermediate variable between hygiene factors and employee performance. Therefore, since job satisfaction has a significant impact and acts as an intermediate variable, hygiene factors directly affect employee performance, mediating role of job satisfaction. at work in the relationship between work policy and hygiene factors is purely mediating.

Based on the results of the tests that have been carried out, the test results obtained from each of the above hypotheses will be presented briefly in Table 7 regarding the conclusion of the hypothesis below.

Table 7 Hypothesis Test Results

No	Hypothesis	Critical Ratio	p-Value	Information
1	Motivational factors have a positive effect on employee performance	5.406	0.000	H1 Accepted
2	Hygiene factors have a positive effect on employee performance	12.507	0.000	H2 Accepted
3	Job satisfaction mediates the influence between motivational factors and employee performance	11.029	0.000	H3 Accepted
4	Job satisfaction mediates the influence between hygiene factors and employee performance	11.200	0.000	H4 Accepted

4.9. Discussion

The results show that hygienic factors have a positive effect on job satisfaction, while motivational factors have a negative effect and cause dissatisfaction. The findings also point to another factor mediating the link between motivation and job satisfaction, namely work engagement. These results confirm that Herzberg's theory may not apply to all organizations and employees in all countries. Previous research on the impact of motivational factors on employee performance was conducted by Paaïs and Pattirohu et al. (2020) Central Moluccas and Nabi et al. (2017) Researchers in Bangladesh. The results of this study are similar to the results of this study and also confirm the first hypothesis that motivation fluctuations have a positive and significant effect on employee performance. This indicates PT to improve employee performance. Bank Rakyat Indonesia (Persero), Tbk Bandar Lampung Regional Office has to meet the needs of employees, which directly affects the motivation factor.

Previous research on the influence of hygiene factors on employee performance has been carried out by Aydin (2012), who conducted research on Motivation and Hygiene Factors on Employee Performance at Turkish University. The hygiene factors that become research variables include: salary, job security, company-administrative policies, supervision, interpersonal relations, status and working conditions in companies that have a positive and significant effect on employee performance at Turkish University. The study involved 150 respondents with various positions including doctoral, assistant professor, and professor. The results of this study have similarities with the results of research conducted by the author and also prove the second hypothesis, namely that the hygiene variable has a positive and significant effect on employee performance. This shows that to improve employee performance, PT. Bank Rakyat Indonesia (Persero), Tbk Bandar Lampung Regional Office must meet the needs of its workers which directly affect the hygiene factor. The absence of the hygiene factor will open up opportunities for workers so that it will cause employees to be unproductive.

Previous research on the influence of motivational factors on employee performance with job satisfaction as a mediating variable has been conducted by Kurniawanto (2022), who conducted research in Jakarta with a sample of 100 respondents of modern mini market employees. The results of this study have similarities with the results of this study and also prove the hypothesis that job satisfaction has a positive and significant effect in mediating the relationship between motivational variables and employee performance. Motivation is one of the variables forming employee job satisfaction (Herzberg, 2017), and according to research by Mai (2022), employee satisfaction at work is a determining factor for productivity and efficiency in the company's production and business. If it is fulfilled properly then the motivational factor will increase employee job satisfaction and contribute positively to improving employee performance and vice versa if it is not fulfilled then the employee will work as is without increasing productivity. The employee's work objectives are the material for management evaluation to improve employee motivation aspects, where every year BRI's human capital division distributes questionnaires for BRI employee job satisfaction.

To anticipate employee turnover caused by the emergence of a sense of basic things that are employee rights, the management of PT. Bank Rakyat Indonesia (Persero), Tbk Bandar Lampung Regional Office seeks to anticipate the emergence of this sense of effort by meeting the basic needs of workers. Some of the things that were done were: during the Covid-19

pandemic, BRI implemented zero layoffs, did not reduce the amount of employee salaries, and still gave full bonuses to employees. The company also improves the employee health service mechanism by creating digital reimbursement of medical expenses to facilitate application and time effectiveness of service. In addition, the company began to implement regionalization gradually to place employees' work areas according to their domicile addresses in the hope of increasing productivity and reducing employee turnover.

5. Conclusion

The results of the first hypothesis in this study which states "motivational factors have a positive effect on employee performance" are supported. The results of this study explain that to improve employee performance, PT. Bank Rakyat Indonesia (Persero), Tbk Bandar Lampung Regional Office must meet the needs of its workers which directly affect the motivation factor. The fulfillment of motivational supporting factors at BRI currently includes: setting realistic key performance indicators (kpi) at the beginning of the year, recognition of employee performance achievements, implementation of a talent pool and clear and transparent career development certainty.

The results of the second hypothesis in this study which states "hygiene factors have a positive effect on employee performance" are supported. The results of this study explain that to improve employee performance, PT. Bank Rakyat Indonesia (Persero), Tbk Bandar Lampung Regional Office must meet the needs of its workers which directly affect the hygiene factor. The absence of hygiene factors will cause dissatisfaction for workers so that it will cause employees to become unproductive. The current fulfillment of hygiene factors at BRI include: salary, work conditions and security, company policies and regulations as well as interpersonal relationships between fellow workers or superiors and subordinates.

The results of the third hypothesis in this study which states "job satisfaction mediates the influence between motivational factors and employee performance" are supported by full mediation. The results of this study explain that motivation is one of the variables that make up employee job satisfaction which is a determining factor for productivity and efficiency in the company's production and business. If fulfilled properly, the motivational factor will increase employee job satisfaction and contribute positively to improving employee performance. At PT. Bank Rakyat Indonesia (Persero), Tbk Bandar Lampung Regional Office, employee job satisfaction is a material for management evaluation to improve employee motivation aspects, where every year BRI's human capital division distributes questionnaires to evaluate BRI employee job satisfaction. The results of the fourth hypothesis in this study which states "job satisfaction mediates the influence between hygiene factors and employee performance" are supported by full mediation. The results of this study explain that the non-fulfillment of hygiene factors will cause job dissatisfaction and have the potential to decrease performance or even lead to turnover. For that the management of PT. Bank Rakyat Indonesia (Persero), Tbk Bandar Lampung Regional Office seeks to anticipate the emergence of this dissatisfaction by meeting the basic needs of workers. Some of the things that have been done are: implementing zero layoffs during the last Covid-19 pandemic, not reducing the amount of employee salaries, and still providing full bonuses to employees. In addition, the use of digital health reimbursement applications is implemented for the convenience and effectiveness of service time as well as gradual regionalization to place employees' work areas according to their domicile addresses in the hope of increasing productivity and reducing

employee turnover.

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The Effect of Work Discipline and Organizational Culture on Motivation and its Impact on Employee Performance in Water Tourism in Muara Enim Regency

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Abstract

This study aims to determine the effect of work discipline and organizational culture on motivation and its impact on employee performance in water tourism in Muara Enim Regency. This type of research is Associative. The sample in this study was employees at water tourism in Muara Enim Regency, totalling 87 people who were selected using a proportionate random sampling technique. The data used in this study are primary data with questionnaire data collection methods. The data analysis technique used is Structural Modeling Equation (SEM) with Program Applications. The results showed that: (1) Work discipline positively and significantly influenced employee motivation at Water Tourism, Muara Enim Regency. (2) There is a positive and significant influence of organizational culture on employee motivation in Muara Enim Regency Water Tourism. (3) Work discipline has a positive and significant effect on employee performance at Water Tourism, Muara Enim Regency. (4) There is a negative and insignificant influence between organizational culture on employee performance at Water Tourism, Muara Enim Regency. (5) Motivation has a positive and significant influence on employee performance at Water Tourism in Muara Enim Regency. (6) Motivation strengthens the influence of discipline on employee performance in Water Tourism, Muara Enim Regency. (7) Motivation strengthens the influence of organizational culture on employee performance at Water Tourism, Muara Enim Regency.

Keywords: Work Discipline, Organizational Culture, Motivation and Performance

JEL CODES: A1, M0, M5

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Introduction

Performance of an employee affects the success of an organization. According to Rivai and Sagala in Priansa (2018:269) performance is a real behavior that everyone displays as work

performance produced by employees according to their role in the organization. According to Kasmir (2016: 189), the factors that influence employee performance are abilities and expertise, knowledge, work plans, personality, work motivation, leadership, leadership style, organizational culture, job satisfaction, work environment, loyalty, commitment, and work discipline.

Motivation is an activity that can encourage not only others but also yourself, meanwhile, this motivation or encouragement is expected to be able to work better in the future. Motivation is an inner force that can arouse, direct and influence a person to have the intensity and persistence of voluntary behavior in doing the job.

Work discipline is a tool used by superiors to communicate with employees so that they are willing to change their behavior as well as an effort to increase one's awareness and willingness to obey all applicable organizational rules and social norms. Work discipline could be seen as something that has great benefits, both for the benefit of the organization and employees. For organizations, the existence of work discipline will ensure the maintenance of order and the smooth implementation of tasks, so the optimal results obtained and organizational targets would be achieved. And for employees, a pleasant working atmosphere will be obtained so that it will increase morale in carrying out work.

Organizational culture is a system of beliefs and values developed by the organization so that it guides the behavior of members of the organization itself. Organizational members will act in achieving organizational goals as guided by the organization through activity implementation instructions in the form of an operational procedure system. Organizational culture is the sharing of social knowledge within an organization regarding the rules, norms, and values that shape employee attitudes and behavior. In other words, sharing knowledge internalized by the leadership of the organization to all members of the organization regarding the rules, norms, and values so that the final result of the internalization process can shape the attitudes and behavior of members of the organization. Organizational culture is a shared perception held by members of the organization as an organizational value system adopted by members of the organization, which then affects the way members work and behave so that the value system or meaning system is able to distinguish one organization from another.

There are several things that become a phenomenon in Muara Enim Regency Water Tourism, namely the achievement of goals have not been achieved optimally, work standards are still not running optimally, lack of competence possessed by employees, lack of motivation from superiors, facilities felt by employees are still lacking. , there are still employees who are often late for work, and go home during working hours, there is still no self-assurance such as the absence of BPJS for labor and BPJS for health that employees receive, and there is still a lack of employee initiative towards situations and working conditions is in a tourist area.

2. Literature Review

2.1. The effect of work discipline on motivation

According to Saydam and Kadarisman in Erri & Fajrin (2018) said that work discipline is one of the factors influencing motivation. A similar study was conducted by Djoko Soelistya, Ade Septiarisna Warindra, Muhammad Rosyihudin, Moch Indah Hastomo Nugroho (2021) and according to Munawir Nasir, Rezky Ratnasari Typhoon, M Fadhil, Moh. Haerdiansyah Syahnur (2021). Proving that work discipline affects motivation. Phenomena in Water Tourism in Muara Enim Regency, what happens is that employees often don't come to work,

there are employees who go home during working hours, effective use of time, employees who arrive late.

2.2. The influence of organizational culture on motivation

According to Saydam and Kadarisman in Erri & Fajrin (2018) said that organizational culture or work culture is one of the factors influencing motivation. Similar studies were carried out by Alfred Lasarudin, Tanto Gatot Sumarsono, Mokhamad Natsir (2021) and according to Usman Hakim (2020). Proving that organizational culture has a positive and significant effect on employee motivation. The phenomenon at Water Tourism in Muara Enim Regency, where there is no BPJS guarantee, complains about the lack of firmness from superiors. Initiative is still a bit lacking in employee initiative towards the situations and conditions that exist in tourism.

2.3. The effect of work discipline on performance

According to Kasmir (2016: 189) one of the factors that influence employee performance is work discipline. A similar study was conducted by Wulan Purmasari. Ratna Ekasari. Isa Madjid (2019). And according to Munawir Nasir. Rezky Ratnasari Typhoon. M Fadhil. Moh. Haerdiansyah Syahnur (2021). Proving that work discipline has a positive and significant effect on performance. The phenomenon in Water Tourism in Muara Enim Regency that occurs for work discipline variables is that employees often do not come to work, there are employees who go home during working hours, do not use time effectively, do not comply with regulations regarding employees who arrive late.

2.4. The influence of organizational culture on performance

According to Kasmir (2016: 189), one of the factors that influence employee performance is organizational culture. A similar study was conducted by Athins. Nurwati. Sinarwaty (2018). Proving that organizational culture has a positive and significant influence on employee performance. Phenomenon in Water Tourism, Muara Enim Regency, which occurs in organizational culture variables, there is no BPJS guarantee for employees who complain about the lack of firmness in their attitude.

2.5. The effect of motivation on performance

According to Kasmir (2016: 189) one of the factors that influence employee performance is motivation. A similar study was carried out by Dwi Irawati, Sri Langgeng Ratnasari and Herni Widiyah Nasrul (2019) and Wulan Purnasari. Ratna Ekasari. Isa madjid. (2019). Proving that work motivation has a positive and significant effect on performance. The phenomenon in Muara Enim Regency Water Tourism that occurs for work motivation variables, the remuneration received by employees is very far from the UMR or UMK, the facilities provided are inadequate, the working conditions of employees are in the field and even some employees complain about work because they work standing a lot because to control security and convenience of tourist sites, working conditions with erratic working hours

2.6. The effect of work discipline on motivation and its impact on performance

According to Saydam and Kadarisman in Erri & Fajrin (2018) said that work discipline is one of the factors influencing motivation. According to Kasmir (2016: 189) one of the factors that influence employee performance is work discipline and motivation. A similar study was

conducted by Wulan Purmasari. Ratna Ekasari. Isa madjid. (2019). Proving that work discipline has a positive and significant effect on employee motivation. The results show that work motivation has a positive and significant effect on employee performance. The phenomenon in Water Tourism in Muara Enim Regency that occurs for work discipline variables is that employees often do not come to work, there are employees who go home during working hours, do not use time effectively, do not comply with regulations regarding employees who arrive late. The phenomenon in Water Tourism in Muara Enim Regency that occurs for work motivation variables, the remuneration received by employees is very far from the UMR or UMK, the facilities provided are inadequate, the working conditions of employees are in the field and even some employees complain because they work a lot standing up because to control security and the convenience of tourist sites, working conditions with erratic working hours.

2.7. The influence of organizational culture on motivation and its impact on performance

According to Saydam and Kadarisman in Erri & Fajrin (2018) said that organizational culture is one of the factors influencing motivation. According to Kasmir (2016: 189) one of the factors that influence employee performance is organizational culture and motivation. A similar study was conducted by M Sholahuddin Al-Ayyubi (2019). And Alfred Lasarudin, Tanto Gatot Sumarsono, Mokhamad Natsir (2021). And Usman Hakim. (2020). Proving that organizational culture has a significant effect on work motivation. That organizational culture and work motivation affect employee performance variables The phenomenon in Water Tourism in Muara Enim Regency, which occurs in organizational culture variables, is that there is no BPJS guarantee for employees who complain about the lack of firmness in their attitude. The phenomenon that occurs for the work motivation variable, the remuneration received by employees is very far from the UMR or UMK, the facilities provided are inadequate, the working conditions of employees are in the field and even some employees complain because they work a lot standing because to control the safety and comfort of tourist sites, conditions work with erratic working hours. The frame of mind that the writer uses in this study is to explain the influence or relationship between the variables studied. The variables used consist of independent variables (X1 and X2), dependent variables (Y) and intervening variables (Z). The frame of mind is that the variable work discipline (X1) and organizational culture (X2) have an effect on the performance variable (Y) with work motivation variable (Z) as the intervening variable. The framework for this research can be seen in the figure below:

3. Research Methods

The hypothesis testing proposed in this study is classified into the dependent variable and the independent variable. This study uses 1 (one) dependent variable, 2 (two) independent variables, and 1 (one) intervening variable. The dependent variable in this study is Performance (Y), while the independent variable consists of Work Discipline (X1), Organizational Culture (X2), and the intervening variable is Motivation (Z). The populations in the study were all employees in Muara Enim Regency Water Tourism, namely 111 employees. that consists of 63 employees at Shuji Lembak Lake Water Tourism and 48 employees at Waterboom Gelumbang. So the total number of samples in this study was 87 the technique that will be used for sampling is probability sampling (a sampling technique that provides equal opportunities for each member of the population to be selected as a sample member) with proportionate random sampling technique. to take samples from members of

the population by using a random method without regard to the strata in the population. Data collection methods used in this study were questionnaires and documentation. The documentation method is by collecting data and documents such as profiles and so on. The questionnaire method is the answer from the respondents to a series of questions related to the influence of work discipline and organizational culture on employee performance of work motivation as an intervening variable in Muara Enim Regency Water Tourism. The path analysis method with the analytical technique used is Structural Equation Modeling (SEM) analysis.

Tabel 1. Definisi Operasionalisasi Variabel

Variabel Penelitian	Definisi Operasionalisasi	Indikator
Kinerja Karyawan (Y)	Suatu hasil kerja dari proses kerja karyawan yang telah memenuhi syarat atau standar kerja yang ditetapkan oleh Wisata Air Kabupaten Muara Enim.	1. Tujuan 2. Standar kerja 3. Kompetensi 4. Motif
Motivasi (Z)	Proses psikologi yang membangkitkan, mengarahkan dan penggerak akan menjaga perilaku manusia secara terus-menerus untuk mencapai suatu tujuan Wisata Air Kabupaten Muara Enim.	1. Balas jasa 2. Fasilitas 3. Kondisi kerja
Disiplin kerja (X ₁)	Semua peraturan organisasi dan norma-norma sosial yang berlaku harus dengan ditaati dengan kesadaran dan kesediaan seseorang di Wisata Air Kabupaten Muara Enim.	1. Tidak mangkir dalam bekerja. 2. Penggunaan waktu yang efektif 3. Mematuhi peraturan
Budaya Organisasi (X ₂)	Persepsi bersama yang dianut oleh anggota organisasi untuk memengaruhi cara bekerja dan berperilaku dari anggota dan sistem nilai Wisata Air Kabupaten Muara Enim.	1. Jaminan diri 2. Ketegasan dalam bersikap 3. Inisiatif

4. Results And Discussion

4.1. Model Testing with Path Analysis

Based on the conceptual framework and the research hypothesis, the selection of the analysis model was carried out. To analyze the causal relationship between variables and test the research hypothesis mathematically, the analytical tool used in this research is path analysis using AMOS software. With path analysis of Direct and Indirect Effects, estimation of the causal influence between variables and the position of each variable in the path, both directly and indirectly, will be carried out.

Model I line Effect of work discipline and organizational culture on motivation

$$Z = \rho_{ZX1}X1 + \rho_{ZX2}X2 + \epsilon_1$$

Model II line The influence of work discipline and organizational culture on motivation and its impact on performance

$$Y = \rho_{YX1}X1 + \rho_{YX2}X2 + \rho_{YZZ} + \epsilon_2$$

Information :

Y = Performance

Z = Motivation

X1 = Work Discipline

X2 = Organizational Culture

ρ = Variable Regression Coefficient

ϵ = Standard Errors

The path calculation explains the influence of the independent variables either directly or indirectly on the dependent variable through intervening variables. Before testing whether there is direct and indirect influence, each path is tested to be significant first. If there is a path that is not significant, then the trimming theory is applied, namely by eliminating or deleting the path that is not significant. Then, from the results of the new structure, each path coefficient is recalculated. Based on these results, it can be seen the magnitude of the direct and indirect influence as well as the total effect.

The calculation step is to calculate the direct and indirect effects as well as the total influence of the independent variables on the dependent variable through the intermediary variables and then calculate the residual variable (ϵ) or residual variables, namely variables other than the independent variable and intermediary variables which also affect the dependent variable but are not included in the research model.

Model Testing With Path Analysis

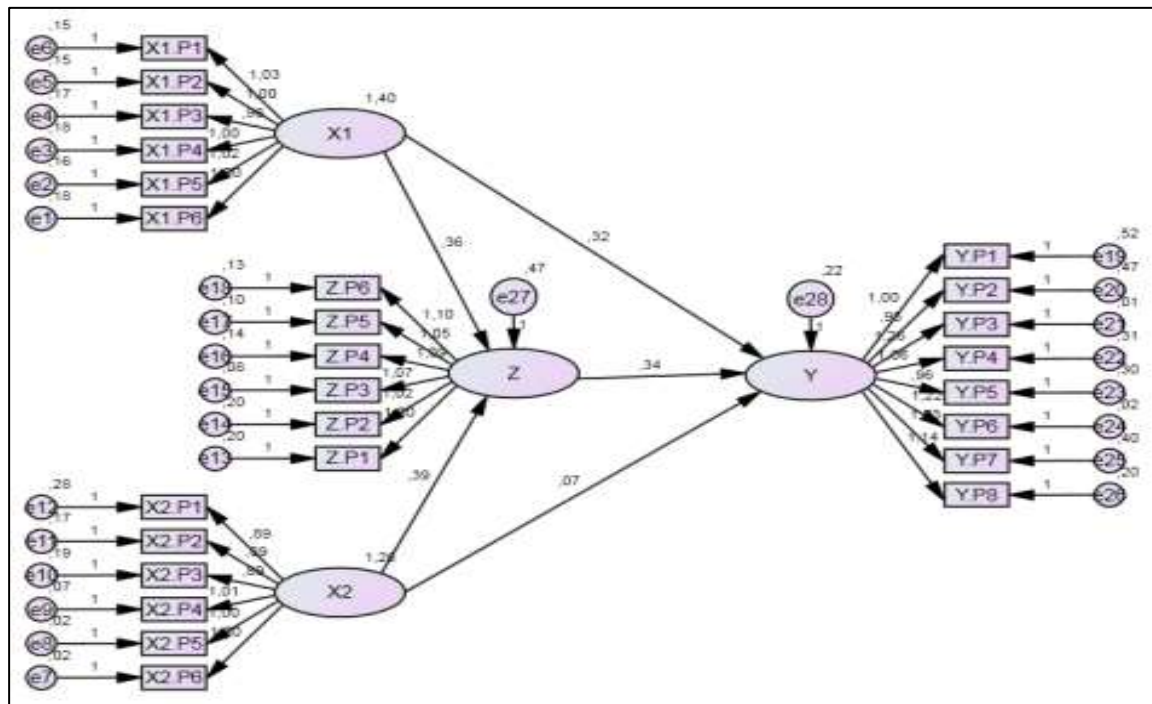


Figure 1. Result SEM

The form of the standard equation in this study was obtained as follows:

$$Z = \rho_{ZX1}X1 + \rho_{ZX2}X2 + \varepsilon_1$$

$$Z = 0.361 X_1 + 0.389 X_2 + \varepsilon$$

$$Y = \rho_{YX1}X1 + \rho_{YX2}X2 + \rho_{YZ}Z + \varepsilon_2$$

$$Y = 0.315 X_1 + 0.071 X_2 + 0.345 Z + \varepsilon$$

Hypothesis test

From the estimation results using the Path Analysis method, the partial hypothesis test values were obtained in the following table:

Tabel 2. Estimate Result Path Analysis

			Estimate	S.E.	C.R.	P	Label
Z	<---	X1	,361	,069	5,255	***	
Z	<---	X2	,389	,071	5,492	***	
Y	<---	X1	,315	,063	5,040	***	
Y	<---	X2	,071	,056	1,277	,202	
Y	<---	Z	,345	,087	3,985	***	

Sumber : AMOS, 2022

Direct influence

1. The effect of work discipline on motivation is 0.361. It means that the variable of work discipline on employee motivation is 0.361
2. The influence of organizational culture on motivation 0.389 This means that the variable of organization culture on motivation is 0.389
3. The effect of work discipline on performance is 0.315. It means that the variable of work discipline on employee performance is 0.315
4. The influence of organizational culture on performance is 0.071. It means that the variable of organization culture on performance is 0.071. The influence of motivation on performance is 0.345. It means that the motivational variable on performance is 0.345.

Indirect influence

1. The effect of work discipline on motivation and impact on performance = $(0.361) \cdot (0.345) = 0.124545$ The estimation results show that the value of the work discipline variable is 0.361 and the value of the motivational intermediary variable is 0.345 resulting in a performance variable value of 0.124545
2. The influence of organizational culture on motivation and impact on performance = $(0.389) \cdot (0.345) = 0.134205$ The estimation results obtained that the value of the organizational culture variable is 0.389 and the value of the motivational intermediary variable is 0.345 resulting in a performance variable value of 0.134205

Total Effect (Total Effect)

1. The effect of work discipline on performance Total influence = direct influence + indirect influence $TE = 0.315 + 0.124545 = 0.439545$. Based on the statement above, it could be obtained that the work discipline variable has an effect on performance to the total value obtained of 0.439545.
2. The influence of organizational culture on performance Total influence = direct influence + indirect influence $TE = 0.071 + 0.134205 = 0.205205$.

Based on the statement above, it could be obtained that the organizational culture variable has an effect on performance to the total value obtained of 0.205205.

Hypothesis test

From the estimation results using the Path Analysis method, the partial hypothesis test values are obtained in the following table:

Table 3 Estimation Result Path Analysis

			Estimate	S.E.	C.R.	P	Label
Z	<---	X1	,361	,069	5,255	***	
Z	<---	X2	,389	,071	5,492	***	
Y	<---	X1	,315	,063	5,040	***	
Y	<---	X2	,071	,056	1,277	,202	
Y	<---	Z	,345	,087	3,985	***	
Sumber : AMOS, 2022							

This test has done by comparing the t-count with the t-table. In the estimation method using the Path Analysis method, the Critical value (CR) is the same as the t value (count) in the OLS regression to P is the probability level of significance with *** significant at 0.01 (1%), but the significance level, 0.05 (5%) P value (significance probability) will still appear in the estimation table.

Tabel 4. Summary

No	Line	Intervening Variable	Direct effect	Indirect Effect	Total Effect
1	discipline - motivation	-	0.361		0/361
2	Culture - motivation	-	0.389		0.389
3	discipline–Performance	Motivation	0.315	0.124545	0.439545
4	Culture – Performance	Motivation	0.071	0.134205	0.205205
5	Motivasi – kinerja	-	0.345		0.345

Sumber : AMOS, 2022

Based on the table above, it could see that the direct influence, indirect effect, and total effect could see, which described as follows:

- The effect of work discipline on motivation, based on the table above, shows 0.361, which means that if work discipline increases, it will increase motivation or vice versa. Based on the test results, the effect of work discipline on motivation is proven to be significant.
- The influence of organizational culture on motivation, based on the table above, shows 0.389, which means that if organizational culture increases, it will increase motivation or vice versa. Based on the test results, the influence of organizational culture on motivation proved significant.
- The effect of work discipline on performance, based on the table above, shows 0.315, which means that if work discipline increases, it will increase performance or vice versa. Based on the test results, the effect of work discipline on employee performance is proven to be significant.
- The influence of organizational culture on performance, based on the table above, shows 0.071 which means that organizational culture does not increase employee performance. Based on the test results, there is no significant effect of organizational culture on employee performance.

- e. The effect of motivation on performance, based on the table above, shows 0.345, which means that if motivation increases, it will increase performance or vice versa. Based on the test results, the effect of motivation on employee performance proved significant.
- f. The direct effect of work discipline on performance is 0.315 while the indirect effect of work discipline on performance with motivation as an intermediary variable is 0.124545 and the total effect is 0.439545.
- g. The direct effect of organizational culture on performance is 0.071 while the indirect effect of organizational culture on performance with motivation as an intermediary variable is 0.134205 and the total effect is 0.205205.

Discussion

1. The Influence of Work Discipline on Employee Motivation in Water Tourism, Muara Enim

- a. The CR-value or t count is 5.255, with a significance of $P\ 0.000 < 0.05$. And supported by the path coefficient value = $Z = 0.361\ X1$. It means that work discipline has a significant effect on employee motivation in Muara Enim Regency Water Tourism.
- b. Saydam and Kadarisman Erri, and Fajrin (2018) suggest that external factors originating from outside the employee can also affect motivation, namely work discipline.
- c. A similar study has conducted by Djoko Soelistya. Ade Septiarisna Warindra. Muhammad Rosyihudin. Moch Indah Hastomo Nugroho (2021) and according to Munawir Nasir. Rezky Ratnasari Taufan. M Fadhil. Moh. Haerdiansyah Syahnur (2021). Proved that work discipline affects motivation.

2. The influence of organizational culture on employee motivation in Muara Enim Regency Water Tourism.

- a. The CR-value or t-count value is 5.492, with a P significance of $0.000 < 0.05$. And supported by the path coefficient value = $Z = 0.389\ X2$. It means that organizational culture has a significant effect on employee motivation at Muara Enim Regency Water Tourism
- b. Saydam and Kadarisman Erri and Fajrin (2018) suggest that external factors originating from outside the employee can also affect motivation, namely organizational culture.
- c. Similar studies have been conducted by Alfred Lasarudin, Tanto Gatot Sumarsono, and Mohamad Natsir (2021) and according to Usman Hakim (2020). Proving that organizational culture has a positive and significant effect on employee.

3. The effect of work discipline on employee performance in Water Tourism, Muara Enim Regency.

- a. The CR-value or t-count value is 5.040, with a significance of $P\ 0.000 < 0.05$. And it is supported by the path coefficient value = $Y = 0.315\ X1$ which means that work discipline

has a significant effect on employee performance at Water Tourism, Muara Enim Regency.

- b. According to Kasmir (2016: 189), the factor that affects employee performance is work discipline.
- c. A similar study was conducted by Munawir Nasir. Rezky Ratnasari Taufan. M Fadhil. Moh. Haerdiansyah Syahnur (2021). Proving that work discipline has a positive and significant effect on performance. Not in line with similar research according to Djoko Soelistya. Ade Septiarisna Warindra. Muhammad Rosyihudin. Moch Indah Hastomo Nugroho (2021). Work discipline has no significant effect and can improve performance.
- d. The reason this research is different is that the research has been conducted by Munawir Nasir. Rezky Ratnasari Taufan. M Fadhil. Moh. Haerdiansyah Syahnur (2021). the population of 20 employees, multiple linear regression analysis techniques. the research has been conducted by Djoko Soelistya. Ade Septiarisna Warindra. Muhammad Rosyihudin. Moch Indah Hastomo Nugroho (2021) Total population 100, SEM analysis technique using path analysis.

4. The influence of organizational culture on employee performance in Water Tourism, Muara Enim Regency.

- a. The CR-value or t-count value is 1.277, with a significance of $P\ 0.202 > 0.05$. And supported by the path coefficient value = $Y = 0.071 X_2$. It means that organizational culture has a negative and insignificant effect on employee performance at Water Tourism, Muara Enim Regency.
- b. According to Kasmir (2016: 189), the factor that affects employee performance is organizational culture.
- c. Similar research according to Dwi Irawati, Sri Langgeng Ratnasari, and Herni Widiyah Nasrul (2019). And according to Munawir Nasir. Rezky Ratnasari Taufan. M Fadhil. Moh. Haerdiansyah Syahnur. (2021). That organizational culture has a negative and insignificant effect on performance. However, this research is not in line with the research according to Djoko Soelistya. Ade Septiarisna Warindra. Muhammad Rosyihudin. Moch Indah Hastomo Nugroho (2021) that work discipline has no significant effect and can improve performance
- d. The reason this research is different is because of the research conducted by Munawir Nasir. Rezky Ratnasari Taufan. M Fadhil. Moh. Haerdiansyah Syahnur (2021). the population of 20 employees, multiple linear regression analysis techniques. Dwi Irawati, Sri Langgeng Ratnasari, and Herni Widiyah Nasrul (2019) the sample of 100 respondents. Sampling using non-probability sampling method using purposive sampling. The data analysis technique used multiple linear regression. While the research was conducted by Djoko Soelistya. Ade Septiarisna Warindra. Muhammad Rosyihudin. Moch Indah Hastomo Nugroho (2021) Total population 100, SEM analysis technique using path analysis.

5. The effect of motivation on employee performance in Water Tourism, Muara Enim Regency.

- a. The CR-value or t-count value is 3.985, with a significance of $P = 0.000 < 0.05$. And supported by the path coefficient value $= \gamma = 0.345Z$. This means that motivation has a significant effect on employee performance at Water Tourism, Muara Enim Regency.
- b. According to Kasmir (2016: 189), the factor that affects employee performance is motivation.
- c. Similar studies were conducted by Dwi Irawati, Sri Langgeng Ratnasari and Herni Widiyah Nasrul (2019), and Wulan Purmasari. Ratna Ekasari. Isa madjid. (2019). Proving that work motivation has a positive and significant effect on performance.

6. The effect of work discipline on motivation and its impact on employee performance at Water Tourism, Muara Enim Regency.

- a. The direct effect of discipline on performance is 0.315 even the indirect effect (through motivation) is 0.439545. It means that motivation strengthens the influence of discipline on performance.
- b. Motivation strengthens work discipline because there are problems with motivation related to the lack of facilities felt by employees, no remuneration other than salaries, and employees who do not get a day off in one week, so water tourism in Muara Enim Regency needs to improve or increase motivation so that perform better.

7. The influence of organizational culture on motivation and its impact on employee performance at Water Tourism, Muara Enim Regency.

- a. The direct effect of organizational culture on performance is 0.071 even the indirect effect (through motivation) is 0.205205. It means that motivation strengthens the influence of organizational culture on performance.
- b. Motivation strengthens organizational culture because there are problems with motivation related to the lack of facilities felt by employees, no remuneration other than salary, and employees who do not get a day off in one week, so water tourism in Muara Enim Regency needs to improve or increase motivation so that perform better.

5. Conclusion

There is a positive and significant effect of work discipline on employee motivation at Water Tourism, Muara Enim Regency. There is a positive and significant influence of organizational culture on employee motivation in Muara Enim Regency Water Tourism. There is a positive and significant influence of work discipline on employee performance at Water Tourism, Muara Enim Regency. There is a negative and insignificant influence between organizational culture on employee performance at Water Tourism, Muara Enim Regency. There is a positive and significant influence of motivation on employee performance at Water Tourism, Muara Enim Regency. Motivation strengthens the influence of discipline on employee performance in Muara Enim Regency Water Tourism. Motivation strengthens the influence of organizational culture on employee performance at Water Tourism, Muara Enim Regency.

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