The Impact of Product Knowledge and Product Awareness Towards Coffee Bean Quality: A Case Study in Morning Glory Coffee

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Abstract. The abrupt growth in the coffee industry brings about a need to analyze factors influencing coffee bean quality, especially in the region of Pangalengan, West Java. Despite training efforts, there are still inconsistencies in the quality of coffee beans, possibly arising from gaps in the employee product knowledge and awareness. This study aims to analyze these factors and its impact towards Morning Glory Coffee, with a quantitative method involving 45 respondents. The findings focus towards the enhancement of SOP implementation and establishment, to further improve the coffee bean quality and drive future research in this field.

Keywords: *Product Knowledge, Product Awareness, Coffee Bean Quality*.

1 Introduction

1.1 Background

The coffee industry plays a significant role in the world's economy. In the current coffee market, the global consumption is on the rise, growing by 1.7% from the previous year in 2023 to a heaping 178.5 million of 60kg bags of coffee consumed yearly according to the International Coffee Organization [1]. Over the course of approximately three years, it was found that coffee consumption has increased by 20% since January of 2021, reaching a 20-year high [1]. With further analysis of certain geographical areas, the Research and Markets predicted the Asia-Pacific market to follow the same growth trend with a 15.3% growth rate annually up to the year 2030 [1].

West Java ranks as the fourth largest center among the largest Arabica coffee producing areas, alongside Aceh, South Sulawesi, and North Sumatera [1]. Enveritas Global Farmer Study in 2018 found that 99% of the coffee in Indonesia is still produced by smallholders. This is evident in the area of Pangalengan, Bandung, where Morning Glory Coffee Roasters sources most of their coffee. But even so, this area possesses high potential in the coffee industry mainly due to the availability of land suitable for coffee planting [2]. The arabica coffee of Pangalengan even earned the interest of many, entitling itself to be considered as a specialty coffee, indicated by the name "Java Preanger" given in 2012 [2].

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Arabica coffee dominates 59% of the total smallholder coffee plantation area in West Java [1]. In areas such as Pangalengan, a conducive environment is naturally available, supporting the optimum growth of Arabica coffee plants. The standard and proper conditions for Arabica coffee plants include a geographic area with altitudes of 1.400-1.800m above sea level with temperatures ranging from 15-21 °C [3]. According to [4], Arabica coffee is higher in quality compared to Robusta, with a more complex flavor profile and good body. It also possesses unique notes composed of flavors including caramel, chocolate, spicy, and lemon with a bright acidity [4]. With this in mind, coffee roasters like Morning Glory Coffee are creating innovative blends to showcase its high quality while highlighting the various notes they provide.

Recently, the coffee industry was found to have a shift in consumer behavior, requiring coffee producers to keep up with current trends while marrying quality with sustainability, ethical concerns, and health, just to name a few [2]. Research by [5] found that 32% of consumers view quality as one of the most important aspects in a coffee brand. This is further supported through data by the National Coffee Association's 2023 National Coffee Data Trends Specialty Coffee Breakout Report (NCDT Report), where 52% of consumers of 18 years and above, have been found to choose specialty coffee for its quality [1].

In an in-depth interview with Morning Glory Coffee owner, it was noted that there currently exists several concerns with regards to the coffee bean quality despite the firm establishment of training and coffee processing methods. It was then realized that the problem might be rooted in the lack of knowledge and awareness of employees, causing different levels of understanding and implementation of the standard operating procedures (SOP) leading to an inconsistency in coffee bean quality. This study will therefore analyze employee awareness and knowledge specifically towards coffee bean quality parameters and the company's standard operating procedure (SOP) and how this affects coffee bean quality to assist in the development of solutions to this problem.

1.2 Research Problem

1. Lack of product knowledge, specifically in its standard operating procedures (SOP), reflected in the inconsistent coffee bean quality.
2. Lack of product awareness despite sufficient training by Morning Glory management, causing inability to maintain coffee bean quality.
3. The need for further improvement on the coffee bean quality, tackling mainly product knowledge and awareness.

1.3 Research Questions

1. To what extent does product knowledge affect coffee bean quality?
2. To what extent does product awareness affect coffee bean quality?
3. How far is coffee bean quality affected by product knowledge and product awareness?

1.4 Research Objectives

- To analyze the impact of the product knowledge towards coffee bean quality.
- To analyze the impact of product awareness towards coffee bean quality.
- To analyze to what extent coffee bean quality is affected by product knowledge and product awareness.

1.5 Hypothesis

Hypothesis 1o: Product knowledge does not have a significant impact on coffee bean quality.
Hypothesis 1a: Product knowledge has a significant impact on coffee bean quality.
Hypothesis 2o: Product awareness does not have a significant impact on coffee bean quality.
Hypothesis 2a: Product awareness has a significant impact on coffee bean quality.

1.6 Significance of Study

The study is significant for several reasons.

1. Coffee producers can evaluate the effectiveness of their training programs on coffee processing.
2. The study will assist in finding possible gaps and foster improvements in the standard operating procedures (SOP) of Morning Glory Coffee that may contribute to a lack of knowledge and awareness.
3. To assist in future research in their study of a similar field.
4. To analyze how product knowledge and product awareness correlate with quality of coffee beans.

2 Literature Review

2.1 Product Knowledge

Product knowledge refers to the extent to which employees are knowledgeable of the firm's products, as well as how they are able to meet customer expectations [6]. It can be defined as a continuous process of knowledge building through the company internally [6]. According to [7] it also means the ability to understand and capture the usage, analyze the development and applications of a company's product.

Product knowledge assists in improving quality, enabling employees to identify products' standards and the possible defects before it reaches the consumer base [3]. To make improvements employees must thoroughly know the company products, familiarizing themselves with how it is processed, packaged, stored, shipped and also all the materials, functions, colors, and all other aspects of the said product [3]. This way, even the slightest defect will be identified before the products reach the customer base, ensuring that it meets quality standards at all times [3].

In order to do so, there must be a standard operating procedure (SOP) maintained [8]. When employees understand each constituting element in a product and the process it undergoes, specific SOPs can be developed to allow standardization to anticipate upcoming quality issues [3]. This also means being familiar with all the tools and equipment used to develop the product, including the manuals, training, and others [3].

2.1.1 Training

Training is essential in achieving excellence [9]. It is necessary in order to develop competent workers, which ensures all employees are aware of their role in providing

quality for customers [9]. Training can be defined as the means or methods that improve the skills, knowledge, and behavior of all employees, enhancing employee performance [9]. Herold & Fedor [10] added that training also influences skill and attitude. Developing training programs which are effective increases skills and abilities in the complexity of tasks, leading to a highly efficient workforce [11]. Once employees are trained, their capabilities improve and enhance the overall organizational performance [12]. Therefore, it is concluded that a quality training program increases employee capacity, improving their work and quality overall [13].

2.1.2 Skills

Companies possessing skilled labor benefit from products produced with higher average quality [14]. Skilled workers do a better job as to the production process, enabling the supply of high quality goods compared to unskilled workers [14]. Competitiveness is also another aspect that skilled workers bring forth, allowing companies to gain market share in the industry. This is due to the fact that employees equipped with good skills can accelerate the achievement of goals [15]. Skills are defined as the ability of a person to carry out a task [15]. As for research by Dunnett's in Lian [15], skills refer to the capacity required to accomplish tasks, which are developed through training and experience. Skills can be categorized into technical, human relations, and conceptual skills, which fall into physical work skills, social work skills, and mental work skills, respectively [15]. Involved in stages of learning, the three categories of skill come from gradual training for a specific purpose until easy and careful operation is achieved [15].

2.1.3 Standard Operating Procedure (SOP)

A standard operating procedure (SOP) document contains a set of written instructions used continuously within a company [16]. It is crucial in maintaining quality as it outlines the standards as to how to perform tasks, ensuring consistency in the product quality [16]. SOPs describe specifically the activities to be performed, for instance the

usage of machinery or equipment, ensuring quality assurance and its compliance to regulations and set standards [16]. By using SOPs, variation and inconsistencies are minimized as there is a constant implementation of procedures despite the possibility of change (personnel change, etc) [16]. This way, miscommunications and safety concerns are also minimized.

According to [17] through a SOP formulation guideline by the Indonesian Institute of Quality Assurance (*Badan Penjaminan Mutu*), a standard SOP must contain the following aspects:

Purpose, to outline the intent and context of SOP, how it supports the company and why it is necessary.

- Scope, describing the range of processes included, allowing a clear boundary to be formed for certain procedures.
- References, including legal documents and regulations about which to conform.
- Definitions, explaining terminologies or abbreviations to ensure a unified understanding from all parties.
- Responsibilities, identified according to what tasks and procedures are to be taken specifically.
- Procedure description, depicting a detailed explanation of the steps to be taken or the activities completed in order to accomplish a task.
- Flowchart, depiction of the written steps to a certain process.
- Related documents, that enable the accomplishment of certain tasks (templates, forms, etc.).
- Miscellaneous, explaining any additional requirements.

Once an SOP has been formulated, it must undergo a testing period before it can officially be implemented; thus, a trial must be performed and revisions are to be made one to two months following the training period [18]. Additionally, a company must hold at least one evaluation yearly to review and update SOPs [18].

2.2 Product Awareness

To be *aware*, in many contexts, has a variety of connotations [19]. At times, the word "aware" is used the same way "knowing" would [19]. Other times it would be connoted as "taking into account," "being present," "paying attention to," and "thinking about" [20][19][21]. Common to the aforementioned aspects of awareness, they all refer to being able to conceive something [21]. Awareness is also an aspect of mindfulness [22]. Other studies refer to awareness as "one's conscious experience of the mind" [23]. While research by Brown [23] defines it as the "conscious registration of stimuli which involves the five senses and activities in the mind." To be aware also means to feel, think, do, perceive, and sense something [22]. Awareness in practice differs with each

person in terms of the degree and duration in relation to his or her surroundings, feelings, thoughts, and actions [22].

2.2.1 Attitude

Despite the many definitions, *attitude* in its simplest form refers to one's behavior [22]. To this comes many interrelated aspects, including one's personality, values, motivations, and behaviors towards certain things [22]. It is a person's point of view and how that person feels about a certain event, affecting how a person behaves and reflected by their actions [22]. It is a disposition, how one responds to objects or situations and events that triggers a certain behavior [24]. Attitudes are affected by various factors, including sociodemographic variables, which are significant in reasoning one's attitudes towards a certain aspect [24][25]. Gender, for one, is an aspect discussed in studies where it was found that women with their lifestyle practices and social identity are highly likely to exhibit stronger attitudes towards the implementation of sustainable practices, for instance, and that men, on the contrary, focus more on status as their driving force, leading to a more unsustainable consumption [26]. People who are more likely to engage in certain practices are found to be people with favorable attitudes towards the issue, with strong intentions to join [24].

2.2.2 Willingness

Willingness encapsulates many aspects. High employee willingness is able to influence companies to be more innovative and to develop in facing inevitable changes [27]. Generally, willingness refers to the impulse within an individual, a desire to continue gaining new information and further developing oneself [27]. Usually, those who exhibit high willingness have a strong motivation and high-level efforts [27]. When one practices willingness, one makes a decision to act upon motivation in ways that bring about learning [27].

2.2.3 Implementation

The implementation of knowledge gained during training and even from SOP is essential in the development of product awareness in employees. Implementation refers to the practical application of skills and knowledge obtained through development, which involves translating theory into practice [28]. A successful implementation often indicates that employees have high product awareness, contributing largely towards product quality [28]. Implementation may include consistency in applying standard procedures to maintain a uniform outcome with high quality and in monitoring employee compliance to ensure a proper procedure is being followed [29].

2.3 Coffee Bean Quality

Despite being a top contributor to the coffee industry, Indonesia still utilizes manual coffee quality determination systems, posing a threat to efficiency and consistency [30].

Coffee bean quality is generally measured through certification, geographical origin, processing method and quality grade [4]. The main quality indicator is quality grade, given based on the green bean scores [5]. This is based on quality assessment according to the physical attributes of coffee green beans including defects, color and odor [6]. Grading classification systems are based on some, if not all of these criteria: altitude, region, botanical variety, processing method, bean size upon screening, bean shape and color, amount of defect, permissible defects, bean density, and cup quality [7].

The Indonesian standard in coffee grading is known as *Standar Nasional Indonesia* (SNI) *Biji Kopi* [8]. The general quality requirements that must be met are that there must not be any live insects present, no foul odor arising from the beans, a maximum of 0,5% impurities from the total mass, and a maximum of 12.5% water content forming the total mass [9]. Other more specific requirements are based on coffee bean sizes according to processing methods, the number of seeds (beans) and defect grade. Therefore, quality of coffee bean is indicated through its product quality attributes and value

2.3.1 Product Quality

Companies that provide quality products are able to compete in today's economy [31]. Product quality is defined as the degree to which a certain product is able to satisfy customer requirements [31]. Quality is perceived differently by consumers, and it may be judged in terms that are product-based, use-based, value-based, or manufacturing-based perspectives [31]. The quality of coffee beans is divided into two aspects; the physical and cup (sensory) attributes [32]. The physical attributes refer to the size, shape, density, color, proportion of defects, and odor [32]. While sensory quality involves cup quality attributes such as flavor, body, cleanliness, and acidity of the brewed coffee [32]. The two aspects combined are used to determine overall quality and influence coffee prices as well [32].

Defective coffee beans have become widely known as one of the contributors towards coffee quality [32]. Defects can be defined as the presence of foreign material, black color, and fungus and insect damage [5]. Defects are often brought about by either improper formation of the fruit or due to faulty processing [33]. Raw coffee beans that are black or dark brown in color, spongy or bleached, spotted on more than a quarter on its surface, sour, or immature, are also considered defective, which becomes a "substandard" upon grading [33]. Black beans are a result of dead coffee cherries or ones that fall onto the ground naturally due to forces or over-ripening [10].

The assessment of color and defects in coffee determines physical quality of coffee beans, giving each coffee with scores used to classify them into different quality grades. [32]. The top tier grades (grade 1 and 2) are used to determine specialty coffee, which is performed by testing using 10 quality attributes including aroma, flavor, acidity, aftertaste, balance, body, sweetness, uniformity, cleanness and cup preference [32]. As for the sensory aspect, a sensory analysis is conducted with a panel of trained 'cuppers' who specialize in evaluating coffee with scoring methods or a sensory descriptive method (lexicon) [32]. However, this method to a certain degree is relatively subjective compared to physical evaluation; thus both assessment methods might be opted for interchangeably [32].

Morning Glory uses the Specialty Coffee Association (SCA) Coffee Standard manual as a guide to their coffee bean quality measure. For green coffee beans to be considered specialty grade, they must have zero category (1) defects, and five or less category two (2) defects in a 350 gram sample [34]. The color for grading mats must be black, and the grading must be done on a table of two feet long and wide [34]. The defects of coffee beans are summarized into the following categories:

- Category one (1) defect

Table 1. Primary Defect Parameters (SCA, 2018)

Primary Defect	Number of occurrences equal to one full defect.
Full Black	1
Full Sour	1
Pod/Cherry	1
Large Stones	2
Medium Stones	5
Large Sticks	2
Medium Sticks	5

- Category two (2) defect

Table 2.. Secondary Defect Parameters (SCA, 2018)

Secondary Defects	Number of occurrences equal to one full defect
Parchment	2-3
Hull/Husk	2-3
Broken/Chipped	5
Insect Damage	2-5
Partial Black	2-3
Partial Sour	2-3
Floater	5
Shell	5
Small Stones	1
Small sticks	1
Water Damage	2-5

Aside from defects, the SCA requires a physical evaluation to be done to green coffee. This includes the physical aspects such as color, odor, moisture content by weight, and size [34]. A desirable green coffee has a deep, blue-green color. Any green coffee beans that are faded or yellow are undesirable. In terms of odor, non-coffee odor present in green coffee is undesirable (usually caused by contamination in storage, close proximity to other substances, improper drying, or the presence of mold) [34]. As for the moisture level in green coffee, the SCA standard of 10-13% water content for natural processes and a 10-12% for washed coffee must be met [34]. A moisture content that is too high risks the beans will develop mold, while when moisture content is too low, the beans are prone to flavor loss and poor uniformity [34].

To summarize the quality parameters as per the SCA standards, the following table is formulated for a 300 gram sample of green coffee beans:

Table 3. Coffee Grading System (SCA, 2018)

Grade	No. of Defects	Size	Moisture Content
Specialty Grade (1)	<5 full defects	Max 5% above/below screen size	9-13%
Premium Grade (2)	<8 full defects	Max 5% above/below screen size	9-13%
Exchange Grade (3)	9-23 full defects	Max 5% below screen size 14	9-13%
Below standard (4)	24-86 defects	-	-

2.3.2 Value

Values are understood to be a consumers' conclusion of the product used and are related to prices [35]. It contributes to one's consideration upon purchasing or choosing a certain product [35]. Value is also described as the benefit minus costs that the consumers and producers get from the products, leading to an exchange only when both parties are benefitted [35]. Coffee is valued for plenty of attributes, ranging from the flavor to its position in global trade [11].

Into one cup of coffee goes many different economic values, including the price of fresh cherries sold, roasted beans sold, and even what customers pay for a cup of coffee at the shops [11]. But aside from that, other values such as emotional attachments, moral values, affective values and even a sense of identity for being a coffee drinker [11]. The Specialty Coffee Association contributes to the assessment of coffee value by advising a new system based on green grading (physical assessment/grading), descriptive cupping, affective cupping, extrinsic values, and value discovery tool that encompasses variables based on customer preferences. It was found that customers value coffee beyond its identity as merely a drink [12]. Customers also take into consideration the

origins, brand investments, and customized experience when selecting their coffee brand [12]. The Specialty Coffee Association found that customers are willing to pay significantly higher prices if the coffee bean claims to have been grown responsibly and is ethically grown. Aside from that, quality certifications, sustainable practices, cup quality, and location also play important roles in creating customer value [12]. When coffee brands offer an array of selections to meet customer needs, it also adds value, tying off the whole experience, overall [12].

3 Research Methodology

3.1 Type of Study

This study adapts a descriptive quantitative study design, as its purpose is to describe the extent of influence of product knowledge and product awareness towards coffee bean quality in Morning Glory Coffee. In order to be classified as a descriptive research, a study must have the intention to describe an existing phenomenon [4, 5, 6]. Similarly, others define descriptive research as one with the purpose to gather, analyze, classify and tabulate data that explains a current condition in cause and effect [7, 8]. With the above mentioned, this research is classified as a descriptive research, as it aims to expand an existing phenomenon by gathering data and analyzing the cause and effect of its relationship.

3.2 Unit of Analysis

According to [9], unit analysis means the focus of the research or the entity that the study is observing. [10] further elaborates on unit analysis as the "who" or "what" from which information and conclusions can be made. By identifying the different types of unit of analysis, various problems are able to be answered more accurately [20]. Units of analysis may be either individuals, groups, organizations, institutions, cultural units, or societal units in social research [21]. In this research, the unit analysis will consist of employees, mainly the coffee processing staff of Morning Glory Coffee. According to research by [20], analyzing employees as the unit analysis allows insights regarding various business problems. As this research aims to study the employee's product knowledge and awareness, it can be concluded that the unit analysis specific to this study is the employees, which aids in data collection for further analysis of the current business problem.

3.3 Population and Sampling Population Size

The population this research focuses on are coffee processing staff. The sample taken will be specifically those who are working in Morning Glory Coffee, wherein the

research will use the whole of the coffee processing staff in Morning Glory Coffee.

The criteria that must be met by the sample is defined as such:

a. The employee must be a permanent, contract, or daily worker, manager, or trainee of Morning Glory Coffee.

b. The employee is a coffee processing staff member, meaning those who are involved in the coffee process starting from sorting up to roasting.

c. The employee has been working in the company for at least 1 month prior to the data collection period.

With the above criteria, a total of 45 respondents were obtained.

4 Results and Discussion

4.1 Reliability Test

Table 4. Cronbach Alpha Reliability Test (SPSS Output, 2024)

Cronbach's Alpha	N of Items
0.899	17
0.873	12
0.935	10

Based on the table above, it is shown that all variables have an alpha coefficient greater than 0.8. Therefore, it can be concluded that all variables from the questionnaire are considered strong and reliable.

4.2 Descriptive Analysis

Table 5. Product Knowledge (SPSS Output, 2024)

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
TRA1	45	1.00	5.00	3.8222	.86047
TRA2	45	1.00	5.00	3.6889	.94922
TRA3	45	1.00	5.00	3.8444	1.10691
TRA4	45	1.00	5.00	3.9111	.97286
TRA5	45	2.00	5.00	4.0444	.79646
SKL1	45	2.00	5.00	3.8222	.83364
SKL2	45	1.00	5.00	3.6000	.98627
SKL3	45	1.00	5.00	3.6444	1.04785
SKL4	45	1.00	5.00	3.4889	1.03621
SKL5	45	2.00	5.00	3.6889	.82082
SOP1	45	1.00	4.00	2.5556	.78496
SOP2	45	1.00	4.00	2.4000	.91453
SOP3	45	1.00	4.00	2.2667	1.00905
SOP4	45	1.00	4.00	2.6444	.71209
SOP5	45	1.00	4.00	2.6222	.77720
SOP6	45	2.00	4.00	2.7778	.63564
SOP7	45	1.00	4.00	2.5556	.81340
Valid N (listwise)	45				

Based on the descriptive data analysis above, it can be seen that most of the respondents agree that Morning Glory has competent trainers when providing training for all its employees (($\bar{x}$ = 4.0444, strong relationship). They also agree that the company updates their training materials and keeps their modules up to date ($\bar{x}$ = 3.9111, strong relationship). However, in terms of SOP there are many aspects needing improvement, among them are the fact that Morning Glory does not update their SOP regularly according to standard (at least one yearly ($\bar{x}$ = 2.2667, neutral) and that the available SOPs are not well organized, making it difficult for the employees to understand ($\bar{x}$ = 2.4000, neutral).

Table 6. Product Awareness (SPSS Output, 2024)

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ATT1	45	2.00	5.00	4.0889	.84805
ATT2	45	2.00	5.00	3.7556	.93312
ATT3	45	3.00	5.00	4.1778	.64979
ATT4	45	2.00	5.00	4.0889	.76343
ATT5	45	2.00	5.00	4.0000	.76871
WIL1	45	3.00	5.00	4.1333	.58775
WIL2	45	3.00	5.00	4.0444	.63802
WIL3	30	2.00	5.00	4.1000	.92289
WIL4	45	1.00	5.00	4.0222	.72265
IMP1	45	1.00	5.00	2.4222	.75344
IMP3	45	1.00	5.00	3.6889	.99595
IMP4	45	1.00	5.00	3.3556	1.11101
Valid N (listwise)	30				

In terms of product awareness, the employees show a good attitude and willingness, especially with how much they care about how coffee is processed as it affects quality ($\bar{x}$ = 4.1778, strong relationship), and how they demonstrate a strong will to apply standard coffee processing procedures that are according to SOP in the workplace ($\bar{x}$ = 4.1333, strong relationship). However, the employees need to improve on the implementation of SOP, especially in terms of routinely reviewing SOP ($\bar{x}$ = 2.4222, weak relationship) and holding meetings to update the employees on new SOPs or to refresh on the existing ones ($\bar{x}$ = 3.3556, strong relationship).

Table 7. Coffee Bean Quality (SPSS Output, 2024)

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
QTY1	45	1.00	5.00	3.6889	.90006
QTY2	45	1.00	5.00	4.0000	.79772
QTY3	45	1.00	5.00	3.8889	.93474
QTY4	45	2.00	5.00	3.8000	.75679
QTY5	45	1.00	5.00	3.9111	1.01852
VAL1	45	1.00	5.00	4.0444	.76739
VAL2	45	1.00	5.00	4.0444	.76739
VAL3	45	2.00	5.00	4.0667	.71985
VAL4	45	2.00	5.00	4.0444	.85162
VAL5	45	1.00	5.00	4.0222	.86573
Valid N (listwise)	45				

In terms of coffee bean quality, the employees agree that the coffee they produce gives value to its customers in terms of the way the high quality attracts customers to purchase the products ($\bar{x}$ = 4.0667, strong relationship) and also how they are willing to pay more to consume Morning Glory products ($\bar{x}$ = 4.0444, strong relationship). But in terms of the product quality itself, improvement needs to be made especially in minimizing the percentage of defects ($\bar{x}$ = 3.6889, strong relationship) and in maintaining the size uniformity of the coffee beans produced ($\bar{x}$ = 3.8000, strong relationship).

4.3 Model Summary

Table 8. Model Summary (SPSS Output, 2024)

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.632[a]	.399	.370	5.31722

a. Predictors: (Constant), TOTALX2, TOTALX1

b. Dependent Variable: TOTALY

The above table shows the model summary of the data. As the R value is 0.632, it indicates a strong correlation between all the independent variables and the dependent variable. The Adjusted R Square value is 0.370 or 37 percent. This indicates that the sum of the independent variables impacts the dependent variable by 37%. The remainder (100% - 37% = 63%) are contributed by other factors that are not examined in this research.

4.4 Hypothesis Summary

Table 9. Hypothesis Conclusion (SPSS Output, 2024)

Hypothesis	T-Test (2.01808)	F-Test (3.220)	Hypothesis Conclusion
H1: PK > CBQ	1.501	13.932	H1a is not accepted
H2: PA > CBQ	3.133		H2a is accepted

1. Lack of organization and workflow charts in SOP, making it difficult and less efficient to understand or learn, leading to inconsistencies in product knowledge.
   Conclusion:
   a. Simplify template and language. Add in graphics and images to aid understanding.

2. Employees do not read SOP independently despite management lacking in holding routine meetings.
   Conclusion:
   a. Schedule study cycles to reflect on current issues and gain feedback. Use digital platforms to increase motivation and ease for employees to study independently.
   b. Schedule routine assessment to measure effectiveness.

3. Need future improvement in maintaining the uniformity and minimizing the defects present in the coffee beans produced.
   Conclusion:
   a. Invest in sorting machines to increase efficiency and accuracy compared to manual process.

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