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Editorial

Information Management and Business Review (IMBR) provides a unique platform for scholars around the world to share their knowledge and publish research work in the fields of information management, business, management and related disciplines. The work submitted for publication consideration in IMBR should address empirical and theoretical developments in the subjects related to the scope of the journal in particular and allied theories and practices in general. Scope of IMBR includes: subjects of finance, accounting, auditing, cost & management accounting, financial psychology, financial literacy, marketing, information management, human resource management, knowledge management, innovation, change management, enterprise management, e-commerce and information system. Author(s) should declare that work submitted to the journal is original, not under consideration for publication by another journal and that all listed authors approve its submission to IMBR. It is IMBR policy to welcome submissions for consideration, which are original, and not under consideration for publication by another journal at the same time. Author (s) can submit: Research Paper, Conceptual Paper, Case Studies and Book Review. The current issue of IMBR comprises papers of scholars from South Africa, Vietnam, Ethiopia, UK, France and Indonesia. Profile Features of Mobile Network Customers as a Basis for Market Segmentation, Targeting and Positioning, Determinants of Farm Households' Willingness to Accept (WTA) Compensation for Conservation Technologies, A Systematic Policy of Misinformation on the Toxicity of Asbestos, The Effect of Biographical Variables on Self-Efficacy of Management Accounting Students and The Quality of the Government Financial Statements are some of the major practices and concepts examined in these studies. Journal received research submission related to all aspects of major themes and tracks. All the submitted papers were first assessed by the editorial team for relevance and originality of the work and blindly peer-reviewed by the external reviewers depending on the subject matter of the paper. After the rigorous peer-review process, the submitted papers were selected based on originality, significance, and clarity of the purpose. The current issue will therefore be a unique offer, where scholars will be able to appreciate the latest results in their field of expertise, and to acquire additional knowledge in other relevant fields.

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PAPERS

Information Management and Business Review (IMBR)
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Profile Features of Mobile Network Customers in Ghana as a Basis for Market Segmentation, Targeting and Positioning

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Abstract: The mobile network industry of Ghana continuously experiences tremendous growth and opportunities for citizens and subsidiary companies worldwide, yet little is known about the profile features of mobile network customers. Mobile network operators need to understand the joy, fun, taste, preferences, feelings, emotional behaviour, lifestyle and satisfaction the individual customers derive from their offerings. This will enable the businesses to design effective and appropriate programmes which appeal to the various segments in which they operate and to assist the network operators to position themselves well in the minds of the target market. The primary objective of this paper is to establish a mobile network customers' profile, as well as to compare and explore the differences or similarities between their experience dimensions, regarding their age, gender, education and the region they reside in. This information can assist network operators to decide how to treat each segment and whether to offer the same or unique marketing and positioning strategies to the groups. The study adopted a descriptive design and quantitative approach and a total of 415 participants completed the survey, which was analysed through frequency distribution and IBM Amos version 25 with multivariate variances conducted. Statistically significant differences were identified in age, gender, level of education and respondents' regional locations that could provide operators with sustainable revenue from continued investment.

Keywords: *Segmentation, Targeting and Positioning, Mobile Customers' Experience, Experiential Mix, Customer Experience, MNO's, Ghana.*

1. Introduction and Background

Ghana's mobile industry has contributed to the economic growth, income generation of the country and households, and reduced poverty (Jenny & Isaac, 2010). The success emanates from the institution of the government of Ghana's policies and reforms as well as the establishment of the National Communications Authority [NCA] and Ministry of Communications in 1996 and 1997, respectively (Abudu, 2011). These institutions were purposely established to steer the affairs of the network operations, which led to the increase of operators in the sector from three to six in 10 years (Arthur, 2016). Despite the mobile network industry being one of the growing sectors in Ghana, it is still confronted with numerous challenges. Recently, there has been stagnation in the industry's growth due to what customers refer to as dissatisfactions, negative experiences, and mixed feelings associated with their encounter with network operators (Quaye, 2012). Also, the industry is characterised by intense competition and different consumer segments with different languages, tribes, religions, and cultures (Tamakloe, 2019). The industry has also been faced with rampant obscurity of the tariffs, poor quality of services, lack of customer care and the absence of service level agreements (Arthur, 2016). Some network operators have negatively affected customers' experiences with their offerings through persistent shutdown of operations (Lokko, 2016).

Grundey (2008) explains that customers' consumption experience is not limited to the sole shopping experience. For instance, the experience customers derive at the point of sale. In one way or the other, the businesses' activities influence customers' experience either negatively or positively, which needs to be monitored for success. Mobile network operators in Ghana, even though the sector is growing in numbers and supporting the Ghanaian economy, suffer from the problems mentioned, leading to negative customer experiences. Thus, the mobile network operators lose out on the benefits of providing positive experiences, namely loyalty to the business, providing positive word of mouth about the business and satisfaction (Tussyadiah, 2016; Worsfold, Fisher, McPhail, Francis, & Thomas, 2016). Interestingly, there appears to be limited research into the profile of individuals who participate in purchasing of mobile products and services in Ghana. Moreover, it is important to establish the differences between age, education, gender and regional groupings, regarding their experiences when they sense, think, feel, act and relate to the network operators,

and their brands, products or services. These will assist the managers of network operators establish the profile of customers and further segment, target and effectively position (STP) itself in the market (Hunt & Arnett, 2004). STP originated in the field of strategic marketing and involves three approaches that make segmentation successful (Kotler, Armstrong, & Tait, 2016).

Segmentation refers to dividing a market into different groups of customers who possess distinctly similar needs and product/service requirements. According to Smith (2010), segmentation enables an organisation to understand their market, competitors' strategies, business customers, and prospect base and be equipped to compete effectively. Targeting allows an organisation to concentrate on segments uncovered and to be focused on specific marketing campaigns and programmes. Positioning allows the organisation to position its market offerings and messages in the target market's minds (Kotler, Armstrong, & Tait, 2016). The study aimed to determine whether mobile customers experiences differ regarding their age, gender, education, and region of the location to such an extent that different clusters of customers result, which warrant a differentiated managerial and marketing approach to mobile network experience. This article starts with a literature review on mobile network operators in Ghana, customer experience and profiles relevant to the study, followed by the research methodology, results and conclusions. Managerial implications and recommendations are presented in the last sections of the study.

2. Literature Review

Mobile Network Operators in Ghana: Mobile network operator (MNO) is also known as a cellular organisation (business), wireless service provider, mobile network carrier, or a wireless carrier (Chepkemoi, 2017). Mobile network operators involve those bigger cellular phone carriers that mostly own equipment and offer mobile phone services to the public or customers (Fendelman, 2017). The MNOs are entities involved in controlling or owning the required infrastructure necessary to sell and deliver mobile products and services to their subscribers. MNO's offer services, including billing, backhaul infrastructure, computer systems and marketing, wireless network infrastructure, repair organisations, radio spectrum allocation, and customer care (Chepkemoi, 2017). MNO's have the capabilities, experience, and track record to offer customers the fastest and most secure authentication. The organisations authenticate customers' devices on the organisation's networks and provide customers with the needed safest voice calls, messaging, internet access, and other services while safeguarding their privacy and personal data (Global System for Mobile Communications Association [GSMA], 2016). Currently, there are five MNOs in Ghana, namely, Scancom Ghana (MTN), Vodafone Ghana, Millicom Ghana (TIGO), Airtel Ghana, and GLO Ghana.

The merger of Airtel TIGO (Yiadom, 2019) was non-existent at the beginning of the study; therefore, these organisations were treated individually. In addition, Expresso was not discussed. The MTN Ghana, owned by Scancom Ghana Limited, began in Ghana in October 1996 using GSM 900 technology with the name Spacefone (Nimako, Azumah, & Donkor, 2010). The organisation started with the brand name Areeba until it was purchased by MTN and rebranded as MTN Ghana (Nimako, Azumah, & Donkor, 2010). The organisation provides network service and high-speed internet access using integrated networks, namely, 3G, 4G LTE, EDGE technologies, and MTN Turbo Net (MTN Ghana, 2014). TIGO cellular phone network is owned by Millicom Ghana and part of Millicom International Cellular in South Africa, the UK, and Luxembourg (Yiadom, 2019). The mother company, Millicom International, is considered part of the biggest global operators of cellular telephony services, which has numerous investments worldwide (Nimako, Azumah, & Donkor, 2010). The cellular operator provides services to over 57 million customers, including fixed and mobile communications, cable and satellite television products, Mobile Financial Services (MFS), music and sports, and other local content (TIGO Annual Report, 2016). Also, Vodafone Ghana is a subsidiary of Vodafone Group Plc, offering Ghanaian customers fixed broadband and mobile modems (Aboagye-Da-Costa, 2012; Yiadom, 2019).

The cellular also provides bundled services and unlimited TV programmes via "Kwese Play" and Vodaphone one family (Ghanaian Times, 2019; Ghana News Agency [GNA], 2018). Also, Ghana Telecom is the incumbent provider of telecommunication services in Ghana (Lancaster, 2019). Vodafone Ghana purchased 70% of shares of the government-owned and the people of Ghana from Ghana Telecom (Nes, 2017). In addition, Airtel Ghana is part of Bharti Airtel Limited (Aboagye-Da-Costa, 2012). The network operator was introduced

in the Ghanaian market in November 2010 as a subsidiary of Airtel International's 16 operating countries (Asabere, Getor, & Asafo-Adjaye, 2012). Airtel network offers 2G, 3G and 3.75G services in selected cities and regions based on the available resources and infrastructure (Aboagye-Da-Costa, 2012; Nimako, Azumah, & Donkor, 2010). On the other hand, Glo Network is owned by Globacom Limited, rated as Africa's fastest-growing mobile operator (Yiadom, 2019; Aboagye-Da-Costa, 2012). Globacom Nigeria Limited is the holding company of Glo Ghana (Nimako, Azumah, & Donkor, 2010). The operator provides a fibre optic cable to enable high speed, reliable and cheaper internet, and mobile services to Ghanaians (Aboagye-Da-Costa, 2012). There are also products like Aye de Keke, a 15% bonus on recharges, the GLO Café App and GLO welcome back packages (Dowuona, 2017).

Customer Experience and Experiential Mix: The concept of experience does not have an exact definition and meaning, and it is holistic, personal, and situational and characterised as being positive or negative (Kalbach, 2016). Organisations utilise experiences to distinguish themselves from rivals in the industry as well as facilitate the building of strong loyalty, bonds, and positive word of mouth with customers (Walls, Okumus, Wang, & Kwun, 2011). Customer experience involves customers' actions, thoughts, and feelings regarding the brands, products/services and the entire offering of the organisations over time (Yiadom & Tait, 2021; Kalbach, 2016). It can be subjective or objective and intangible depending on how the customer perceives itself regarding the situations and circumstances on the organisation's, brands, and products or services (Ketchen, 2018; Kalbach, 2016). Customer experience thoroughly investigates marketing as an idea that considers both sensibility and rationality. It must be noted that the customer's decision to make a purchase or acquire a conceived service is mostly influenced by the way they sense, feel, think, act, and relate to a particulate organisation, brands, and products or services (Hultén, 2011). Customer experience refers to the unforgettable memories deeply enshrined in the customer's mind (Lee, Hsiao, & Yang, 2011).

It must be noted that the extent of memorability of customers are strengthened in a situation where the customer experience is special (Yiadom, 2019). The more memorable experiences are the easier it facilitates individual positive outcomes which are beneficial, for instance, the attainment of individual growth or renewal, mental, spiritual and psychological benefits and value (Radder, Van Eyk, & Koekemoer, 2019; Jefferies & Lepp, 2012). Positive and pleasant customers' experiences are mostly unique and differ individually; thus, experiences are based on the person, the general situation and the environment under which it prevails (Walls, Okumus, Wang, & Kwun, 2011). Positive and pleasant customer experiences assist organisations to create growth value, sales, and profit value as well as return on capital employed value successfully (Yiadom & Tait, 2021). Customer experience consists of the sense experience, feel experience, think experience, act experience, and relate experience (Yiadom & Tait, 2021). Sense experience relates to the customer senses as well as the experiences they derive from seeing, hearing, touching, tasting, and smelling (Yiadom & Tait, 2021); (Wibowo, Chen, Wiagin, Ma, & Ruangkanjanases, 2021).

The think experience concerns the customers creative and theoretical practices (Wibowo, Chen, Wiagin, Ma, & Ruangkanjanases, 2021; Ananta, 2016) and the intelligence organisations need to create composed experiences which are cognitive and also solve problems via the artistic involvement of customers (Gao, Fan, Li, & Wang, 2021; Yiadom, 2019). The feel experience concerns the feelings and emotions an organisations customers' have towards the business, brands, products, or services (Wibowo, Chen, Wiagin, Ma, & Ruangkanjanases, 2021; Same, 2014). Also, the feel experience refers to the customers' mood and feelings concerning the organisations, brands, and products (Datta, 2017; Yang & He, 2011). In addition, act experience concerns the physical behaviours, lifestyles and interactions between the organisations and their customers (Yiadom & Tait, 2021; Conti & Peachlivanidou, 2016). The act experience assists organisations to amend customers' behaviours, lifestyles, and social interactions with societies via the business offerings to ensure positive experiences. Relate experience merges the sense, feel, think, and act experience variables to evoke positive customer experiences (Wibowo, Chen, Wiagin, Ma, & Ruangkanjanases, 2021; Gita, 2017).

Profiling Mobile Network Customers: Marketers have used demographic characteristics as mechanisms to target customers as they are often associated with consumer needs and wants (Kotler, Armstrong, & Tait, 2016). Customers' socio-demographic characteristics are utilised to set the pace for effective market segmentation, targeting and positioning, thereby facilitating marketing and promotional campaigns (Jonas, Radder, & van Eyk, 2019). This article considered the customer profile variables, namely, age of the customer,

gender, educational level, and their regional locations in Ghana. The elements have been employed by academics in several studies as the basis of marketing segmentation (Radder & Han, 2011) and a significant positive relationship were found between these variables regarding network operators' experience, which was deemed as relevant customer profile variables. The customers' age in segmentation, targeting and positioning are very important in marketing decisions as it exhibits different lifestyles, behaviour, taste and preferences (Kotler, Armstrong, & Tait, 2016; Theodoridis & Chatzipanagiotou, 2009), mostly relating to their needs and wants (Kotler & Keller, Marketing Management, 2012).

Also, people in different stages of their life cycle behave differently throughout the various stages and those in the same position of their life cycle' behaviour might not be the same as they progress in life (Kotler & Armstrong, 2014). For instance, a person going into another marriage after a divorce, the one with the ageing, as well as the one preparing and having in mind to buy a new home. Marketers can seize opportunities these life stages present as well as assist the customers to cope and solve their major concerns (Kotler & Armstrong, 2014; Gina, 2006). The customer's age has also been found to have a significant positive influence on the judgement concerning edutainment (i.e., education and entertainment) (Radder & Han, An examination of the museum experience based on Pine and Gilmore's experience economy realms, 2015). According to the study conducted by Juwaheer (2007), age has a significant positive relationship with 8 out of 9 quality dimensions. As a result, it is hypothesised that:
H1: Different customer age groups experience mobile network operators differently.

The mobile customers' gender also constitutes the second aspect of the profile variables researched in the study. Individuals gender mostly influences and shapes their purchasing and consumption decision. It must be noted that the decision making, attitude and behaviour of male and female gender differs significantly (Kotler & Keller, Marketing Management, 2012). These are because of the connections and associations gender play with their genetic makeup and socialisations (Leonard, et al., 1995). According to Greg and Dominique {2004), females decision making, and behaviour are more "communal-minded" whilst males are "self-expressive and goal-oriented". Also, the lifestyle and behaviour of men are more shaped by the conditions in their immediate environment and are mostly invited by business owners to examine and feel a product before purchasing. On the other hand, women's decisions making is shaped by one or more pieces of information in their surroundings and they make outright purchases (Kotler & Keller, Marketing Management, 2012). Significant differences regarding mean scores of gender groups of banking service providers and their size of liquid assets were discovered in a study (Seiler, Rudolf, & Krume, 2013). According to Deshwal (2016), there is a statistically significant difference between customers who were men and women regarding peace of mind, with a higher percentage of females than males. It must be noted that customer experiences, as found in the study of Yiadom (2019) are influenced by the dimensions (mix) namely, sense, feel, think, act, and relate.

Thus, the experiences of male and female customers are influenced by their sense, feel, think, act, and relate dimensions and can facilitate segmentation, targeting and positioning the business, brands and products or services in their minds. Since the male and female groups sense of hearing, listening and feeling, affective experience (feel), creative cognitive experience (think), physical experience, behaviour and lifestyles (act) and social identity (relate) differs significantly. Both can be segmented, targeted and be positioned separately. Thus, marketing campaigns and programmes, advertisements, and promotions can be designed to target a different gender group as a separate market segment. Network operators can adopt or design different promotional strategies to target males and females' groups separately. In addition, through positioning, businesses can design effective advertisement or marketing campaigns, deepening or concentrating on their unique selling points or messages to target both genders separately. This article explores whether a difference and similarities exist between the profile variables of mobile network customers in Ghana regarding their experiences with their operators and assist the business in categorising these profiles into different market segments, targets, and positioning. Further, this study explores these profiles variables that influence customer experience mix (dimensions) to assist management in decision making. Based on these analyses, it is hypothesised that:
H2: Different gender classifications experience network operators differently.

Profile variable different level of education is important as it influences individual customers' needs, expectations, and perceptions in an industry. Customer's educational levels influence their social identity and self-concept, which further impacts their taste, preferences, and behaviour. According to Schmitt (2010), experience marketers in the experience economy uses memorable experiences for their customers that are entertaining or educational. Also, the experience must be infused in the entire human resource functions and as a training mechanism and objectives of a business (Cetina, Akovab, & Fazil, 2014). It must be noted that education also results in different customer satisfaction (Theodoridis & Chatzipanagiotou, 2009). Individuals' educational attainment influences what they eat, taste, preferences, lifestyle, and attitude (Kotler, Armstrong, & Tait, 2016). This also implies that customers' educational levels influence their sight, taste, sound, touching, and smelling (sense experience). Additionally, customers' educational levels may impact their affective experience (feel), creative cognitive experience (think), physical experience, behaviour, and lifestyles (act) and social identity experience (relate). Concerning the mobile network sector, customers with a higher educational background might use critical thinking before deciding which operator to have dealt with. Others might consider their social status, association with friends and educational achievement. This also means that the way businesses appeal to and package their marketing and promotional messages might not be the same as each educational level of customers might not be the same. These call for the need to group the level of education of customers into profile segments with equal levels of thinking to target.

Design different marketing, promotional and advertising messages. Further, to position organisations in the minds of the customers. Consequently, it is hypothesised that:
H3: Customers with differing levels of education experience network operators, and their products/services or brands differently.

Customers' regional location is the final variable investigated in the current study. The region as a method of geographic segmentation enables a business organisation to divide its market into regional segments (Kotler & Keller, Marketing Management, 2012). Afterwards, an organisation can decide to do business in a few sections or all the regions with special attention given to local market characteristics. Organisations can also decide to implement marketing strategies and programs purposely to the needs and wants of customers in the regions targeted (Kotler & Armstrong, 2014). This target market concerns the identification of the most profitable market segments to the organisation. It must be noted that marketers nowadays have moved from serving mass markets.

To targeting smaller markets by offering customised marketing programmes (Camilleri, 2018). Organisations can divide markets into regions because one or more of these segments could differentiate customers from one sector to the other. For instance, people living in wet and cold climates will opt for a warm, sunny country for holidays (Camilleri, 2018). The culture, religion, and lifestyle of people within the various regions of Ghana differ significantly, therefore, after targeting organisations will be able to establish their positioning strategies in the target market in order to strengthen current and prospective customers' perceptions regarding the organisations' offerings. It must be noted that customers' geographic location can impact their affective experience (feel), creative cognitive experience (think), physical experience, behaviour, and lifestyles (act) and social identity experience (relate) and their sensorial thinking. It is therefore hypothesised that:
H4: Customers in different regions experience mobile network operators in Ghana differently.

3. Research Methodology

This article forms part of a major study regarding value creation through experiential marketing. Ten regions in Ghana namely Ashanti, Brong Ahafo, Greater Accra, Eastern, Central, Northern, Western, Upper West, Volta, and Upper East constituted the study. The target population included the customers or subscribers of the mobile network operators who are in the ten regions of Ghana. The study's sample was confined to mobile subscribers, approximately a total number of 40,934,875 in the country (National Communications Authority , 2019). A proportional sample of customers belonging to these network operators was taken with a total number of 384 participating in the survey. Additionally, through convenience sampling 31 customers were added bringing the total number of subscribers interviewed to 415. The IBM Amos version 25 web was utilised to capture the study's data collected through a hard copy self- administered questionnaire reflecting

on the literature review. Before the data collection, a total pool of 35 items was created to examine the five-customer experience mix (experiential dimensions). A larger number of these items were derived from the work of Schmitt (2010; 1999) and Gita (2017). Pilot testing was conducted on 50 participants in order to ensure the validity and reliability of the constructs in the study. The study's reliability test through Cronbach Alpha coefficient exceeded the minimum threshold of 0.7, thus a total score of 0.916 was obtained for all the customer experience dimensions namely sense, feel, think, act, and relate experience.

4. Results

This section presents sets of results relating to the profile of respondents' experiences towards network operators, the characteristics of the total sample, and the comparison of participants regarding their experience based on the demographic and geographic characteristics (gender, age, level of education, and region).

Profile of Respondents: Table 1 displays a summary of the characteristics of the total sample of customers or subscribers who participated in the study.

Table 1: Demographic and Geographic Information Pertaining to Respondents (n=415)

VARIABLE	FREQUENCY	PERCENTAGE
GENDER		
Males	218	52.5%
Females	197	47.2%
Total	**415**	**100%**
AGE		
19-30	215	51.8%
31-40	105	25.3%
>41	95	22.9%
Total	**415**	**100%**
EDUCATION		
No schooling	21	5.1%
Primary school	36	9.2%
High school	116	28%
Certificate/Diploma/Degree	180	43.4%
Post-graduate qualification	60	14.5%
Total	**415**	**100%**
TYPE OF CUSTOMER		
Individual	271	65.3%
Agent	36	8.7%
Retailer	45	10.8%
Wholesaler	35	8.4%
Other	28	6.7%
Total	**415**	**100%**
CURRENT PREFERRED NETWORK OPERATOR		
MTN	209	50.4%
Vodafone	111	26.7%
Airtel	51	12.3%
TIGO	31	7.5%
GLO	13	3.1%
Total	**415**	**100%**
REGION		
Brong Ahafo	107	25.8%

Ashanti	113	27.2%
Northern	21	5.1%
Greater Accra	65	15.7%
Eastern	29	7%
Volta	12	2.9%
Western	18	4.3%
Upper East	8	1.9%
Upper West	15	3.6%
Central	27	6.5%
Total	415	100%

Descriptive Statistics: Descriptive statistics for the mobile network operators regarding their experiences were conducted and Table 2 below displays the outcome. These provide the average mean scores of the customers regarding their sense, think, feel, act, and relate experiences to the MNO's, their products/services, activities and programmes.

Table 2: Descriptive Statistics

Variable	Descriptive Statistics Factor Name	Mean	Std. Dev.
SE	Sense experience	4.0294	0.49207
TE	Think experience	4.0704	0.52426
FE	Feel experience	4.0530	0.52280
AE	Act experience	4.0231	0.52645
RE	Relate experience	4.0863	0.48869
Experiential Mix	Experience dimensions	4.0524	0.41532

The mean scores ranging from 4.0294, 4.0704, 4.0530, 4.0231, 4.0863, and 4.0524 were obtained from the sense, think, feel, act, and relate experiences (CX). These results indicate that respondents on average concord with the items contained in the experience mix (CX). It must be noted that in a situation whereby a low score is obtained it denotes that respondent disagreed with the variable items as well as higher values indicate respondents' agreement with the variable items in the study. Consequently, on average, the various profile features of the respondents in totality agreed with the variables contained in the customer experience in the study t (i.e., sense, think, feel, act, and relate experience).

Analysis of Variance (ANOVA, and Multiple Comparisons): ANOVA was used to determine whether significant differences exist among participants of the five selected mobile customer experiences (i.e. sense experience, feel experience, think experience, act experience, and relate experience) base on the respondents' demographic profile variables (age, level of education, type of customer, and current preferred customer). The ANOVA results are displayed in Table 2.

Table 3: ANOVA Results on the Experiential Mix (Customer Experience)

Independent Variables	Dependent Variables (CX) Experience Dimensions									
	Sense Experience		Feel Experience		Think Experience		Act Experience		Relate Experience	
	F-values	p-values	F-values	p-values	F-values	p-values	F-values	p-values	F-values	p-values
Age	4.998	0.002	7.408	0	4.238	0.006	4.782	0.003	2.42	0.066
Education	6.382	0	5.251	0	4.261	0.002	4.369	0.002	4.254	0.002
Type of customer	1.779	0.132	0.909	0.459	1.563	0.183	2.432	0.047	1.174	0.322
	1.325	0.26	1.753	0.137	1.707	0.148	1.705	0.148	1.421	0.226

Preferred network operator

(*p<0.05; **p<0.001)

The ANOVA conducted on age groups and experience mix (i.e., sense experience, think experience, feel experience, act experience, and relate experience) displayed the following: sense experience df=3, f=4.998, p=0.002, think experience df=3, f=4.238, p=0.006, feel experience df=3, f=7.408, p=0, act experience df=3, f=4.782, p=0.003, relate df=3, f=2.42, p=0.066, experience mix df=3, f=6.877, p=0. These values indicated a significant difference between average scores of age groups and experiential mix (CX). To understand these values further, t-test multiple comparison was conducted depicting the following values for the experiential mix, between age groups 19-30 and 31-40, Sig=0.23, between age groups 19-30 and 41-50, Sig=0, and between age groups 31-40 and 51-59, Sig=0.04. These results show a little significance in the values concerning the threshold of 0.05; as a result, there was a significant difference with regards to the average age scores of the age groups to customer experience (experiential mix). The outcome also indicates that the age~~s~~ groups studied expressed different opinions concerning customer experience. Additionally, the Tukey HSD multiple comparison showed a Sig value of 0.05 for the age group 19-30 and 51-59; Sig value of 0.084 for age group 31-40 and 41-50; and Sig=0.999 for ages 41-50 and 51-59. A larger significance was found for the variable, as the value was above the threshold of 0.05. These results also indicate no significant differences with regards to the average age group scores studied concerning the customer experience. The results also show that age groups shared similar views regarding customer experience (CX). Concerning educational levels and customer experience.

The following results were realised: sense experience df=4, f=6.382, p=0, think experience df=4, f=4.261, p=0.002, feel experience df=4, f=5.251, p=0, act experience df=4, f=4.369, p=0.002, relate experience df=4, f=4.254, p=0.002. Therefore, depicting a significant difference between the level of education and experiential mix (CX). Based on these results, the t-test multiple comparison was conducted given the following values for experiential mix (i.e., sense experience, think experience, feel experience, act experience, and relate experience) between primary school and certificate/diploma/degree, Sig=0.003; between high school and certificate/diploma/degree, Sig=0; and between certificate/diploma/degree and post-graduate qualification, Sig=0.015. Consequently, significant differences were found between the average scores of the participants' level of education in the study and customer experience. The scores for the educational level of the respondents were smaller in value compared to the 0.05 threshold. The outcomes from the educational level also depict that there was no significant difference among the educational level. Consequently, different opinions were held by members concerning the educational level and customer experience. These results also depicted that the various educational levels held different views regarding customer experience. Further, higher values were found with regards to the test results for the following educational levels, between no schooling and primary school, Sig=0.829; no schooling and high school, Sig=0.882; no schooling and certificate/diploma/degree, Sig=0.507.

And no schooling and concerning post-graduate qualification, Sig=0.994. In addition, larger values were found between primary school and high school, Sig=0.997; primary school and post-graduate qualification, Sig=0.904; and high school and post-graduate qualification, Sig=0.947. These values depict that no significant differences were found between the participants in those educational groups, thus the Sig. values for the groups were above the minimum threshold of 0.05. Consequently, these results indicate that the respondence in the education groups held similar views concerning customer experience. The next ANOVA test was concerned with type of customer-on-customer experience (experiential mix), as indicated in Table 2. The results indicated values as follow; sense experience, df=4, f=1.779, p=0.132, think df=4, f=1.563, p=0.183, feel df=4, f=0.909, p=0.459, act df=4, f=2.432, p=0.047, relate df=4, f=1.174, p=0.322, experience mix df=4, f=2.024, p=0.09. These outcomes show no significant difference in the average values of the type of customer categories for customer experience (experiential mix). Further, the t-test multiple comparison was undertaken to fully understand the differences with the following outcomes for customer experience.

Concerning MTN and Vodafone, Sig value=0.467; MTN and Airtel, Sig value=0.139; MTN and TIGO, Sig value=0.693; as well as MTN and GLO, Sig value=0.31. In addition, the following values were obtained for Vodafone and Airtel, Sig=0.854; Vodafone and TIGO, Sig=0.999; Vodafone and GLO, Sig=0.731; Airtel and TIGO, Sig=0.987; Airtel and GLO, Sig=0.968; as well as TIGO and GLO, Sig=0.881. These indicate that there was no significant difference between the average scores of these groups on customer experience. The group's significance values were above the 0.05 threshold. As a result, these customers groups expressed the same views concerning the customer experiences (i.e., experience mix). Lastly, the ANOVA test refers to the currently preferred network operator on the experiential mix or customer experience (CX) was conducted. The current preferred customer displayed the following values: sense experience, df=4, f=1.325, p=0.26, think experience df=4, f=1.707, p=0.148, feel experience df=4, f=1.753, p=0.137, act experience, df=4, f=1.705, p=0.148, and relate experience df=4, f=1.421, p=0.226, and experience mix df=4, f=2.205, p=0.068. These results indicate that a significant difference between average scores of the currently preferred network operator categories and customer experience was not found.

Thus, the p-value was larger than the 0.05 threshold. As a result, t-test multiple comparison concerning the current preferred network operator and customer experience (experience mix). It must be noted that a greater significance was discovered between the types of customer groups. Concerning the t-test, the requirement is that there is no significance as well as no difference in the views of respondents in cases where the value of Sig. is above the 0.05 threshold. The results from the currently preferred network operator denoted the following: between groups, individual and agent, Sig=0.355; individual and retailer, Sig=0.999; individual and wholesaler, Sig=0.764; and individual and other, Sig=0.848. In addition, these results were found for agent and retailer, Sig=0.716; agent and wholesaler, Sig=0.159; agent and other, Sig=0.225. Also, for the retailer and wholesaler, Sig=0.789; retailer and other, Sig=0.846; and wholesaler and other, Sig=1. These findings showed that all the Sig. values were beyond 0.05, therefore, depicting that no significant difference existed in the type of customer groups concerning customer experience. Consequently, these customers in the categories shared similar opinions concerning customer experience.

Post-Hoc Turkey Test: This section presents the post-hoc test results undertaken using the Turkey test for the factor experiential mix (CX) which involves the sense experience (SE), think experience (TE), feel experience (FE), act experience (AE), and relate experience (RE) based on the ANOVA results obtained. The t-test results are displayed in Table 3 below.

Table 4: Independent Sample T-Test Results for Customer Experience Dimensions

	Levene's Test for Equality of Variances		T-Test for Equality of Means			
	F	Sig.	t	DF	Sig. (2-Tailed)	Mean Difference
Sense experience	0.397	0.529	0.310	412	0.757	0.01486
			0.310	407.401	0.757	0.01486
Think experience	0.030	0.863	-0.438	412	0.662	-0.02241
			-0.437	403.160	0.663	-0.02241
Feel experience	0.421	0.517	-0.119	412	0.905	-0.00608
			-0.120	411.240	0.905	-0.00608
Act experience	1.192	0.275	-0.768	412	0.443	-0.03960
			-0.775	409.455	0.439	-0.03960
Relate experience	0.011	0.917	-1.495	412	0.136	-0.07148
			-1.499	410.672	0.135	-0.07148
Experiential mix	0.326	0.568	-0.618	412	0.537	-0.02494
			-0.619	409.843	0.536	-0.02494

From the Table 3 above, the t-test results for customer experience and dimensions displays and indicated the following values; SE (t = -0.558, df = 412, p-value = 0.577), TE (t = -0.558, df = 412, p-value = 0.577), FE (t = -0.558, df = 412, p-value = 0.577), AE (t = -0.558, df = 412, p-value = 0.577), and RE (t = -0.558, df = 412, p-value = 0.577). These results of the t-test found that mobile network customers' experience had Sig. (2-tailed) values larger than the 0.05 threshold. As a result, the customer experience dimensions were all considered to have a significant difference in average values. Consequently, these factors were said to concur with the opinions of the male and female categories in the study.

Discussion

The findings from the customers' age groups concur with H1 (the different customer age groups experience mobile network operators differently) and are compatible with the study conducted by (Amoah, Radder, & van Eyk, 2018; Jonas, Radder, & van Eyk, 2019; Radder & Han, 2015). Respondents aged between 19 and 30 constituted the higher number of customers that experienced network operators differently. About 51.8% experienced the operators similar. Also, a total of 25% of the customers in the middle class experienced mobile operators the same. Consequently, the operators can target these groups as separate market segments in order to design customer experience programmes, effective advertising and marketing campaigns, and position the offerings of the network operators in the minds of customers. In addition, significance difference in customers experience and opinions exist for the gender categories and thus support the H2. A total of 52.5% and 47.2% of Males and Females respectively experienced the network operators differently. This result suggests that two segments can be formed to design marketing programmes, thereby positioning the organisations in the minds of customers.

The mean scores obtained for the various items were as follows: sense experience (M=4.0249), think experience (M=4.0704), feel experience (M=4.0530), act experience (M=4.0231), relate experience (M=4.0863), and the experiential mix (M=4.0524). This result may be that the male group experienced network operators more than the female groups. The results also imply that on average the customers have different experiences concerning the sense experience, the sensory experience of both gender categories was appealed differently. This results also mean that concerning the think experience, maybe both male and female derive different impressions concerning the organisation products/services, programmes, and campaigns. Concerning the feel experience, the average mean score obtained means that over 52% of the male group experienced different feelings concerning activities, strategies, products, experiential campaigns as compared to the 47.2% females. Also, with regards to the act experience, the average mean score depicts that the gender categories were treated differently concerning their behaviour, lifestyle and relationship with the operators.

The male group was given special treatment, for instance, they received more promotions and recognition than females, males saw the atmospheres and the physical environment more inspiring than the females, therefore, facilitating in building greater lifestyle and behaviour towards the operators. Lastly, based on the results it can be observed that the male gender might have related better to the mobile operators than the female groups. This result also means that the operators were able to arouse the senses, provide positive feelings, were more creative and involved the male groups in their programmes and decision makings more than their female counterparts. This is confirmed by (Jonas, Radder, & van Eyk, 2019). Also, significance differences were found between customer experiences and level of education and support the hypothesis H3. Also, this result support the finding of the following authors (Amoah, Radder, & van Eyk, 2018; Juwaheer, 2007; Haralambopoulos & Pizam, 1996).

These categories of education can serve as a segment to the network operators that can be targeted as well as use to position the operators in the minds of the customers. It was observed that although a larger number of the subscribers for the five operators had tertiary education, there were disparities concerning the level of qualifications, for instance, some individuals possessed a certificate or diploma, while others had beyond a degree. Also, some subscribers did not have formal education. Consequently, mobile operators should provide informative experiences and of interest to the people based on their educational background. For instance, individuals with a degree can be offered leaflets and brochures that educates and by considering their level of understanding. Local languages can also be included in the songs and jingles that organisation

use as a medium to communicate to those individuals without formal education. The prime objective of these must be to provide in-depth experiences and information. Significant differences also exist between regions and customer experiences and this also confirms hypothesis H4.

This difference complies with the idea that experiences can be staged everywhere in the region, nation, or continent differently (Altobelli, 2011; Dicken & Hosking, 2009). Out of the ten regions in Ghana, over 85% of subscribers came from the Southern part of the country, with the remaining 25% from the North. The greater numbers of subscribers 70.8% were individuals from the Akan tribe of Ghana, people that speak one language that serve as one segment for operators. These people might have similar altitude, culture, and language that operators can used to categorise them as one market segment to stage the profile experiences and implement different marketing strategies successfully. Mobile network operators must be careful to ensure that they are having dealing with market segments that can offer to them value for money. L~~a~~stly, significant differences were found between the current preferred network operator and customer experience. This implies that~~,~~ out of the total number of respondents who took part in the study, the individual customers preferred a particular operator. This may also concern several factors, for instance, the network coverage and the quality of the operators might be the point.

For a particular customer to choose between the MTN over Airtel Tigo. Thus, MTN had the highest number of respondents in the entire regions of Ghana than the other operators. MTN subscribers that took part were 50.4%, which was over half the total number of subscribers. Also, these differences might have been that the individual customers received good customer services from one operator than the other operators. The relationship between the staff members of the operators might had also contributed to the disparities in the number of customers obtained by the individual operators. Also, the higher number of respondents or subscribers obtained by the MTN and Vodaphone with over 70% might have been as the result of good promotional and experiential campaigns, pricing policies, distribution policies, and competition strategies adopted in the mobile industry. Growing the market share of the operators is very paramount for the sustainable operation of the business, therefore, it is paramount for organisations to seize any possible opportunity to broaden the market size in the industry they find themselves. Customers must be provided with the best and quality experiences regarding the offerings to remain loyal to the organisation.

5. Managerial Implications and Recommendations

Mobile and telecommunication services are paramount to the growth and success of the Ghanaian economy. Meanwhile, the attempt to offer the best quality and experience mobile network services to the subscribers in Ghana is limited. Concerning the inconsistencies between the gender group (i.e., male and female) and customer experience, network operators must stage experiences positively to appeal to the customers' senses. The operators should also design products, programmes, and campaigns that create positive sensory experiences via the customers' sight, hearing, feeling, sound, and smelling as observed by (Krishna & Schwarz, 2014). Also, the network operators will be able to attract more customers in order to generate more profit and enjoy competitive advantage in the industry, if they consider the gender groups as the target market.

Thus, organisations must design marketing programmes that facilitate the creation of deep impression on the heart of consumers regarding the products or services been offered (Schmitt, 1999). This process could build the thinking experience of the mobile subscribers successfully. Also, the operations, programmes and activities of the network operators should be designed to target either the male or female gender to facilitate positive feel experiences. The customers must derive exceptional feelings when they buy the operators products/services, interact with staff members, and derive quality mobile network. The organisations can also involve the customers in their decision-making processes, for instance, decisions regarding the best sponsorship deals to the community, and the general corporate social responsibility to the public must involve member in the community.

The operators can also provide suggestion boxes at vantage points for the mobile customers to air their views and grievances regarding the treatment meted by staff members to the customers to create good mood and feelings as well as positive experience as confirmed by (Yiadom & Tait, 2021; Datta, 2017). The best and

positive feelings and moods derive by customers through the interactions with operators will facilitate to position the network operators in the minds of the customers (Kotler & Keller, Marketing Management, 2012). Through this study, network operators can segment, and a target market appropriately, and also formulate programmes and strategies purposely directed to the targeted customers in the segment effectively and efficiently. Also, since the mean score of the act experience was average in value (M=4.0231), mobile operators build positive experiences of the business by improving on their physical atmospheres, buildings, and the artistic designs in the operator's premises. This will ensure that anytime a customer visit the businesses premises they can generate special interest for the operators as well as be inspired to change their behaviour, lifestyle, and perception concerning the operators.

Since the mobile customers are regionally distributed in a country where there are different languages, culture, beliefs, norms, taboos, and ethnics, there is the need for the operators to consider the consequences of these when promoting its products, sending salesforce to the regions in order to understand the customers better. The operators must also improve their service quality, provide more mobile vans to visit communities, and to also monitor the activities of the competitors in order to remain longer in the market. There is the need to also understand the religious positions of the market segment or the regions the operators are targeting. These will give a clear picture to the organisations concerning what can be included as a bundle purchase to the mobile products been offered to such customers. It must be noted that customers are always looking for something new and unique in the market so attempt should be made to provide subscribers with something unique and innovative in the market in order to facilitate positive experiences as well as competitive advantage. A successfully mobile network industry assists citizens in a country generate income for their pockets, reduce poverty, solve unemployment problems, strengthen the educational system, and increase productivity.

Conclusion

The objective of this paper was to establish the profile futures, compare and explore the characteristics for mobile network customers who took part in the five selected mobile network operators in Ghana to understand and identify the difference or similarities between these groups and their experiences. Several differences exist as said earlier. For instance, MTN and Vodaphone both were the most preferred network operators in Ghana with MTN obtaining the highest spot. Most mobile customers were found in the Southern part of Ghana than the Northern part, with an increasingly higher number of the population been the people belonging to the Akan tribe. Also, most participants had tertiary education and qualifications and thus could read and write. This implies that there are some unique experiences that these two network operators are offering that best attract customers than other which needs to be emulated in the industry. The information also means that mobile operators must design and implement effective and efficient competitive strategies to survive in the industry. The industry must seek to renew their licenses with the government, operate with the maximum ethical standards, and in a socially responsible manner to provide positive experiences to the mobile customers in the country. Special attention must also be given to entire marketing mix variables (i.e., product, price, place, promotion, people, physical evidence, and process) when serving new market segments to position the organisations positively in the mind of customers.

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Determinants of Farm Households' Willingness to Accept (WTA) Compensation for Conservation Technologies: Ethiopia, Amhara Region, Northern Showa

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Abstract: The purpose of this study was to investigate and evaluate the WTP limits of irrigation water in the Sheva region of the Northern Amhara region of Ethiopia to understand whether irrigation water is feasible. Data were collected from primary research sources. An upright bivariate model was used to determine households' willingness to address irrigation water problems in the study area. Using data from a sample of 800 farmers, the results show that WTP is positive for irrigation water in the North Sheva region. The results show that the average household can obtain irrigation water for about 3,001.47 0.25 hectares of land in Ethiopia, which is a one-time irrigation land value of US$100.05 at the current exchange rate. In addition, the study found that household size, agricultural experience, household costs, irrigated land, livestock capital education level, and measured tropical livestock live-stock units had a positive effect on willingness to pay for irrigation water. Capital is adversely affected by family age, but market access for farmers is not guaranteed. Based on the pursuit, convincing reliability constraints, increasing market access through information and irrigation schemes, and increasing farmers' awareness of irrigation water and its use, is the efficient use of irrigation and irrigation water. Valid maintenance conditions are recommended. Stick to discipline.

Keywords: *Bivariate probabilistic model, decision-making, irrigation, sustainability, willingness to pay Ethiopia.*

1. Introduction

Agriculture is the main source of employment and income in the most progressive countries (Driba, 2020). Ethiopia is one of the developing countries and relies heavily on agriculture as the main source of employment and income (Woldemariam, 2017). A rich agricultural sector also lays the foundation for future growth. Ethiopia has huge potential for surface water and water bases that can contribute to development. Clearly, the development of water centers is a footprint on the country's economic development (Berhanu et al., 2014). The agricultural sector offers an opportunity to move from subsistence levels to a modern and commercial sector (Woldemariam, 2017). It has the capacity to change and make a significant contribution to the country's economy, but its reliance on rainfed agriculture makes the sector's structure vulnerable. Hence, water is a major factor in the rapid development of the agricultural sector. Water treatment, access and water quality reasons are critical for development and poverty reduction**.** Irrigation benefits the poor by increasing yields, increasing yields, reducing the risk of crop failure, and increasing year-round on-farm and off-farm employment.

Irrigation enables smallholders to adapt to different forms of shearing & transform subsistence farming from low-value market production to high-value market production (Hussain & Hanjra, 2004). Irrigation improves livelihoods by increasing incomes, food security, employment opportunities, social needs and poverty reduction (Woldemariam, 2017). Irrigation is necessary to maximize the yield of the most fertile crops, even in areas with heavy rain, irrigation of second and third crops, or in the absence of rain in fields with multiple crops under consideration. Establishing strategies for water allocation and management is critical for assessing the economic value of agricultural water use (Medellín -Azuara et al., 2010). The Ethiopian government acknowledges that investments in irrigation, especially for smallholders and households, have the potential to transform the irrigated lives of smallholders. In addition to surface water use, groundwater use for irrigation is critical to ensuring agricultural growth for present and future generations (Hagos et al., 2012). There is very fertile land available for irrigation in the northern & northern parts of the Shewa District, but there are 3.6 million hectares of potential irrigated land.

However, only about 290,000 hectares of irrigated land may have been used so far, & its use remains low (Puertas et al., 2015). Therefore, there is a willingness to investigate whether farmers are willing to pay irrigation water fees to develop such an irrigation system. In Ethiopia, there is no knowledge or research on the pricing necessary for sustainable water infrastructure (Hagos et al., 2012). The annual water requirement is 673 M3 (Fitsume et al., 2017) and the onion is 3900 M3, and 60% of the paddy field must be used for 0.25 hectares of land. In addition to the water requirement, each meter the initial cost of one cubic meter of water is taken from each person's water needs. Based on these facts, we quoted 6 bids per Walleda to store randomness information and ordered 750-3375 Ethiopian birr as shown in Table 2. This methodological study bridges the gap in research availability on irrigation water.

2. Data Analysis Method

Data collected by STATA version 13. The composite dependent variable in this study applies to households using the small-scale irrigation dichotomy and is an estimate of a household's decision to use small-scale irrigation and nothing else. A bi-junction dichotomous model was used to coordinate farmers' irrigation readiness, and a bivariate model was used as a factor influencing household participation in small-scale irrigation use decisions.

Economy: We used two econometric models, a bivariate probability and a bivariate dichotomous model, to derive the responses to the formatted questionnaire. A closed bidichotomy model was used to drive the irrigation demand function and calculate the average readiness for each Walleda solution. A test bivariate model was used to determine household availability of irrigation water supply in the northern Shewa region. The profit evaluation process begins with the measurements required for a purpose. It is a change in net income equal to or compensated by a change in the quantity or quality of public assets. Start with that person's privilege. Let it be a vector of private property, a vector of public goods that can have the characteristics of private property. Everyone maximizes his or her income.

$$U(X_i, W_i) \quad (1)$$

Indirect utilities are $V\ (P, W, Y\ )$ provided in the following ways:

$$V\ (P, W, Y) = maximum\ X\ [\ U\ (X, W] = PX \leq Y] \quad (2)$$

The utility has also changed from $_{u0j}$ to $_{u1j\ to}$ show the unreasonable case of the final result of the process. The quality index q changes $u_{0j} = u(Y_j, Z_j, q^0, e_{0j})\ to\ u_{1j} = u(Y_j - WTPj, Z_j, q^1, e_{1j})$.from q0 $^{to\ q1.}$ In this case, we are willing to pay the difference between the original national income y and the environmental benefit or better water q0, and the amount of tax that everyone must pay to raise and raise the national income y-WTP water quality.

Fork-Closed Finite Double-Chain Selection Model: In the bipartite discrete dichotomy format, ask the following questions based on the first answer. The family believes the answer to the first question asked at the original price is yes. Next is more ph $^{>}$ p. If no family member answers the first question, the next question is low price p ^{L} < p (Freeman III et al., 2014). According to (Verbeek, 2004), the intent to release was undetected, revealed by the underlying WTP variable and changed to 10i according to individual characteristics.

$$WTP = X_i\beta + \varepsilon_i \quad (3)$$

Latent variables are ready to be measured in birr (Abyssinian currency) and ready to be addressed.

$$WTP = \alpha + \sigma P + \beta Z + \varepsilon \quad (4)$$

Where P is the price value, Z vector is the covariate, β is the parameter vector, $\boldsymbol{\varepsilon}$ mistakes are the limit (Addai and Danso-Abbeam, 2014; Hanemann et al., 1991; Mohd, 2013).

Bivariate Selection Model: Bivariate starting models are useful because the most common form involves the estimation of two independent models. Prisoners are free to pay their first bid p, lower bids PL, higher bids

Pu. The economic model of the data generated by the correlation problem is based on two types of equations (Haab & McConnell, 2002) :

$$WTP_{1j} = \mu_1 + \varepsilon_{1j} \quad (5)$$

$$WTP_{2j} = \mu_1 + \varepsilon_{2j} \quad (6)$$

J was prompted for the first response by WTP $_{1j,}$ while respondents in $_J$ were prompted by $_{WTP\ 2j}$ for the second response, and μ1 and μ2 are the averages of the first and second responses. This form of discrete choice is called a bivariate model. Set the error limit for the normal distribution with mean 0 and variance σ2, then set the bivariate normal distribution for $_{WTP1j}$ and $_{WTP2j}$ with mean $_{\mu 1}$ and μ2, σ_2^2variance σ12 is the covariate between the σ_1^2error function WTP and the correlation coefficient $\rho = \frac{\sigma_{12}}{\sqrt{\sigma_1^2+\sigma_2^2}}$ρ.am. The value of the correlation coefficient rho between the first and second responses must be statistically significant or non-zero. According to individuals who are endogenous decision-making systems, the link between these two responses suggests that evaluating the model yielded small results. If ρ = 0, this means the best model is estimated using the Probit model.

Variable Size: Building an economic model involves specifying various interdependencies and independent specifications of the variables that share the relationships between them. Table 1 shows the expected codes of the variables, the properties of the variables, and the codes assigned to the fixed variables.

Table 1Summary of Variable Specifications

Changing	Code	Types of	Anticipatory Signs
gender	SX	fake	+/-
Patriarch's age	joint stock company	continue	————
family size	HFS'	continue	————
stay away from the market	DFM	continue	————
Respondents' agricultural experience	AGEXP	continue	+
Total Hospitality	pay	continue	+
Potential Irrigation Site	Ilulan	continue	+
total arable land	TCLS	continue	+
livestock	TLU	continue	+
family education level	Education $_{02}$	fake	+
	Education $_{03}$	fake	+
Head of household marital status	Ms Taos	fake	+/-
access to credit services	air traffic control system	fake	+/-

3. Results and Discussion

Data Description: Data from the CVM survey was studied and analyzed in two ways, including descriptive analysis and economic analysis. Demographic and socioeconomic factors related to the availability of water supply and optimal irrigation water services were analyzed, as shown in Table 2.

Table 2Order Recommendations and Responses

Valeda's First Name	Angola Natra	Mensgra	Mingershen Kola	Moretina Gill
say 1	1125	2700	3375	2250
Order 2	1063	2550	3188	2125
Order 3	1000	2400	3000	2000
Order 4	938	2250	2813	1875
Order 5	875	2100	2625	1750
Order 6	750	1800	2250	1500

Table 3 shows the socio-demographic characteristics of the respondents.

Table 3Socio-Demographic Characteristics of Respondents

Categorical Variable	Category	Shares (Percentages in Parentheses)
6 families	people	717 (90.08)
	Miss	79 (9.92)
family education level	I cannot read or write	309 (38.82)
	1-8 inches	385 (48.37)
	9-12 inches	90 (11.31)
	> 12	12 (1.51)
gain academic credit	Yes	425 (53.39)
	number	371 (46.61)
non-farm employment	Yes	493 (61.93)
	number	303 (38.07)
Keep	Yes	493 (61.93)
	number	303 (38.07)
extended access	Yes	743 (93.34)
	number	53 (6.66)
cooperative farm	Yes	670 (84.17)
	number	126 (15.83)
Continuous Variable	**Average**	**Standard Deviation**
family age	43.19	10.92
family size	4.97	2.08
TLU	6.26	4.32
Land area	1.69	2.87
stay away from the market	9.55	8.36
all-weather road	7.19	8.33
irrigated land	0.16	0.42
agricultural use	24.4	12.1

About 90.08% of the sample households are headed by men and 9.92% are headed by women. According to the form of education, 38.82% of the families were illiterate, 48.37% completed grades 1-8, 11.31% completed grades 9-12, and 1.51 was in grade 12. About 53.39% of families receive credits. 46.61% unavailable. About 61.93% of households participated in instant operations and saved money. 38.07% are not shared and saved. Also, they own about 93.34% of extended family farms instead of 6.66%. 84.17% of the households are cooperatives and 15.83% are non-cooperatives. The average age of household capital is 43.19 years. The average household size is 4.97. The average land area, irrigated land and livestock based on TLU were 1.69 ha, 0.16 ha and 6.26 TLU, respectively. The average distances from markets and roads to most weather are 9.55 km and 7.19 km respectively. The average age of the head of the household is 24.4 years.

Choose a Model from a Bisecting Double Bound

Intermediate Households Want to Use Irrigation Water: The survey was conducted by farmers in the study area to determine the average amount of irrigation water available. Using the mean dichotomy to solve the double agglomeration model, it was found that farmers were willing to pay 0.25 per hectare of land for a single irrigation period of about 3001.47 birrs. Table 4 shows farmers' willingness to pay different fees for Walledum irrigation, as shown below.

Table 4Average Voluntary Wages in Study Areas

Valeda's First Name	Means you want	Z *	P-Value
Angola	2028.226	16.66	0.000
Mensgra	2670.715	40.20	0.000
Moretina Gill	1999.935	39.73	0.000
Mingershen Kola	3839.886	25.03	0.000
Regional media	3001.474	36.80	0.000

Former Bivariate Probability Model: Which family members were identified using the estimated bivariate test model Household projections means they want higher irrigation wages. Fit fixed model, Wald chi2 (40) = 215.04, the overall model is High and shows the probability of prob > chi 2 = 0:00. This shows the variables contained in it. Statistically significant models of family-determined binding in WTP descriptions. This relationship between the two answers is "process and evaluation of a single probabilistic model will give satisfactory results.

Probability of Family Response: As a result of the marginal effects analysis, the probability of the farmer's response was determined as yes-yes, yes-no, no-yes or no-no, and the results are shown in Table 4 below. Home Irrigation Water Decision Available: Household variables for primary and secondary education levels, household age, agricultural experience, and tropical livestock units were statistically significant (p = 0.01) levels based on bivariate models. Respondents' distance to market and availability of irrigated land was statistically significant (p = 0.05). However, household size and total household expenditure level were also significant (p = 0.1).

Table 5Response Probabilities

Reply	May or Slightly Affect
PR (respons1 = 1, answer2 = 1)	0.644
PR (Answer 1 = 1, Answer 2 = 0)	0.093
PR (Answer 1 = 0, Answer 2 = 1)	0.112
PR (Answer 1 = 0, Answer 2 = 0)	0.171

Table 6Marginal Effects after Bivariate Probabilities

Changing	*dy* *dy* *	Standard Error	z *	P-Value
SX	0.072056	0.103	1.16	0.056
DFM	-0.0049623**	0.00219	-2.42	0.016
HFS'	0.01693*	0.00785	1.71	0.093
joint stock company	-0.0088459***	0.00469	-3.31	0.001
AGEXP	0.0102556***	0.0024	4.27	0.000
pay	0.0000209 *	0.00001	1.88	0.093
Ilulan	0.06947**	0.04185	2.56	0.011
TCLS	0.007819	0.00319	0.84	0.398
TLU	0.01296***	0.00479	2.68	0.007
Education 02	0.2297775***	0.0433	5.31	0.000
Education 03	0.1226741***	0.04185	5.22	0.000
master*	0.093994	0.04195	1.53	0.126
s_ _	-0.1182569**	0.04185	-2.38	0.017

1 *** p < 0.01, ** p < 0.05, * p < 0.1
2 () dy / dx is a wonderful discrete variable from 0 to 1.

Household distance from the market has a negative sign and a significant (p = 0.05) significance level. For example, if farmers are far from the center of the market, their crops won't get attractive prices and they won't try to produce them more Furthermore, farmers closer to the market are more willing to pay for adequate irrigation water because they are cheaper and have higher wages than farmers farther from the market. Therefore, as the distance from the center of the domestic market increases by one kilometer, the water supply decreases by 0.5, and farmers are willing to pay for the development of a new irrigation system. percentage while keeping other variables constant. The age of the household variable was negative and significant, indicating that respondents' WTP had an adverse effect on irrigation water supply, and as respondents aged, they were less likely to pay higher prices for new irrigation service developments. Under other constants, as respondents aged one year, their chance of receiving the initial price tag decreased by an average of 0.88%. Very older farmers have less access to irrigation water. The reason is that older adults have less expertise in using irrigation techniques, have improved physical labor, and may be limited to irrigation practices (Abera et al., 2017). Respondents' willingness to address the development of new irrigation systems positively reflected their formal education. As a result, we receive a positive and meaningful education in both the second and second grades.

As the field of home education for low-literacy households expands and educates families in need and understands the uses and importance of irrigation water, respondents address the issue of developing new irrigation systems, suggesting that the possibilities are increasing. Improving education levels had a positive and meaningful impact on respondents' willingness to pay. With the improvement of the level of primary and secondary education, the probability of the illiterate group receiving both primary and higher education increased by an average of 23% and 22.3%, respectively, when other factors were held constant. There were no significant differences in willingness to pay between primary and secondary education levels. The results were similar to those of studies (Alemayehu, 2014). Since the development of the new irrigation system, the household WTP has had a positive and significant impact on water rates. Economic theory also states that the demand for an individual's household wealth depends on an individual's household income. People spend a lot of money on a lot of income, so we use household income as a proxy for income. Income and quantity demand is positively correlated with asset decline (Alebel Bayrau, 2002). (Arbués et al., 2003; Whittington, 2010; Whittington & Nauges, 2010). This is an increase in household spending and is more likely to pay for the development of new irrigation water systems. As household spending increased by 100 N, respondents were 0.21% more likely to accept the initial and highest bids, even at the 10% significance level.

Household size had a positive and significant effect (p = 0.1) on the level of importance of readiness to address water development in a new irrigation system. Holding other variables constant, such as the size of individual households, it was more likely to get both initials and previous variables, with an average increase of 1.42%. Larger households are labor-rich and are the source of employment and agricultural practices in most young rural areas (Alemayehu, 2014). Since irrigation is a labor-intensive activity, farmers' interest will increase with the implementation of irrigation and WTP. The size of the irrigated soil had a positive impact on the family planning for the development of new irrigation systems. A significant effect on the significance level (p = 0.05) means that all other factors are consistent. Increasing the percentage of irrigated households by one unit size increases the likelihood of payment availability by a factor of 0.001. This may be because a wide irrigated area helps increase agricultural yields through intensive production and reduces the risk of growing more than one crop in a year (Mezgebo et al., 2013). The farmer's experience had a positive effect on the importance level of household commitment (p = 0.01). Respondents increased their farming experience by one year and their odds of being admitted to more than one primary and tertiary education increased by 1.03%. According to (Chandrasekaran et al., 2009), the survey results of irrigation water observed in this area showed the highest levels of WTP. Results will be determined in other studies. Various types of livestock as measured in TLU (Tropical Herd) had a significant positive effect (p = 0.01) on household income involved in the development of a new water irrigation system.

Other constants showed that respondents' willingness to accept earlier and higher levels increased by 1.28%, increasing their tropical cattle units by one unit. There is a positive relationship between livestock wage availability and livestock ownership due to increased livestock wealth. For example, someone who owns a large cow may have enough money to participate in irrigation activities. Cattle are an important source of cash in rural areas, allowing farmers to purchase agricultural products (Luo et al., 2018). Households'

willingness to pay for irrigation water prompts them to obtain credit. There was also a significant negative correlation between access to credit and the level of significance for willingness to pay at home (p = 0.05). In contrast, today's study (Birhane and Getachew, 2016) reports on increased access to credit and farmers' willingness to pay. Because it can help farmers address their economic needs and allow them to invest in production techniques to increase agricultural yields. Nonetheless, the findings of this study are inconsistent with those of other studies, with small effects of variables holding other factors constant, so that farmers who get credit irrigate more than those who don't. This shows that you are 11.83% less likely to pay for usage. It is believed that this can be explained by the fact that households are accustomed to borrowing from unproductive businesses. It will not reduce poverty; it will exacerbate it. The data collected from the center is built for households who are unable to repay their loans by paying on term loans and taking high-interest-rate loans over a period of time.

4. Conclusion and Recommendations

Finally, he believes that water is an essential economic reserve for irrigation development and plays a vital role in the agricultural transformation and economic development. Therefore, this study preliminarily analyzes the use of irrigation water and the feasibility of the canal in the Sheva region in the northern Amhara region of Ethiopia. Our estimates suggest that the feasibility of using irrigation water in the study area is as significant as household size, agricultural experience, household labor, irrigated land, and household income as measured by TLU. Negative and negative numbers are determined by age. Heads of households, market farmers and their loyalty. The results showed that the average WTP for one crop season was 3001.47 birr per 0.25 hectares. These results appear reasonable compared to other studies conducted in different parts of Ethiopia. The average WTP assessed in this regard (Wassihun et al., 2022) was 972.66 bulls per 0.25 ha. Oman et al. (2020) The average WTP is estimated at 726.55 bulls at 0.25 ha per year. Birhane and Getachew (2016) estimated an average WTP of 1004,505 bulls per year for 0.25 hectares and 128.88 bulls per hectare (6.78 hectares/year) for Alemayehu in 2014. Therefore, the estimated mean WTP was adjusted for this study. Therefore, this result supports farmers' willingness to pay for the use of irrigation water in the study area, which is a significant increase in agricultural profits. Based on the survey results, (companies, governments, NGOs and individuals) made the following recommendations: The survey requires farmers to prepare irrigation water to improve market access. show that there is Move them closer to the farmer market. This business will reduce costs and allow farmers to earn better income.

Raise awareness among illiterate farmers through information on the positive relationship between payment preparation and education, the need for stakeholders to invest in education and education in the form of training, advice and collaboration, irrigation, and the use and benefits of education. Service consultants provide irrigation systems for farmers' livelihoods. Based on the positive link between implementation readiness and agricultural experience, both parties need to share experiences through mutually beneficial cooperation in solid discussions. Earning points can negatively impact your willingness to pay. That is, households borrow from habitual consumption and unproductive enterprises, rather than spending on irrigation investments. The data collected from the center is built for people who make regular loan repayments, those who receive loan interest from the high-interest population over a period of time and are unable to repay it. This intervention should be taken into account when lending, which should be used for productive agricultural investment. Furthermore, incentivizing farmers who are able to scale up irrigation technologies, especially through government-based agricultural delivery technologies, is critical to mobilizing funds from other stakeholders to close economic disparities. In addition, groundwater supplies must be guaranteed to be designated as irrigation water, as long as farmers are willing to pay. Finally, the performance of this study is related to the knowledge of the ambassador's research through presentations to the country house, discussions and publications.

Data Availability Statement: Data supporting the findings of this study are available to respondents upon request.

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A Systematic Policy of Misinformation on the Toxicity of Asbestos: Lobbying as Key Component of a Major Health Crisis

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Abstract: Asbestos is one of the most-deadly occupational carcinogens on the planet. Its toxicity has been proven by scientific studies conducted for several decades, including for people who have never worked in industries directly related to asbestos, or who have massively used it. The serious diseases and deaths caused by asbestos have provoked a major health crisis which has led to significant media exposure and then to resounding trials of victims and families of victims claiming compensation. The article aims to underline that if the toxicity of asbestos has been known for a long time, the manufacturers of the sector have succeeded in protecting their activity thanks to a policy of misinformation driven by powerful lobbying companies. The interest of the asbestos health crisis is to underline that the tools used for misinformation can counter, over a long period of time, the most relevant scientific arguments seeking to establish the reality of the facts. From a methodological point of view, secondary data were collected from official reports and minutes of meetings of lobbying companies, including meetings of the Asbestos permanent committee (*Comité permanent amiante*, or CPA) in France. The study contributes to a better understanding of the mechanisms of misinformation to fight for several decades the scientific evidence from several hundred medical publications.

Keywords: *Asbestos, Asbestos permanent committee (CPA), Crisis, Lobbying, Misinformation.*

1. Introduction

It would take a long time to list the multiple health scandals that we have experienced in recent years, especially in the world of food products. For example, in 2008, spoiled or expired Italian cheeses were sold throughout Europe after being recycled; in 2013, chocolate pies were contaminated with fecal matter in Ikea stores; in 2014, various listeriosis intoxications due to a deli product; in 2017-2018, the large-scale contamination of Lactalis milk; or in 2022, about 40 cases of hemolytic uremic syndrome following E.coli contamination of Buitoni frozen pizzas. For each of these health crises, as we learn from the literature, a "crisis communication" had to be organized –more or less urgently– to reassure an anxious population (especially when children were affected), among other things by intensive use of social networks (Eriksson, 2018). The main characteristic of all these crises is their relatively short duration, of the order of a few days or a few weeks.

To cope with them, they rely on very reactive communication strategies. Their mission is to limit the negative impact of an event on the reputation of an organization, in other words, to overcome an exceptional period to reduce the negative effects on its image. The situation is different with one of the most significant and painful public health crises that France, but also Italy, experienced after WW II: the asbestos crisis, for which the International Labor Organization's count is 100,000 deaths per year worldwide, most often after atrocious suffering in the case of pleural cancer. In France, 35,000 deaths were recorded between 1965 and 1995 (Dériot & Godefroy, 2005), and since then, each year, between 2,200 and 5,400 cancers, and between 1,600 and 3,800 deaths, are recorded by the *Institut de Veille Sanitaire*. What is sometimes called the "killer fiber", as do Rossi & Didiot (2012), certainly attacks workers in direct contact with the mineral.

But also, multiple people, including children and adolescents, attend public places normally without history (high schools, universities, in particular). One of the most important scandals of the asbestos crisis, especially for its victims, is the silence in which it was deployed until recently. It was not until the 1990s that awareness emerged about the proven toxicity of the mineral, for example with the monumental removal of asbestos from the Jussieu campus, in the center of Paris, or the removal of asbestos from the Berlaymont, the building housing the European Commission in Brussels. This is a very late date, admittedly, which raises questions for many observers. Indeed, as early as 1906, in the *Bulletin de l'Inspection du Travail et de l'Hygiène Industrielle*, Denis Auribault, a French factory inspector in Caen, described the first cases of fibrosis with his "Note on the hygiene and safety of workers in asbestos spinning and weaving mills" (Auribault, 1906). His observation is

unambiguous: "*In 1890, an asbestos spinning and weaving factory was established in the vicinity of Condé-sur-Noireau (Calvados).*

During the first five years of operation, no artificial ventilation ensured direct evacuation of the siliceous dust produced by the various looms; this total disregard for the rules of hygiene caused numerous deaths among the personnel: about fifty male and female workers died in the above-mentioned period" (quoted by Dériot & Godefroy [2005]). However, the ban on the use of asbestos in France did not come into effect until 90 years later. The explanation lies in a strategy of misinformation led by manufacturers wanting to protect their market and taking advantage of the media's lack of interest in a technical issue considered of little interest to the general public (Henry, 2003). Based on secondary data analysis, this article aims to highlight the hidden dimension of the asbestos health crisis: the intense policy of misinformation led by the manufacturers of the sector, relying for that on a long-term strategy of lobbying. It is a remarkable example of the manipulation of public opinion.

Because despite the millions of deaths caused by asbestos, misinformation has been able to continue, even by "organizing silence" with the implicit agreement of the Authorities, as was the case in France with the Asbestos permanent committee (*Comité permanent amiante*, or CPA). The article is organized in two parts, after a brief presentation of the methodology. In the first part, the main historical facts concerning asbestos are underlined, indicating that the mineral had an exceptional industrial and even cinematographic success before a growing number of works finally demonstrated its toxicity, which will be for a long time the object of denials. In the second part, the roots of these denials are identified through the policy of misinformation, the dramatic result of which was to slow down the prohibition of the use of asbestos in Western countries, and for the moment to prevent its prohibition in many countries.

2. Methodology

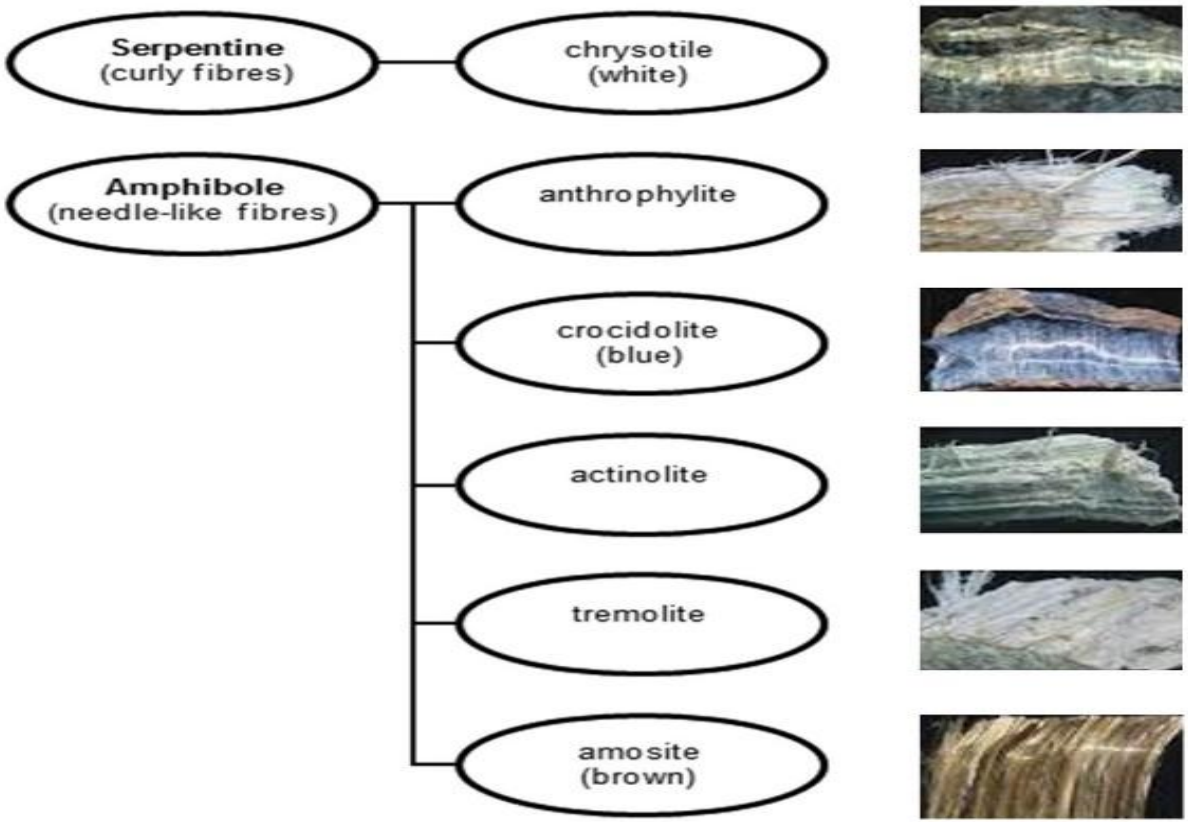
To better understand the mechanisms used by companies in the asbestos sector to conduct a misinformation policy over several decades, the study relied on two types of secondary data: internal secondary data and external secondary data. The first data are usually available within different organizations (activity reports, archives, etc.); the main source used in the article is all the minutes of the meetings of the CPA in France, available on the Internet website http://www.sante-publique.org/amiante/cpa/cpa.htm (in French). The second type of data was obtained from general or specialized information centers, research centers, professional federations, etc. The author, the son of an asbestos worker, also used confidential documents kept in his family on the Eternit Company, in particular information letters on the supposedly exaggerated dangers of asbestos for health. These documents were arranged in a thematic hierarchy, distinguishing between general documents on the asbestos industry, specific documents on misinformation policies, and documents on the accumulated scientific evidence on the toxicity of asbestos. Secondary data analysis has been widely used for the past 40 years, particularly in nursing research (McArt & McDougal, 1985), and it is now recognized that it is particularly rich material for retrospectively analyzing decision-making processes when the actors are no longer available for the collection of primary data.

3. Fall and Decline of Asbestos

The history of asbestos is strongly linked to that of the 20th century and the triumph of industrial capitalism, even if the origins of its use are much older. In one century, asbestos will go from the status of "white gold" to that of "killer fiber" in three successive stages (for a historical overview of asbestos extraction and uses, see Franck [2006]). The first stage is that of the rise in power, from the beginning of the 1900s to the aftermath of WW II, because of its exceptional qualities of resistance to fire, heat and electrical or chemical aggression. The second stage is that of its apogee which corresponds to the "Thirty Glorious", the diffusion of asbestos ignoring then all its consequences on the health of the individuals. The third stage starts at the beginning of the 1980s and corresponds to a "controlled", more thoughtful use of the mineral, but faced with the toxicity finally recognized of asbestos, the decision to prohibit its use is presented as the only way out. In brief, it is possible to speak of the fall and decline of asbestos.

Glory Days: Asbestos is a fibrous mineral of the silicate family, also known as asbestos. It is grouped into two families; the amphibole group and the serpentine group, each of which has several minerals (see Figure 1). Asbestos has been known since ancient times, as the earliest evidence of its existence is explicitly found in the writings of the Persians, Greeks, and Romans (Kakoulli et al., 2014). These people used asbestos for ritual purposes, being convinced of its magical properties. Specifically, they wrapped the deceased in it before cremation to obtain finer and lighter ashes. In his work *Naturalis Historia*, Pliny the Elder (23-79 AD) mentions the custom of making asbestos funeral shrouds for kings. Another use reported by the same Pliny the Elder concerns the exceptional sound absorption properties of asbestos, already known at the time: before cutting down a tree, the Ancients placed an asbestos cloth around the trunk to muffle the noise caused by its fall.

Figure 1: Classification of Asbestos Minerals



Later, in the Middle Ages, asbestos was also called "salamander's wool" insofar as the famous reptile, according to a popular belief, would have its body covered with asbestos and could therefore brave fire without burning itself, its use for textiles woven with asbestos finds its roots there (Brown, 2003). For his part, Marco Polo mentions asbestos in his *Book of Wonders*: according to the explorer, it is used in the Chinese province of Chingitalas to make valuable tablecloths. Around 1600, the use of asbestos was even commonplace in certain medical preparations. For the physician Boethius, the mineral would be very useful to treat ulcers but also to cure children of scabies (Harris, 2009). In fact, the use of asbestos in medicines will be –incredibly and dramatically– in vogue until the early 1960s, being used in particular to make an ointment to combat foot perspiration and a paste for dental fillings. In Ancient times, asbestos came mainly from Cyprus, Greece and the Italian Alps, but important deposits were discovered in the Urals in the 17th century. However, it was in the 19th century, in 1878 to be exact, that the most important deposits were identified in Quebec, paving the way for a powerful asbestos fiber processing industry whose development was to be absolutely "meteoric". The latter is linked to its specific properties of resistance to traction and corrosion by acids and chemical agents in general.

But also, its resistance to fire, which allows excellent thermal and electrical insulation. The versatility of asbestos, combined with the low manufacturing cost of its transformation, plays a key role in its use, a mineral that will eventually be exploited over time for the creation of more than 3,000 products for the construction, transportation and industrial sectors. In the construction industry, asbestos is used for roofing industrial buildings, pipes, tanks, joints, walls and ceilings, and the production of panels. In transportation, asbestos is used in clutch and brake systems for automobiles, heavy trucks and trains. In industry, it is used in the production of packaging, paper and cardboard, floor coverings and fireproof textiles for theater and cinema furniture. In addition, asbestos, a fiber considered by some to be "miraculous" and described as "white gold" is also widely used in textiles and cosmetics: blankets, aprons, jackets, pants, gloves, boots, powders, foundation, special talc for children, shoe soles, sanitary towels, among others. As for the young July Garland in the *Wizard of Oz*, few people know that during a poppy scene in the movie, she is covered with snowflakes, which are actually chrysotile (see Figure 2) (Harmetz, 2013).

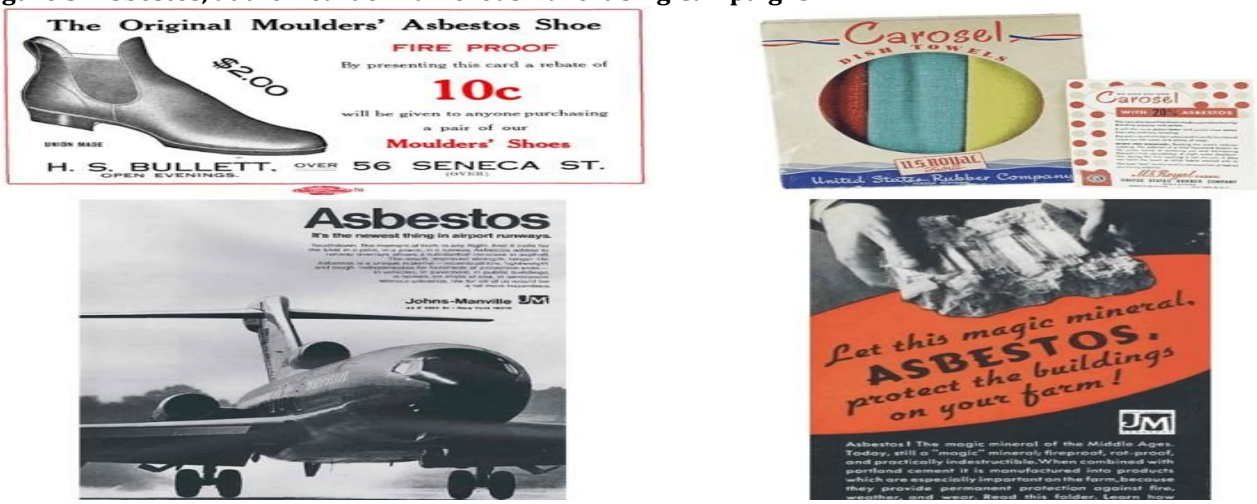
Figure 2: Use of Asbestos in the Wizard of Oz

(https://fibresafe.com/the-demise-of-asbestos/, Accessed March 11, 2021).

The success of the company's activities can be traced back to the first part of the 20th century, sometimes taking advantage of windfall effects. Thus, in 1903, after a dramatic fire killed 83 people, the flammable materials in the Paris metro were replaced by products containing asbestos, which was already being used in the brakes of the trains. Across the Channel, a similar replacement was carried out in the London Underground, then in 1932, it was the insulation of the prestigious Queen Mary liner which gave rise to massive use of asbestos. There is no doubt that the media echo given to these events will encourage the general public to have an excessive –and blind– trust in asbestos, which was quickly used on a large scale without really attracting any contestation. In short, one can speak of a real golden age during which the warnings of the French factory inspector Denis Auribault seemed to be little heard, and which gave rise instead to a series of advertising campaigns whose existence seems today to be very dubious on the ethical level (see Figure 3).

Early Concerns About Health: The strongest symbol of this golden age is undoubtedly the triumph of the "eternity", a material also known as asbestos cement, which is characterized by its remarkable lightness while maintaining a high resistance to wear and corrosion. Often used to make pipe and roofing elements because of its isothermal qualities, it is a special mixture invented by the chemist Ludwig Hatschek in 1900 which, over time, took the name of fiber cement. Fiber cement, or eternity, is a mixture of asbestos and fibers whose consistency gives the material its main characteristic, namely its extremely fibrous character, which makes it very suitable for various uses, especially in public works and construction. It is also the name of the cement company of the same name, founded in 1922 (now owned by the Belgian Etex Group), which registered the trademark and produced the material for decades in various industrial sites, notably in Italy and France, including the dramatically famous Casale Monferrato factory in Piedmont, at the origin of the Italian maxi-trial of Turin in charge of judging the "safety crime of asbestos" (Marichalar, 2019), with more than 6,000 civil parties, and which will have no equivalent in other countries.

Figure 3: Asbestos, at the Heart of Numerous Advertising Campaigns

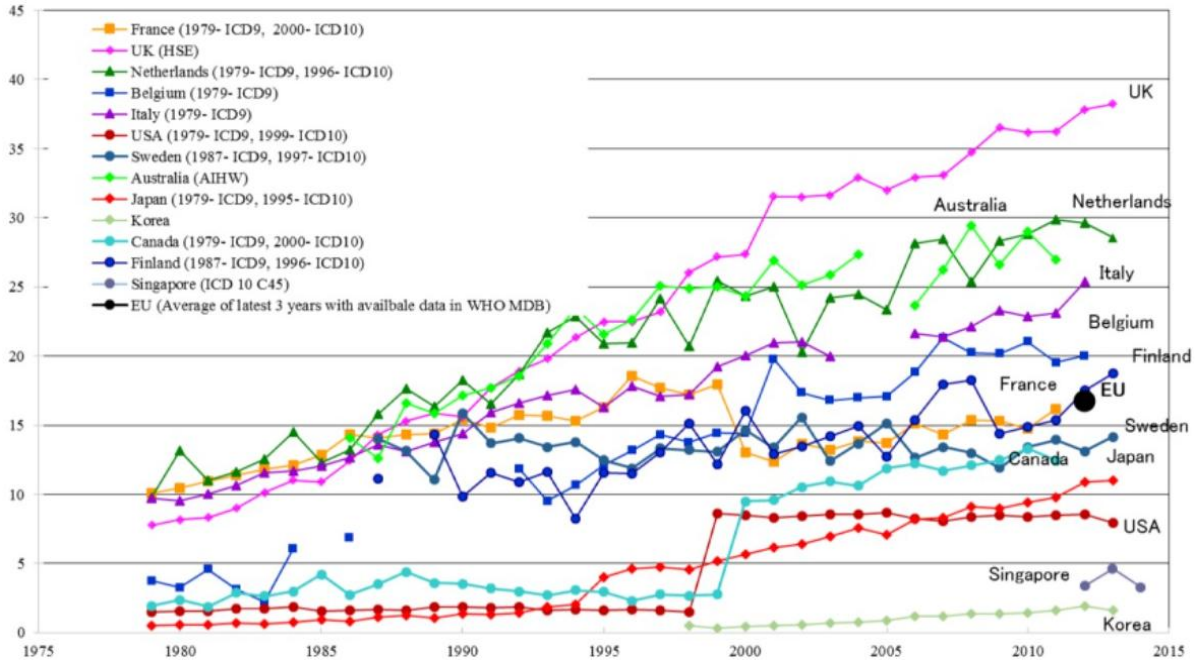


(https://www.suva.ch/fr-ch/la-suva/100-ans-suva/amiante, Accessed April 16, 2022).

The name eternit, which comes from the Latin *aeternitas* (eternity), was first patented in 1901 and the brand was bought in 1902 by a merchant, Alois Steinmann, who opened the first production unit in Niederurnen, Switzerland, the following year. The Swiss businessman Ernst Schmidheiny inherited the Eternit company and, in 1907, the Casale Monferrato factory was inaugurated. It became the largest fiber cement production site in Europe, with more than 5,000 employees at the height of its glory. In 1915, the famous Eternit planter boxes appeared on the market and soon became one of the main elements of urban furniture in European cities. To perfectly control the oligopolistic market, Ernst Schmidheiny created in 1929 the cartel *Internationale Absestzement AG*, with the British asbestos multinational Turner & Newall, extending to the fiber cement producers what he had already achieved before the war in the cement and brick sectors (Catrina, 1985). After WW II, the Eternit company became extremely popular and visible, especially with its corrugated sheets used for the construction of hundreds of thousands of warehouse roofs and industrial sites. Trust in fiber cement grew so much that it was used massively throughout the "Thirty Glorious" for the construction of pipelines and aqueducts to bring drinking water to European homes. No limit seems to appear in its use. However, voices are beginning to be raised to underline the toxicity of the material, notably in the United States, following the study of Selikoff et al. (1972) on 18,000 individuals indicating that the risk of lung cancer is 4.6 times higher in asbestos workers.

When it degrades, it tends to flake off and turn into a very fine powder that can have serious health consequences if inhaled. Indeed, inhalation causes not only asbestosis and lung cancer but also a disease called pleural mesothelioma, a particular and very aggressive form of cancer of the pleura discovered by Paul Klemperer and Coleman Rabin in 1931. If we consider, moreover, that the effects of asbestos and its fine dust have an incubation period that can last more than thirty years, specialists of the disease estimate that the deaths due to the diseases linked to the inhalation of fine asbestos dust, but also of fiber cement, will not stop for decades. Sixty years after the note of the French factory inspector Denis Auribault, the truth about asbestos-related diseases such as pleural mesothelioma is now coming to light, while a wave of lawsuits is sweeping the courts around the world, particularly in Italy, leading governments to restrict the use of asbestos and fiber cement. Work conducted by Furuya et al. (2018) confirms that pleural mesothelioma mortality due to asbestos continues to increase in most countries surveyed (see Figure 4). However, it was not until the 1990s that the sales of the Eternit ended in Europe (early 1997 in France) while continuing in many other countries around the world, including Brazil and Russia. Thus, while concerned scientists and physicians revealed the toxicity of the mineral as early as the 1960s and 1970s (Mossman et al., 1983), political decision-making did not follow. Why did this happen? Undoubtedly because of the powerful strategies of misinformation and lobbying carried out by the asbestos industry, which will seek in particular to "sell doubt", to use terms of Oreskes & Conway (2010).

Figure 4: Number of Mesothelioma Deaths per Million Inhabitants (Furuya et al., 2018).



4. Two Facets of a Misinformation Policy

Misinformation is traditionally presented as a communication process that consists of using the media to transmit partially erroneous information with the aim of deceiving or influencing public opinion and leading it to act in a certain direction (desired by the organization that originated the misinformation) (Volkoff, 1999). In the case of propaganda implemented by a State, a lobby or a multinational company, the misinformation is conscious and planned, but is exercised with the complicity of the media according to their degree of independence. The mechanisms of misinformation are of three types: (1) distorting the initial information or presenting it by telling only part of the truth, the one that goes in the direction that one wants to defend; (2) giving certain information importance and a weight that is much greater than its real weight; and (3) denigrating or casting doubt on the statements of experts that go against the erroneous information transmitted to deceive or influence public opinion. The asbestos crisis confirms the presence of a policy of misinformation over several years.

The Power of Lobbying: Cement companies continued to produce fiber cement for several decades, dispersing asbestos dust in their factories and wherever the material slowly crumbled, even though they ultimately weighed only a limited amount in direct and indirect industrial employment. In the mid-1970s, in France, the number of employees of the Eternit company, the largest operator in the sector, was thus 5,600 employees spread over 8 factories (Hardy-Hémery, 2005), at the same time as the de Wendel steel group employed more than 50,000 employees, before the steel crisis led to a significant drop in employment, particularly in Lorraine (Raggi, 2015). The reason for the continued production of the "killer fiber" is to be found in an exceptional capacity to exert influence on the political system, rather than to be innovative by radically changing strategic behaviors. The asbestos industry has taken advantage of the weak regulatory environment in developing countries to sell asbestos.

It denies the presence of early weak signals, such as the refusal of US insurance companies to ensure asbestos workers in 1918, even demonstrating a kind of "*negationism*", to use the harsh words of Finet & Giuliano (2012) about the Eternit company. The asbestos lobbies, in perfect symbiosis with the logic of cartelization that manifested itself in the late 1920s at the initiative of the Eternit company, collectively maintain close relations with the governments of Russia and India in particular, to protect the sales of the "killer fiber". In the past, the asbestos industry propaganda was particularly intense in Quebec, given the economic stakes for

one of the world's largest asbestos exporters, but as Ruff (2017) notes, the misinformation strategy was successfully countered some 30 years ago, resulting in the "defeat" of the Canadian asbestos industry. At present, however, three associations are pursuing fierce lobbying in different parts of the world:

- The International Chrysotile Association (ICA). It operates mainly in developing countries where asbestos is still commonly used, trying to block use bans whenever they are considered. The ICA funds study instilling doubt, modeled on the tobacco industry, and lobbies policymakers based on economic considerations. In 2016, for example, the ICA succeeded in having asbestos-containing mine waste excluded from the ban on the processing and selling of asbestos in Canada, a country historically sensitive to the issue.

- The Chrysotile Association of Russia (CAR). Russia is the world leader in chrysotile mining, and this association is one of the most ardent defenders of this highly toxic mineral, part of the serpentine group (see Figure 1). Its objective is to maintain a "dialogue" between the Russian government and mining giants such as Uralasbest. As asbestos exports are a multi-billion dollar source of revenue for Russia, the CAR seeks to protect these profits and ensure that asbestos continues to flow to developing countries, which is unlikely to be curbed by European sanctions following the attack on Ukraine in February 2022.

- The All-Pakistan Cement Manufacturers Association (APCMA). Its purpose is to lobby on behalf of the asbestos industry in India, one of the world's largest consumers after Russia. The APCMA receives funds from the industry to disseminate biased "scientific" studies. One of the most significant paradoxes is that the association acknowledges the number of asbestos-related deaths in the West while claiming that it does not cause disease among Indians. The APCMA's lobbying efforts may have played a key role in the failure of proposals to ban asbestos in the country in 2011 and 2012. The case of India is particularly interesting to understand the power of the asbestos lobbies. About 30 Indian companies continue today to manufacture asbestos-based products for insertion in roofing, wall panels and piping, and since asbestos mines are officially closed in the country.

Asbestos is imported from abroad, mainly from Russia and Kazakhstan (more than 400,000 tons per year). The asbestos industry in these countries benefits from powerful lobbying that is well funded, having allowed it, for example, to infiltrate an anti-asbestos movement by paying an informant more than 500,000 euros to obtain valuable information. Trade unions and NGOs are calling on the Indian government to recognize the dangers of asbestos, but the government regularly asserts that there is no conclusive evidence that asbestos factories or asbestos products used in buildings are toxic. The precise number of people who are ill from asbestos exposure is unknown because of the lack of reliable data, and many physicians do not know the precise symptoms of the diseases involved. The power of asbestos lobbying is also evident in the United Nations-backed Rotterdam Convention.

In theory, the Rotterdam Convention should better protect people from the risks associated with chemicals and particularly toxic substances, thanks to the so-called "prior informed consent" procedure that limits international exchanges. Unfortunately, this agreement, which entered into force in 2004, has a major design flaw that renders it virtually worthless operationally (Ogunseitan, 2015). In order for a pesticide, or other hazardous substance, to be listed in Annex III of the Rotterdam Convention, a consensus among the contracting parties is required. This means that a single country can block inclusion. For example, Russia, Kazakhstan and India, as well as other countries, are preventing the trade in asbestos from being subject to minimum information requirements, despite a clear recommendation on the matter from the Technical Committee of the Rotterdam Convention.

The Case of the CPA in France: One of the most complete examples of manipulation through a strategy of misinformation to safeguard the fiber cement industry is that of the CPA, created in 1982 by the French Asbestos Association, which groups together the main manufacturers of the sector (acting in this case as "financiers of the committee"). The informal character of the organization, without any official status, is one of its most remarkable features, as is its influence on political decision-makers. Indeed, the CPA deals with public health problems related to the presence of asbestos in public and private buildings, to the point of

directing years of sanitary policy in France in this matter. Its composition is symptomatic of a will to lead a policy of "co-management" in the *reasoned use of asbestos*, rather than its prohibition since one finds there besides the manufacturers of asbestos, representatives of the principal trade unions, having the objective of defending employment, but also officials of various ministries (of which that of labor and that of health) and some scientists.

One of the most interesting points to highlight is that the CPA, comprising about 20 people, is directly organized and managed by one of the main managers of a French lobbying and corporate communication company. Communications Economiques et Sociales (CES). From a logistical point of view, this company provides most of the CPA's operating resources. It hosts the CPA in its Parisian office, it publishes all the publications, and it is the person in charge mentioned above who runs the working meetings. Thus, as Henry (2005) rightly notes, while the CPA is perceived as a meeting place for professionals in occupational risk prevention to establish a constructive dialogue on the issue of asbestos, it is a lobbying company in the service of the sector's manufacturers that controls its governance and explicitly guides the debates. One can imagine that the important role played in the setting up of the CPA by the Institut National de Recherche et de Sécurité (INRS), an organization attached to the French Social Security, explains the vision of scientific neutrality that emerges, at least at the very beginning of the meetings, which leads to the adherence to the opinions of the CPA on the part of many social partners.

From September 1982 to September 1995, the CPA met about a hundred times, until the representatives of the various ministries and trade unions decided to stop sitting. Thus, signing its death warrant and preluding the ban on asbestos by the Juppé government of President Chirac at the end of 1996. It must be recognized that the CPA has endeavored to disseminate incomplete information, based paradoxically on an increase in the number of expert reports, but whose distorted or contradictory conclusions have for years distilled more doubt than certainty (Umbhauer, 2010). Even though it was confronted with a major public health risk, the dramatic nature of which could no longer be denied, the French government was unable to rely on a neutral body to provide it with the data it needed, especially to analyze the potential use of substitute products and thus to program, with ad hoc accompanying measures, the cessation of all use of the "killer fiber". The French State has undoubtedly found a certain interest in the controlled use of asbestos, as conveyed by the CPA.

According to a real approach of "organized silence" (Peton, 2011), associated punctually with misinformation operations with the dissemination of "true-false controversies" by manufacturers. It is important to point out that the CPA's capacity to cause harm goes far beyond French borders & extends to other geographical areas. Thus, when the USA envisaged in 1986, through international organizations (International Labor Office, Environmental Protection Agency), to ban the use of asbestos, the French representative intervened to issue a negative opinion, based on the critical analysis by the CPA of a technical report of the International Labor Office. The negative opinion is argued as follows in the minutes of the CPA meeting of March 26, 1986: "*The authors of this report are not well known and do not seem to have any specific expertise in the field of asbestos. The bibliography is not exhaustive. This study does not provide any new data. The data used in the program have not been discussed. The correlation between measurements from very different models can only lead to uncertainties. In the opinion of the scientists, this document cannot be recognized as a study based on indisputable scientific data. It is an incomplete report on the current knowledge of asbestos-related pathologies*" (taken from the Internet website http://www.sante-publique.org/amiante/cpa/extraits.htm, Accessed May 26, 2021). Five years later, when the European Community was considering an outright ban on asbestos (under pressure from Germany), the CPA again engaged in intense lobbying to prevent any prohibition, supported by the Quebec government.

5. Discussion and Conclusion

A well-known expression indicates that "facts are stubborn things". We could add that the studies conducted on the toxicity of asbestos have been just as stubborn since the end of the 19th century. Thus, as early as 1899, Dr. Henri Montagne Murray diagnosed in London, in a worker who had worked in an asbestos mill, pulmonary fibrosis of mysterious origin which attracted his attention. This diagnosis was followed in 1906 by a note from the French factory inspector Denis Auribault, mentioned several times in the article. From then on, scientists began to study the causal links which, step by step, left no doubt as to the extreme toxicity of

asbestos. In 1930, Dr. Victor Dhers, in Lyon, published a statistical study on the harmfulness of asbestos in the French journal *Médecine du Travail*, and thirty years later, Wagner et al. (1960) caused a sensation by highlighting the causal relationships between mesotheliomas and exposure to asbestos among South African miners. The top managers of the companies were not unaware of this work, and from this point of view, their behavior can be qualified as "criminal", in the legal sense, and not just "wrongful" (Paraciani, 2016).

Key Findings: The established historical facts make it surprising that many stakeholders, including trade unions, have been organizationally blind for decades. Is this organizational blindness *really* surprising? In conclusion of this overview of a health crisis whose end is far from being seen (maybe in 2060 in Western countries?), the main elements of understanding the situation are available for researchers in management. The dangers of asbestos have been known for a long time; they have been documented by a growing number of indisputable scientific works since the 1960s and 1970s. If a heavy –organized– silence reigned in many countries, the origin of this silence must be found in a strategy of misinformation, including the one conducted from 1982 to 1995 by the CPA, which we will describe as particularly remarkable. Seznec (2014) does not hesitate to evoke the "deadly effectiveness of the CPA", which could serve as an archetype of manipulation in all business ethics courses in business schools.

If the asbestos tragedy has already given rise to abundant literature, the time has come to dig into the organizational springs that have allowed the denial to survive for nearly 40 years. It would also be important to evaluate the persistence of the asbestos health crisis on the deteriorated image of the companies in the sector. As Pinyochatchinda (2014) underlines, the environmental damage that a polluting-industry cause remains in the collective memory of a population for a long time. This results in a deep and lasting alteration in the trust that individuals may have in an organization and its various stakeholders. In the case of asbestos, especially in France, the Authorities did not play the game of regulation, leaving the CPA free to proceed to an "institutionalized misinformation". One can fear that this culpable failure will not be forgotten in a hurry by the families of the victims, sick or deceased, most often in terrible suffering. In conclusion, research on this topic seems important to better understand the long-term negative impacts of decisions based on the search for maximum short-term profit.

Policy Implications: As the article points out, the influence of lobbies can have a deep impact on the health and well-being of millions of people around the world. To increase their revenues, multinational companies sometimes use harmful chemical ingredients, and the individuals who come into contact with them do not have enough information about their level of toxicity. It is up to the State to intervene to inform and protect its citizens, but politicians are influenced and financed by lobbies and the general interest is then neglected because public action is thought in reference to the next elections. However, there is a slow improvement in awareness, but many questions remain concerning the relationship between lobbies, Authorities and citizens: is coordinated legislation at the global level possible? Is it possible to dissociate long-term political action from short-term electoral deadlines? Within the framework of economic liberalism, how can we impose coercive rules that go against the freedom to organize exchanges? These questions are at the heart of public action, and the answers must be rigorously studied by conducting complementary work.

The most important observation is undoubtedly the way in which a policy of misinformation has been pursued for several decades based on a coherent discourse constructed by the companies in the asbestos sector. They developed a kind of *cognitive framework* that allowed them to imagine a reasoned use of the "killer fiber", based on precautions of use. Rather than discrediting the opponents, the companies sought to minimize the dramatic effects of asbestos use, based on controversial scientific opinions. To better fight misinformation, it is essential to encourage coordination between Authorities, NGOs and academic institutions to develop strategic communication. In general, misinformation campaigns do not limit themselves to the punctual dissemination of false news; they develop a misleading narrative to make a profit. It is this narrative that must be combated as soon as it spreads, not after it has succeeded in manipulating the masses. Thus, NATO actively fights against misinformation with programs that quickly analyze the information in circulation, especially online, and detect the weak signals of misinformation. In brief, the speed of reaction of the public action is undoubtedly the key element to avoid new health crises like the asbestos crisis.

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The Effect of Biographical Variables on Self-Efficacy of Management Accounting Students

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Abstract: The purpose of this paper is to investigate whether biographical variables such as Gender, Race, Home District, School (urban/rural) and Language proficiency play any role in the Self-efficacy of Cost and Management Accounting (CMA) students and to assess whether Self-efficacy. A descriptive, longitudinal, and mixed-methods approach was used in this paper. In the current study, the quasi-experimental design used for the pre-test and post-test control groups was non-equivalent. The population targeted was CMA students. A census survey was performed. The comparative analysis between the variables revealed no significant difference. However, females, Africans, Urban Home District, Urban School, and English Second Language learners scored more in the post-test. The paper recommends that the implementation of General Education modules into the curriculum be instituted. Additionally, current learners appear to have very poor General Education skills, and respondents themselves believed that self-efficacy can have a positive impact on academic performance.

Keywords: *Financial Accounting, Gender, Home District, Management Accounting, Race, Self-efficacy.*

1. Introduction

While lecturing at the university for many years, it has been observed that some students are eager to learn and can face new challenges, while others appear unmotivated to learn. Among learners, many demonstrate high levels of confidence in their skills, while others seem unsure of their abilities. It is necessary to analyze the factors affecting communication skills as many DUT students come from different cultural, ethnic, and geographic backgrounds and to understand the problem before measuring the communication proficiency of students. The study will attempt to ascertain the contribution of communication skills as a subject in enhancing the performance of CMA students in higher education. Naidoo and Garbharran (2013) conducted a study into communication skills as a subject in the program Cost and Management Accounting at a South African University. The study revealed that respondents, with a majority of 48% and 53% respectively for both English First Language (EFL) and English Second Language (ESL), acknowledged that the English language affected them in obtaining better ranks in Cost and Management Accounting (CMA). The study also indicated that 23 percent of both EFL and ESL were unsure if it affected them. Furthermore, the researchers reported that both EFL and ESL respondents, with a majority of 65% each, showed that CMA lecturers were unaware of the weak comprehension of English by the learners. Educators and administrators should be concerned about the performance of students at tertiary institutions, as well as employers in the labor market.

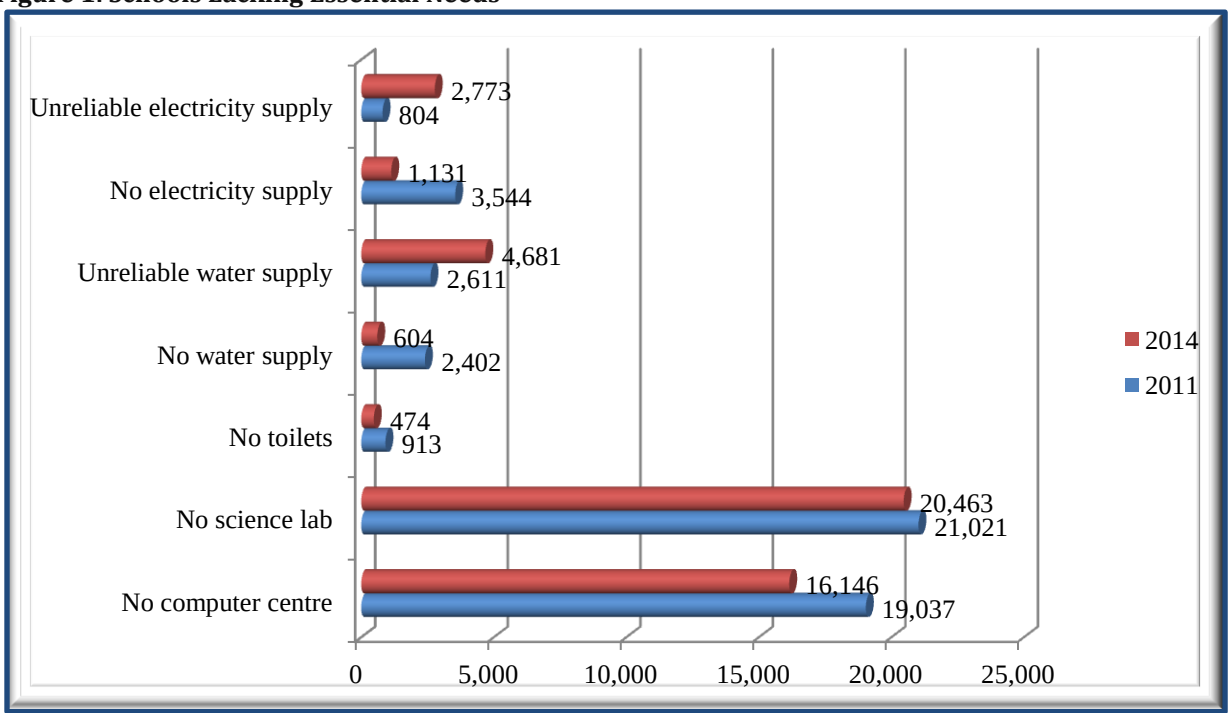
Academic performance is a factor that employers consider when recruiting workers, especially fresh graduates. The other factor is work experience and students have to place the greatest effort in their studies to obtain good results to fulfill the employer's demands. According to the University of Central Arkansas (2018), General Education has six skill areas. There are five areas of emphasis: i) Written Communication; ii) Critical Thinking; iii) Oral Communication; iv) Information Technology, and v) Quantitative Analysis and Researching. According to Greer (2012), General Education helps learners learn oral and written communication skills, physical and natural sciences, humanities, arts, and social sciences, fitness, and wellness skills, comprehension, and knowledge. The goal is to provide the necessary skills and information to function in society through a collection of learning experiences organized according to subject disciplines. According to Washington State University (2020), general education is important to succeed in the workforce and to incorporate the learner's planned careers in broader, more inclusive, and multiple contexts. A college education offers valuable training for the kind of work that graduates do by being exposed to different beliefs, viewpoints, and cultural practices. An experience that will greatly enrich their understanding of the context and significance of careers. South Africa's performance in terms of producing professional Accounting and Auditing trainees to meet the labor market demand has confirmed the seriousness of the problem and the urgency of finding solutions.

The Vice-Chancellor of Durban University of Technology (DUT) has taken steps to address these shortages of skills through General Education Modules. According to the Vice-Chancellor, the new curriculum will be DUT's signature and will ensure that DUT graduates receive a more holistic education curriculum, ensuring that they are not simply trained for the job market but receive a more holistic education. Self-efficacy is an important motivational concept, according to Gist and Mitchell (1992). Individual decisions, goals, emotional responses, commitment, coping, and resilience are all affected. The authors claim that self-efficacy evolves as a result of learning, experience, and feedback. In the literature on organizational behavior, self-efficacy has received increasing empirical attention. According to Gist and Mitchell (1992), believing that one will succeed on a mission is easier than thinking one will fail. Self-efficacy increases with bona fide improvements in skills.

Infrastructure and Socio-Economic Status: There are a large number of schools in rural areas that are dysfunctional, and some of these schools have dilapidated classrooms that cater to multiple grade levels (Perumal 2009: 38). The same teacher will be teaching different grade pupils simultaneously that share the same classroom. Rural schools are also easily targeted and damaged due to the violent protests that originate from poor service delivery. Teachers in rural schools promote mindless rote learning that confused rather than intellectually stimulated the students because they, themselves, were subjected to such learning. In rural areas, where poverty is common and HIV/AIDS is rife, dysfunctional schools are characterized by a lack of meaningful teaching and learning (Mitchell et al. 2010).

Infrastructure: Equal Education (2018) also states that there are currently over 400 mud schools in the Eastern Cape, many of which are made of mud and shacks. Gardiner (2008) adds that over one-fifth of Eastern Cape, KwaZulu-Natal, and Limpopo schools have over 45 learners per classroom. In addition to the poor infrastructure of schools, many of the schools are grossly under-resourced in terms of reading materials. According to the National education evaluation and development unit (2013), much of the responsibility for improving the poor infrastructure of schools must lie with the provinces, where the budgets for Learning and Teaching Support Materials (LTSM) do not provide for supplying schools at the required levels. These are not conducive conditions for delivering quality education to young learners. As illustrated in Figure 1, there are indications of some improvements in the government's battle to provide schools with science and computer laboratories.

Figure 1: Schools Lacking Essential Needs



Source: John (2014). Adapted.

A majority of rural schools in South Africa have poor infrastructure and lack the necessary resources to conduct quality and constructive education for young learners. There were huge disparities between the Department of Education and NEIMS reports regarding the state of schools in the Eastern Cape. John (2014) assumes that if the reliability of the data is in doubt, then the consistency of the implementation plans for infrastructure in the provinces will also be in question. A majority of these rural schools are lacking basic, facilities like clean running water, electricity, libraries, laboratories, and computers. These are essential for the proper functioning of schools and a lack of these basics will negatively contribute to the quality of education that rural learners receive. On 29 November 2013, the Ministry of Basic Education issued legally binding requirements and specifications for school facilities and it will now be a law that every school must have the basics to act as a learning environment.

Resources: Perumal (2009) reports that rural schools are dysfunctional and lack the resources to function properly as learning centers in South Africa. Furthermore, the researcher found that teachers taught multiple grade levels and mindless rote learning that confused rather than intellectually stimulated students. As a result of large class sizes and inadequate training, teachers have become frustrated, which exacerbates the problem (Brown, 2010). Wallace & Adams (1989) confirm that rural teachers face large classes and different abilities than the students most of them teach.

Rote Learning: According to Gardiner (2008), the total number of teacher training institutions in South Africa from 1994 to 1998 was 120, but reduced to 50 with a significant percentage of these institutions in rural parts of the country. The researcher states that a large number of such teacher-training institutions were of inadequate quality and qualified teachers used static, memorization-learning approaches in the classroom. The scholastic ideology-facilitating teacher training is known as 'Fundamental Pedagogics'. Gardiner (2008) argues that this educational philosophy, established during colonialism, promoted an authoritarian approach to learners and prevented students from questioning or objective reasoning by pupils. A study on MBChB learners at the University of Pretoria found that rote learning is a superficial approach that lacks understanding or insight, whilst a deep approach that requires understanding is needed (Pickworth 2001).

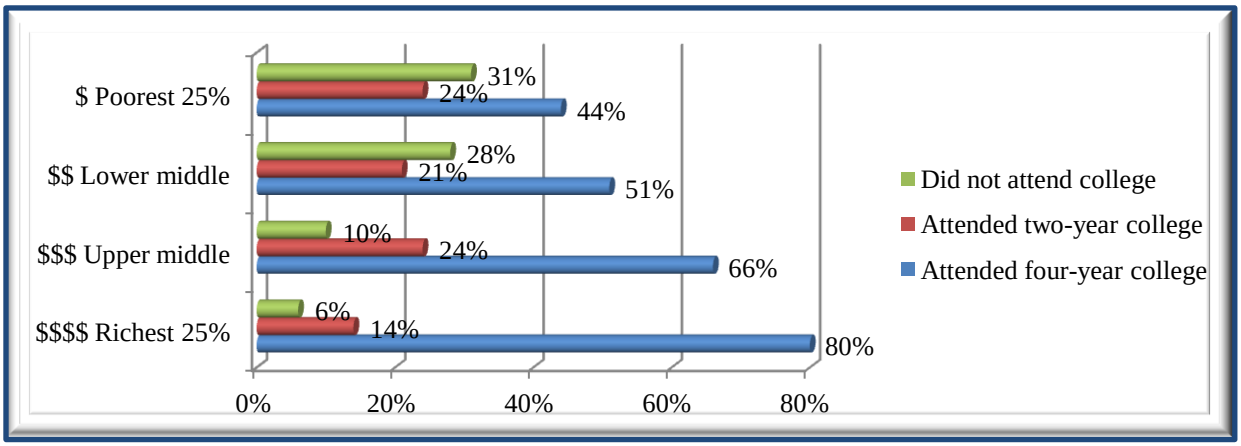
Socio-Economic Status and Education Relationship: According to Corrigan (2009) of the South African Institute for International Affairs, socioeconomic development issues have been identified in six African countries that have received African Peer Review System (APRM) Country Evaluation Reports, namely Ghana, Rwanda, Kenya, Algeria, Benin, and South Africa. All of these countries have recently experienced difficult times. According to the APRM Country Evaluation Report, inequality, land access, inadequate education systems, gender discrimination, and poor healthcare systems are frequent challenges across these countries, (Corrigan, 2009). According to an independent researcher, nearly 75 percent of all South African children are trapped in poverty, and their lack of financial and social capital causes them to attend low-performing schools, according to an article published by the University of South Africa (UNISA) (2012) titled 'How does socio-economic status impact on educational outcomes in South Africa?' The standard and quality of education received by an individual is a factor in the number of opportunities open to that individual. Higher levels of labor development will be aided by an increase in educated individuals.

Through a society's awareness, talents, and innovative capacity, education is a crucial aspect of a country's socio-economic advancement and plays an important role in increasing human capacities and accelerating economic growth (Kiani, 2015). Kiani (2015) further believes that education has favorable consequences on poverty and inequality reduction, improved health, and excellent governance in the execution of socioeconomic policies. Because of a lack of substantial education as well as urban representation in committee membership and office holding, advanced-level participation in growth projects is reduced (Imoh, Nwachukwu and U-James 2009: 73). According to Wall, Pettibone, and Kelsey (2005), a person's socioeconomic status has a significant impact on their level of community engagement, as well as their educational levels and income. According to Angba, Adesope, and Aboh (2009), as a person's educational level rises, his or her attitude toward community development is likely to improve positively. Oladipo and Adekunle (2010) feel that people with high educational achievement are also quick to absorb new ideas and that there is a positive relationship between educational achievement and people's cultural-economic status

in society. Higher education has demonstrated its long-term survival as well as its ability to adapt and bring about societal change and development.

Because of the volume and speed of change, society has become increasingly knowledge-based, and higher education and science are now critical components of individuals', societies', and nations' political, socioeconomic, and environmentally sustainable growth (UNESCO 1998). According to a report from the United States Department of Schools, students who score in the top 25% on standardized tests do not have equitable access to secondary education (Landy, 2012). According to the author, students from affluent socioeconomic origins are more than 80 percent more likely to enroll in a four-year college program than students from low socioeconomic backgrounds. Figure 2 on socioeconomic status shows that students from low socioeconomic backgrounds are five times more likely to not attend college at all. Landy (2012) argues that socioeconomic variables, rather than the wealthiest students, determine who is admitted to top universities.

Figure 2: Socio-Economic Status at Colleges



Source: Landy (2012). Adapted.

The most important aspect of the dispute is study quality, and whether or not this is adequate for the many inputs that may make resource interpretation more difficult. People with higher educational accomplishments and higher socioeconomic status, according to Taylor and Yu (2009), are much more likely to become active in the school group, increasing the school staff's sense of responsibility toward the parents and contributing positively to the school standard. Several other studies have found that parents with a strong educational background may harm their children's schooling. Other factors that affect student accomplishment, such as the character of family inputs, may not be fully accounted for by statistical models. When contrasted with certain of the school features, the estimates may incorrectly attribute higher student accomplishment due to superior household elements (Hanushek and Woessman, 2007).

2. Rural Student's Skills

When compared to rural students, urban students begin reading and writing at a younger age, which may have an impact on their academic performance at the postsecondary level (Banda, 2003). Because rural students develop reading skills later in life and later in tertiary education, they may believe that the speaker is speaking too quickly for them to absorb the content; however, it might not be an issue for English First Language or metropolitan students. Jiya (1993) indicates that some lecturers talk extremely fast which is a problem for rural students, as these students may take a longer time to understand what is been expressed. Souter, Archer and Rochford (1992) conducted a study on 52 first-year English second language students at a rural institution in 1987 and 1988, believing that because inference is so important in reading, poor performance in inference by most students is a matter for concern.

Role of Gender: Different cognitive learning styles have different effects on different learners. Because each gender has a distinct cognitive learning style, the compatibility or incompatibility of their preferred thinking and reasoning abilities is more likely to affect understanding and, ultimately, academic performance (Bosire, Mondoh and Barmao, 2008). There could also be psychological and biological influences that could account for the differences in academic performance between the genders. Male students tend to take more risks during examination conditions and female students tend to play it safe. Accounting was previously known as a male-dominated profession, which could explain why males were more academically successful, but females have made significant inroads into the male-dominated profession over the years (Lanier and Tanner, 1999: 76). According to several studies, male students outperform their female counterparts. According to a study conducted by Blaylock and Lacewell (2008) in assessing prerequisites as a measure of success, the inclusion of gender is the model of best fit when determining student performance in accounting. A study by Huh, Jin, Lee and Yoo (2010: 84) into the differential effects of student performance in the accounting discipline found that gender played a significant role in the grade point average and that males were performing better than female students. Du Plessis, Moller and Prinsloo (2005) presented evidence to suggest that males were performing substantially better and were more successful in accounting.

Koh and Koh (1999) learned that gender played a significant role in academic performance and found that male, students were performing better in the accountancy degree program. Doran, Benillon and Smith (1991: 74-83) had similar findings concerning males performing significantly better in examination scores than females in the introductory Accounting course but did not maintain the difference in the next level of the Accounting course. The common belief is that students who have an instructor of their gender may perform better than other students but this did not present itself in their study. Male performance is best explained by school accounting, while female academic ability is stronger than that of specific cognate disciplines such as school mathematics and accounting (Auyeung and Sands, 1994). There is additional evidence to imply and corroborate that female students outperform their male counterparts academically. Cudia (2009) claims that gender has a significant impact in determining the final grades of Managerial Accounting students and that if the student is female, the chances of receiving a higher final grade increase. Kaighobadi and Allen (2008) presented evidence to suggest that female academic performance was superior to male students in Financial Management. Tyson (1989) also found that female students were outperforming male students in all courses, including introductory Accounting courses. Mutchler, Turner, and Williams (1987) found that female students consistently outperformed male students for 18 years.

In 1984 and 1985, the same researchers ran a second trial in an accounting class, which confirmed their prior findings of females outperforming males. Female accounting students' academic performance has increased over time. The ratio of women getting Ph.D. qualifications in accounting in higher education has steadily increased since 1985 (Lanier and Tanner, 1999). Some academics also argue that gender has little or no bearing on a student's academic success. Gender, according to Tumen, Shulruf, and Hattie (2008) of the University of Auckland in New Zealand, plays little effect on student academic performance. In a study of factors impacting students' success in undergraduate Accounting modules, Guney (2009) found no evidence to indicate that there was any association between gender and academic achievement. Lipe (1989) likewise found no evidence of a gender effect on academic achievement or those students who have a female instructor perform much better than those other students. Gender is a topic that has been extensively researched, yet the results are frequently contradictory. Other factors may be at play in the gender research findings on whether female or male accounting students are more effective. Ethnic or cultural differences among students could be a factor in the inequalities in these research findings. Ethnicity and cultural characteristics should be considered in future research on female academic success.

General Education Prerequisites of Professional Accounting Bodies: From the perspective of professional accounting organizations, the current part discusses the aspect of General Education competence requirements for accounting learners.

International Federation of Accountants: IFAC is a global organization dedicated to serving the accounting profession's public interest by strengthening the discipline and contributing to the development of strong international economies. IFAC has more than 179 associates and members in 130 countries and territories,

with almost 2.5 million accountants in public accounting, education, government, business, and commerce, according to Deloitte Global Services (2020).

Purpose and Scope of International Education Standards (IES): International Education Standards 3 recommends a mixture of skills that applicants need to be suitable as qualified Accountants, according to IFAC (2008: 59). Much of the aim of IES 3 is to illustrate how and where to obtain General Education in a variety of ways in different environments, which can potentially contribute to the growth of the mixture of skills. According to IFAC (2008: 59), the goal of IES 3 is to ensure that applicants for affiliation to an IFAC member body have the right balance of intellectual, personal, technical, interpersonal, and organizational skills to perform as proficient Accountants. Accountants with these skills would be able to function as effective professionals in an ever-changing and challenging environment throughout their careers. Professional accountants, according to Fawcett (2015), are required to have the following soft skills and General Education competencies:

- ✓ Intellectual abilities;
- ✓ Competencies in technical and functional areas;
- ✓ Personal capabilities;
- ✓ Interpersonal and communication skills are important; and
- ✓ Organizing and business management abilities.

As per IES 3, the skills listed above are essential for anyone aspiring to be a skilled accountant. According to IFAC (2008: 59), IES 3 seeks to address non-business topics that stimulate the development of both prerequisite skills and may even be included in General Education learning. Specialized Accounting learning, ethical norms, concepts, and behaviors, criteria for practical experience and professional competency evaluation are not included in the IES 3. IFAC and professional bodies agree that a portion of General Education should be included in all professional education programs and that this specific General Education will make a major contribution to the development of professional skills. IES 3 stipulates that General Education will focus on developing non-professional knowledge; intellectual talents; personal talents; interpersonal and communication talents; and management and organizational talents. IFAC and professional Accounting bodies highlight those skills requirements allowing the qualified accountant to use the information gathered through General Education with success.

Models and Theories on Education Skills: Many learners' current superficial approach to learning may not be appropriate for studying the Management Accounting curriculum. Quality learning can help students succeed and obtain good results in Management Accounting. Furthermore, quality learning can help learners develop strong communication skills and a deep approach to learning (Pickworth, 2001). Critical thinking skills, decision-making ability, Rauding Theory, and Bloom's Taxonomy are all components of good learning. The Rauding Theory and Bloom's Taxonomy identify the skills required for high-quality learning for students to succeed in their studies. It is therefore pertinent that the following section addresses these skills.

The Rauding Theory: The goal of attempting to read is to comprehend the essence of whatever the instructor or problem requires, as well as to use that knowledge to solve the problem. When studying, students might use a variety of reading tactics. The Rauding Theory is the best example of these reading strategies. According to the Rauding Principle, reading can be divided into four categories: scanning, skimming, rauding, learning, and memorization (Carver, 1978). Knowing or understanding a text, terms, or sentences is required for rauding (Carver Learning Systems 2020). It combines reading and hearing; reading involves looking at written words to determine context and listening to spoken words to determine meaning (Carver Learning Systems 2020). A human being is Rauding when he/she is not scanning, skimming, learning, or memorizing, but looks in sequential order at 100 percent of all the words in a text segment, as well as simultaneously understanding all the thoughts found in that passage. Learners will need to be able to read aggressively to answer important issues, especially in science subjects, which can be accomplished via the Rauding Theory. When studying the subject of Management Accounting, the Rauding Theory is also a good strategy to use. For reading newspaper articles, learners' common rapid and scanning methods may be more useful (Carver, 1978). To grasp what is required from the question, learners in the Management Accounting program must be fluent in reading. Furthermore, they must familiarize themselves with the relevant skills to be proficient. As evidenced by the Rauding Theory, learners should be able to perform the following:

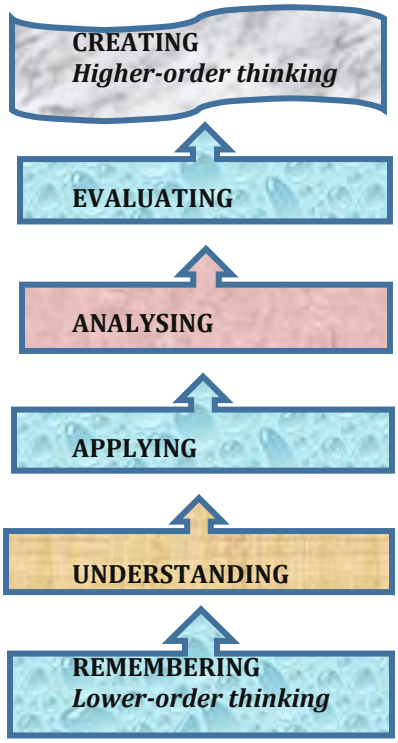
Rauding: Learners should be able to perform an analytical, detailed, and searching type reading style to comprehend essential and crucial information from the text, which is a combination of reading and listening.

Researching: Learners should be able to examine essential statements and be able to look for relevant information from case studies.

Planning: When completing research, the learner must be able to utilize information by preparing, formulating, and presenting the data in an organized way that gives meaning and sense.

Bloom's and Krathwohl's Taxonomies: The updated taxonomy is focused on two goals: first, to encourage information retention, and second, to facilitate knowledge transfer (Mayer, 2002). Mayer & Wittrock (1996, cited in Mayer 2002: 226) define retention as the ability to retain knowledge at a later date, whereas transition is the ability to use what has been learned to solve complicated issues in new circumstances. Figure 3 best illustrates the essential skills required for quality learning.

Figure 3: Bloom's Taxonomy (Revised)



Source: Krathwohl's Taxonomy (2002: 215). Adapted.

Remembering (level one) is linked to knowledge retention from the six stages indicated in the updated taxonomy illustrated in Figure 3, whereas comprehension, implementation, review, assessment, and development are linked to information transfer (Mayer, 2002). Learners must be able to function at all taxonomic levels, according to Black and Ellis (2010, referenced in Thomas 2011: 28).

- **Remember:** Learners should have the ability to recollect information when needed, such as ideas, definitions, formulas, concepts, principles, etc.

- **Understand:** Learners must therefore know the significance of the information and express it in their own words.

- **Apply:** Learners need to use the information and knowledge acquired to solve problems and answer questions.

- **Analyze:** Learners should be able to study, examine, investigate and analyze knowledge or information.

- **Evaluate:** Learners need to be able to assess the significance of the information and procedure for a given purpose.

- **Create:** Finally, learners should be able to build or improve on their knowledge according to the situation and formulate new ideas depending on the circumstance.

Analysis of Models and Theories on Quality of Learning: Even though Bloom's Taxonomy came into being in 1956, it has been included in the current study due to its relevance and importance. Moreover, it is still commonly practiced today. Krathwohl has made some minor but pertinent amendments, as illustrated in Figure 2 in the revised taxonomy. Both Bloom's and Krathwohl's Taxonomies, including the Rauding Theory, indicate vital qualities necessary for learners and young graduates to possess and/or develop to be successful academically and in the field of Management Accounting. IFAC, IEC 3, SAICA, and other professional bodies have also stressed the significance of Bloom's, Krathwohl's taxonomies and General Education skills and soft skills necessary for Accountants and newly qualified graduates to succeed in the field of Accounting. After significant discussion on the subject of quality learning, it now becomes imperative to focus on the initiatives available to provide additional support for the development of teaching and learning for pupils. Initiative programs are essential tools that provide an additional alternative approach to the traditional classroom method of learning, which may strengthen and address any absence of academic skills in accounting learners.

Self-Efficacy: This section explores the concept of self-efficacy as it relates to the academic curriculum for Accounting students, particularly those who are struggling academically. The emphasis will be on learners' self-efficacy. The question is why some students appear to have more self-confidence in their abilities while others appear to have less confidence. The gap between these two extremes could be explained by a student's belief in his or her ability to execute tasks, which is known as Self-efficacy. A growing body of evidence suggests that self-efficacy beliefs and academic achievement are linked positively.

The Role of Self-Efficacy: Almost anybody can set goals, improve areas, and complete tasks. Nonetheless, most people are aware that putting such plans into action is not as simple as they may believe. Bandura and others examined and discovered that a person's self-efficacy is important in how they manage objectives, tasks, and problems. Bandura and others have discovered that a person's self-efficacy has a significant impact on how they manage objectives, activities, and problems.

Self-Efficacy vs Self-Esteem: There is a great deal of misunderstanding regarding Self-efficacy and self-esteem beliefs. It is therefore necessary to clarify the difference between these two concepts. As with Self-efficacy and other forms of expectation, there is no clear definition of the theoretical difference between Self-efficacy and self-esteem to researchers or people. Several researchers have used the terminology synonymously whereas others describe self-esteem as nothing more than a conceptual type of Self-efficacy. Other researchers define educational self-esteem as self-perception talent. Pajares (2002) believes that self-esteem is considered at a wide-ranging point of specificity, which involves the assessment of these abilities and the self-esteem associated with the behaviors in question.

A typical self-esteem item: "*How good are you in English?"* fluctuates significantly from a question on Self-efficacy, which can start from *"How certain are you that you can diagram this sentence*?" (Zimmerman, 2000). Beck (2008) highlights that Self-efficacy varies from self-esteem even though it is a judgment of individual capacities instead of just a general sense of self-worth. In addition, Ferla, Valcke and Cai (2009) conclude that the academic self-esteem of learners strongly influences their academic Self-efficacy values, and that this is a reliable predictor and decision-maker of effective and efficient motivational factors; while academic Self-efficacy is indeed a better indicator and facilitator of scholastic achievement. The vast number of available references shows that Self-efficacy progressed commencing a novel view in the 1960s to a common term now validated by a considerable body of literature.

Sources of Self-Efficacy: Bandura's early study focused on learners' tendency and ability to understand and alter their actions through vicarious interaction and social modeling rather than experience. Bandura (1994) advocates that Self-efficacy beliefs are formed according to how people perceive the feedback they receive from four sources:

- Performance in the Past (Bandura claims that one of the most powerful ways to build a clear sense of success would be through interactions of mastery);
- Modeled Behaviour;
- Others' Persuasion or Social Persuasion; and
- Physiological Effects.

Dimensions of Self-Efficacy: Self-efficacy evaluations differ along with three distinct yet interconnected factors. Self-efficacy is measured with these interconnected qualities. Magnitude, strength, and generalizability are the three dimensions in question.

- **Magnitude:** To begin, the degree of task complexity that an individual believes is doable may be explained by the strength of one's expectations of effectiveness (Bandura, 1977). Learners with a high level of Self-efficacy believe they are capable of accomplishing tough tasks, whereas learners with a low level of Self-efficacy believe they are only capable of completing simple activities.

- **Strength:** Second, the strength of self-efficacy expectations varies (Bandura, 1977). Low expectations are easily shattered by disconfirming information, whereas high expectations exist in the face of such information (Brief and Aldag, 1981).

- **Generalisability:** Finally, the degree to which self-efficacy expectations can be generalized varies (Bandura, 1977). Many students believe they are qualified to perform certain acts under specified situations, while others believe they can perform specific tasks under any conditions and take a slightly different activity. Within the Accounting environment, Albert Bandura's three dimensions of Self-efficacy theory were introduced.

Self-Efficacy Affecting Learner Performance: Through four primary psychological processes, self-efficacy can influence a learner's performance. The cognitive, motivational, emotional, and selection processes, according to Bandura (1994), are the four major processes.

- **Cognitive Process:** The learner's self-confidence influences the cognitive process by influencing the proactive situations that individuals create and practice (Bandura, 1994). Learners who have high Self-efficacy beliefs, for example, are more likely to predict success, whereas those who have low Self-efficacy beliefs are more likely to dwell on what could go wrong and predict failure. High Self-efficacy, on the other hand, can sometimes lead to learners putting in less effort on a single task. This is because high self-efficacy can lead to overconfidence in a learner's intellectual capacity, resulting in a false sense of potential.

- **Motivation Process:** Self-efficacy now influences motivation by determining the level of goal setting, determination, and failure resistance (Bandura 1994: 73). Students with a high sense of self-efficacy appear to set higher goal rates than those with a low sense of self-efficacy, implying a greater willingness to exert more effort. Learners who have low Self-efficacy frequently mention a lack of expertise, whereas those who have high Self-efficacy frequently mention a lack of dedication. As a result, those with low self-efficacy are more likely to give up when faced with adversity (Bandura 1994: 73).

- **Affective Process:** Affective processes, which govern emotional states and stimulate emotional or physiological reactions, are influenced by self-efficacy on numerous levels. According to Bandura (1994: 75), autonomic reflexes, catecholamine secretion, and endogenous opioid release are triggered by a poor sensation of effectiveness for exercising stressor management. Those who have a higher sense of self-regulatory effectiveness, on the other hand, are more successful in eliminating

health-damaging behaviors and incorporating health-promoting practices into their daily routines (Bandura 1994: 75).

- **Selection Process:** Self-efficacy also influences selection processes, implying that it has an impact on the types of activities and conditions pupils choose.

Assessment Processes: Activity criteria analysis, knowledge attribution analysis, and personal and situational resource evaluation are the three self-efficacy evaluation methods.

Analysis of Task Requirements: The mental strength of a student will determine the level of performance required. When task requirements are analyzed, judgments are made regarding what it will take to accomplish at various levels (Gist and Mitchell, 1992). When a student considers the burden of creating a market prediction, the researchers point out that he or she may recognize the degree to which quantitative abilities, such as statistics, are required to perform well, as well as the time required. As a result, anytime the work is original or newly discovered, the activity analysis should be carefully explained. Individuals who have completed jobs personally and frequently in the past are more likely to depend largely on their understanding of the causes of previous performance levels (Gist and Mitchell, 1992).

Attribution Analysis of Experience: Gist and Mitchell (1992) point out that attributional analysis entails a learner's assessment of why a particular level of achievement occurred. Although individual experiences may provide more robust data for attributional scrutiny, causal information from persuasion or modelling experiences can also be acquired (Gist and Mitchell, 1992). According to the researchers, learners can determine the appropriate skills and personality traits used by lecturers or peers in the performance of a task by calculating the extent to which certain skills are identical to their own and inferring the magnitude of their commitment versus the ability required to produce a comparable result by calculating the extent to which certain skills are identical to their own and inferring the magnitude of their commitment versus the ability required to produce a comparable result by calculating the extent to which certain skills are identical to their own and inferring

Assessment of Personal and Situational Resources: Gist and Mitchell (1992) point out that a person's assessment of personal and situational supplies is linked to their consideration of personal and situational elements. Personal aspects include things like skills level, anxiety, motivation, and energy availability, whereas situational influences include things like competing requests and diversions (Gist and Mitchell, 1992).

Self-Efficacy and Information Processing: Cognitive psychology views a person as an information processor in the same way as a machine that receives information and follows an output program (McLeod 2008). Cognitive psychology compares the human mind with that of a machine, which means that learners are indeed processors of knowledge and that it is necessary and acceptable to research the internal emotional processes, which often reside behind learners' motivations and reactions.

Goal Setting: Schunk (1991) suggests that learners who set goals, as well as through teachers or lecturers assigning a target, are prone to feeling an initial sense of Self-efficacy to achieve it. Often, learners who obtain goals are more likely to commit to pursuing the task and therefore goals need to affect performance. As learners move through the mission, they engage in activities that they think will contribute to achieving the goal. Schunk (1991) believes the activities that learners engage in are attending to instruction; rehearsing material to remember; expending effort; and persistence. Learners will need to interpret the information before rehearsing the information to achieve the goals set by themselves or teachers/lecturers.

Academic Material: Research studies have shown that learners' Self-efficacy about their capabilities can influence motivation and learning to process academic material knowingly through the process of perception, memory, judgment, and reasoning. Schunk (1989) argues that learners who consider that they will have significant difficulty in understanding information may have a lower perception of effectiveness in understanding it, whilst learners who feel they are capable of managing information processing requirements will feel more positive. A greater sense of efficacy encourages learners to carry out those tasks that they are

confident will result in becoming skilled. As a learner works on a task, he/she derives information about how well they understand. Schunk (1991) believes that if the learner has the perception that he/she can interpret the academic material, it enhances their efficacy and incentive. Alternatively, if the impression is that minimal progression is been made, then it will suppress learners' effectiveness and motivation. However, if learners feel they can do well by modifying their commitment to the assignment, it may increase their effectiveness and encouragement.

Salomon (1984) carried out a study on students' efficacy in studying from television, composing a text, and found that Self-efficacy has links to psychological determination. Participants had been approved permission on whether to watch a televised movie or read a comparative text and thereafter participants were evaluated on the material. It measured the amount of human energy required to know. The findings showed that learners with an increased mental commitment to text had shown higher text-related achievement ratings. Self-efficacy was effectively associated with intellectual effort and accomplishment concerning the learning of text. As with television research, it correlated with intellectual effort in the negative. Students who viewed television felt that learning was more effective, but used minimal energy and accomplished at an even reduced level. Meier, McCarthy and Schunk (1984) highlight that mental processing measurement amongst university students is associated with the effectiveness of writing. Learners were at the beginning and at the end of a semester requested to write essays. Thereafter, their efficacy was assessed after accomplishing the course writing objectives. Efficacy accurately predicted performance in writing.

Analysis of Self-Efficacy and Information Processing: The Management Accounting program demands learners to be proficient in reading and interpreting the requirements of case studies. The rapid and scanning methods that learners usually use may be more suitable for reading newspaper articles. Therefore, learners who believe that they will experience considerable difficulty interpreting academic material are capable of holding a low sense of efficacy for learning Management Accounting. However, those learners who believe they have become capable of managing information-processing requirements should be more efficacious in Management Accounting. A study by Salomon (1984) observed that all those learners with increased mental commitment to writing also showed higher text-based success scores. The Self-efficacy of text learning was positively associated with intellectual effort and a sense of accomplishment. The Self-efficacy for television studying was negatively associated with mental effort. Learners who watched television thought they were more successful in learning and therefore used a smaller amount of energy and achieved at a reduced level.

3. Methodology

Research Design: The current research paper made use of the quantitative methodology.

Longitudinal Research Study: The current research study collected data at two points in time: before the implementation of the General Education Modules and after the implementation of the General Education Modules. The aim was to measure any noticeable change between the non-implementation and implementation phase, if any, in the learners' Self-efficacy over the period. In view that the current research study aims to determine the apparent gains in learners' Self-efficacy over a period, after the implementation of the General Education Modules, therefore the researcher felt it was more appropriate to use the longitudinal study type method.

Quasi-Experimental Design: The nature of the quasi-experimental approach that was used in the current study is the non-equivalent pre-test and post-test control group design. In the current research study, the scholar pursued to conclude whether the intervention, that is, the integration of General Education into the CMA program influences the Self-efficacy of CMA learners.

Sampling Design: The target population considered for the current study were first-year learners registered, for Cost and Management Accounting at Mangosuthu University of Technology (MUT) and DUT. A census survey was considered an appropriate method and relevant to the present study.

Sample Size: The sample size that was deemed appropriate for the study in progress is as follows:

- The control group: The first-year learners registered for Cost and Management Accounting at MUT.

- The experimental group: The first-year learners registered for Cost and Management Accounting at the DUT.

Data Collection Method: For this study, Cost and Management Accounting students were given questionnaires (quantitative approach) to determine their level of self-efficacy. The questionnaires were distributed in two stages. The first stage occurred at the time of the learner's enrolment, followed by a follow-up near the end of the second year of study. The researcher was in charge of disseminating and collecting all of the respondents' questionnaires.

Data Analysis: Cronbach Alpha, Correlation Analysis, Bar charts, Cross-tabulations, T-tests, and ANOVA were among the inferential statistics employed in this study. Under the supervision of a statistician, quantitative data were collected using the computer software package known as Statistical Package for Social Sciences (SPSS). Predictive Analytics Software (PASW) Statistics and Pearson Chi-Square Tests were used to analyze the quantitative data.

Research Ethics: The researcher met all of the conditions set forth by the DUT's Institutional Research Ethics Committee (IREC). The current study had no ethnic or community focus and adhered to all of the university's ethical norms and guiding principles.

4. Results and Discussion

The current section presents the results and interprets the findings obtained from the questionnaires in the current study. The questionnaire was the primary tool utilized to collect data from DUT and MUT learners. The data collected from the responses were analyzed using SPSS version 26.0. The descriptive statistics will be presented in the form of graphs and cross-tabulations. The inferential techniques include the use of correlations and chi-square test values, which are interpreted by using the p-values.

The Sample: In total, 442 questionnaires were distributed and 360 questionnaires were completed and returned, which gave an 81.5% response rate.

Factor Analysis: A summary table represents the results of the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett's Test of Sphericity before the matrix tables. The KMO must be larger than 0.50 and Bartlett's Test of Sphericity must be less than 0.05. The prerequisites are met in every case, allowing for the factor analysis technique. Table 1 shows the KMO and Bartlett's Test results for the study's pre-test.

Table 1: KMO and Bartlett's Test (Pre-Test)

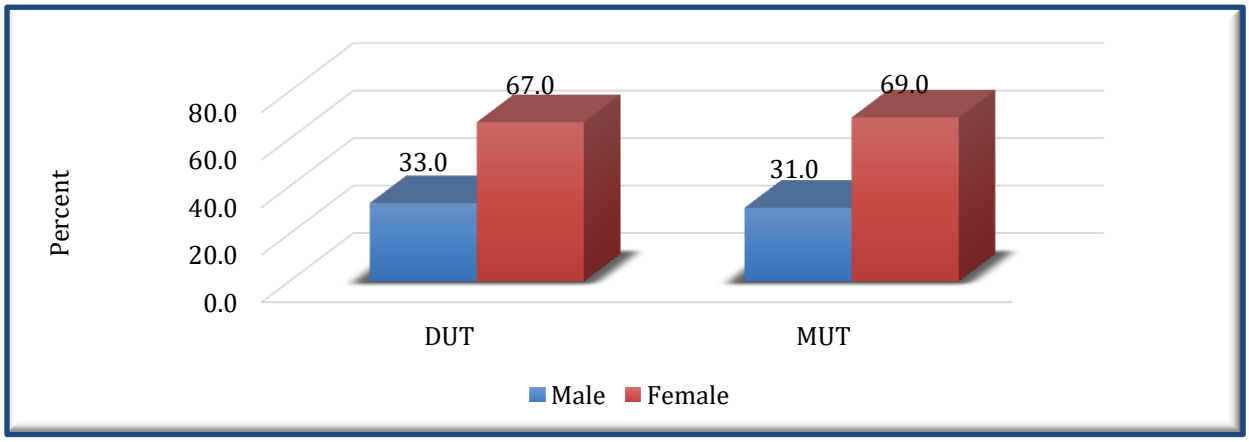
The Measure of Sampling Adequacy.		**0.841**
Bartlett's Test of	Approx. Chi-Square	2575.439
	df	435
	Sig.	0.000

Table 2 reflects the KMO and Bartlett's Test regarding the post-test of the study.

Table 2: KMO and Bartlett's Test (Post-Test)

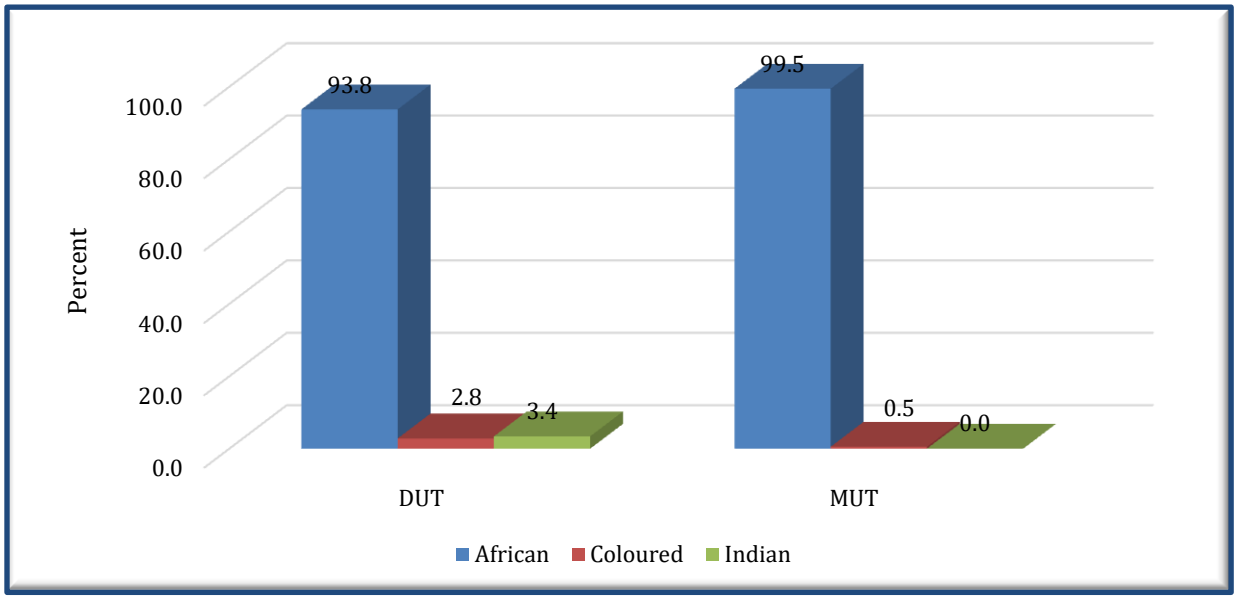
Post-Test of Study		
Sampling Adequacy.		**0.868**
	Approx. Chi-Square	2249.146
	df	435
	Sig.	0.000

Figure 4: Gender Distribution



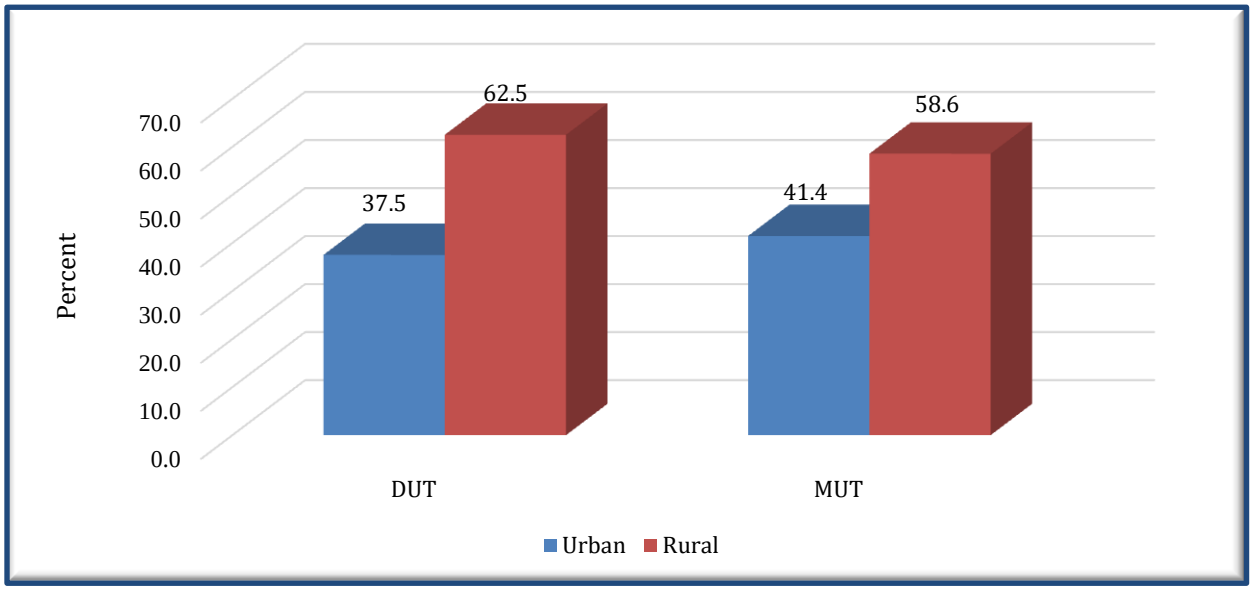
All of the conditions are satisfied for factor analysis, which means that the Kaiser-Meyer-Olkin Measure of Sampling Adequacy value should be greater than 0.500 and Bartlett's Test of Sphericity sig. the value should be less than 0.05. Figure 4 illustrates the gender distribution of the respondents from DUT and MUT. Learners' statistical data for DUT comprises 67% females and 33% males, while the MUT learner population is 69% females and 31% males. The overall ratio of males to female respondents is approximately 1:2 (32.0%: 68.0%). There were significantly more females than males ($p < 0.001$), but the composition of the institution is not different ($p = 0.735$). Figure 5 illustrates the racial composition of the respondents of both DUT and MUT.

Figure 5: Racial Composition of Respondents



The respondents' statistical data for DUT comprises of 93.8% African, 2.8% Coloured and 3.4% Indian; while MUT's learner population is 99.5% African, 0.5% Coloured and 0.0% Indian. There are significantly more African respondents in each institution ($p < 0.001$). The composition of the institution is also significantly different ($p = 0.003$), with there being more African respondents at MUT, whilst DUT had more Coloured and Indian respondents compared to MUT. Figure 6 indicates the nature of the respondents' home district.

Figure 6: Home District of Respondents



The DUT respondents' home district comprised 37.5% urban and 62.5% rural; while MUT respondents' home district is 41.4% urban and 58.6% rural. Within each institution, there were significantly more respondents from rural areas ($p < 0.05$), but the ratio of respondents between the institutions was similar ($p = 0.257$). Figure 8 illustrates the respondents' location in the high/secondary school district of both DUT and MUT. The DUT respondents' high/secondary school district comprised 44.9% urban and 55.1% rural; while MUT respondents' high/secondary school district is 47.3% urban and 52.7% rural. According to each institution, there were similar numbers of respondents who attended urban schools, as there were those who attended rural schools ($p > 0.05$).

Figure 7: High/Secondary School of Respondents

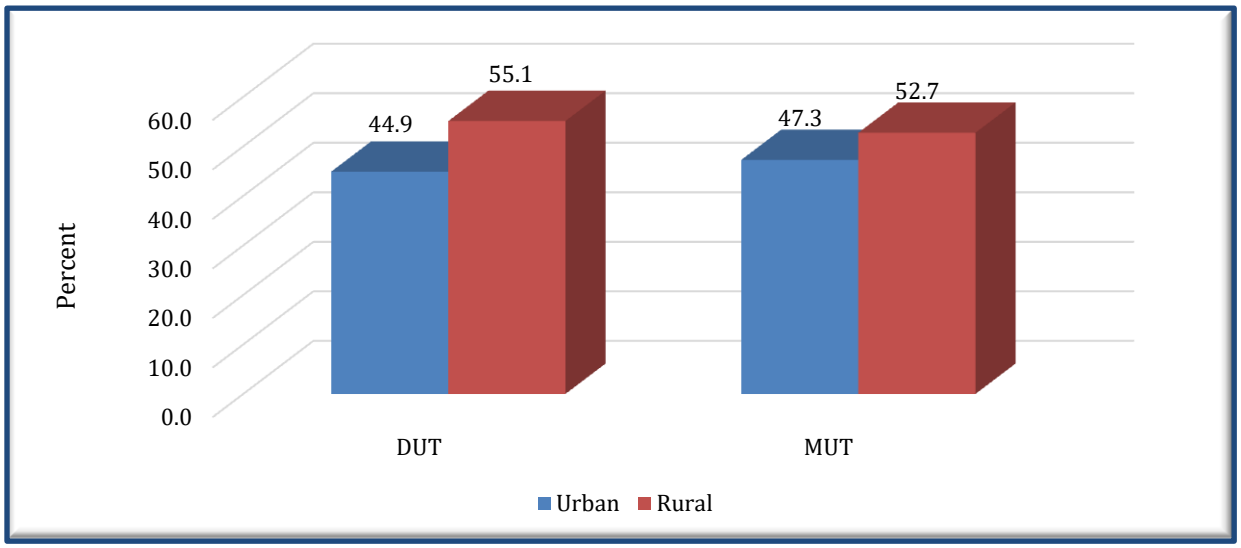
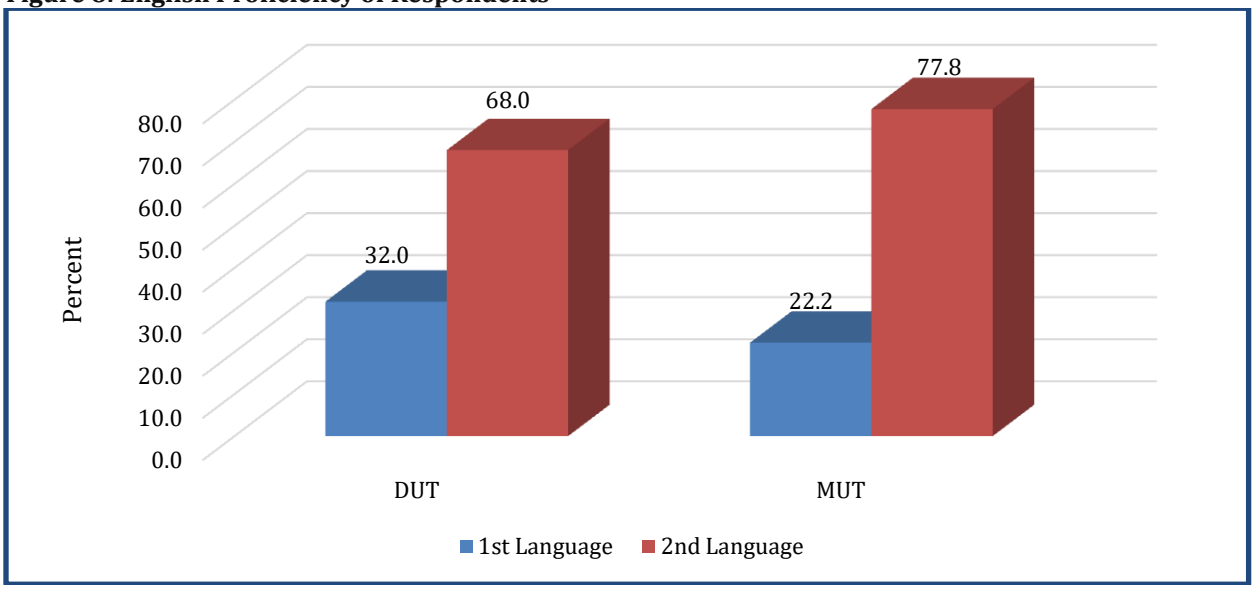


Figure 8 illustrates the English proficiency of the respondents.

Figure 8: English Proficiency of Respondents



The DUT respondents' English proficiency comprised 32.0% 1st Language and 68.0% 2nd Language; while MUT respondents' English proficiency comprised 22.2% 1st Language and 77.8% 2nd Language. The ratio of first to second language respondents was 1:2 at DUT and approximately 1:4 at MUT ($p < 0.05$). The difference was significant between the institutions ($p = 0.042$).

Analysis of Variables (DUT & MUT): The study also analyzed other variables that could affect the Self-efficacy of learners. Sex, race, home district, school (urban/rural), and language proficiency were the variables that were considered.

Comparative Analysis of Variables (DUT): Table 3 illustrates a comparative analysis of variables regarding DUT. The current study probed a comparative analysis of biological data for DUT that could affect learners' Self-efficacy. The variables taken into consideration were Gender, Race, Home District, School (urban/rural), and Language proficiency. The comparative analysis between the same variable revealed no significant difference. However, females, Africans, Urban Home District, Urban School, and English Second Language learners scored more in the post-test.

Table 3: Comparative Analysis of Variables (DUT)

DUT	Pre-test % (Mean Score)	Post-test % (Mean Score)	Difference % (Mean Score)
Gender:			
Male	68.1345	77.0241	8.8896
Female	68.1966	77.3932	9.1966
Race:			
African	67.9339	77.0776	9.1437
Coloured	75.0600	76.6800	1.62
Indian	69.1000	83.1000	14
Home District:			
Rural	69.0218	77.7045	8.6827
Urban	66.7667	76.5500	9.7833
School:			
Rural	69.2010	77.8165	8.6155
Urban	66.9177	76.6025	9.6848

Language:			
1st Language	69.7309	77.6309	7.9
2nd Language	67.5197	76.9581	9.4384

Table 3 reflects the analysis of DUT and MUT. For the effect size testing, the study used ANOVA. An effect size is utilized when the dependent variable is numerical and the independent variable is categorical and is measured using a partial eta squared score. Various scenarios were set up for individual institutions, together with a combined cohort. In all instances, there was a minimal effect by the following variables on the scores observed: Gender, Race, Home District, School (urban/rural), Language proficiency, and the combinations thereof. It was observed that all of the partial eta squared values are less than 0.02, which is an indication of a small effect (refer to Table 4). This means that these variables had little to no effect on the overall patterns observed.

Table 4: Analysis of Variables (DUT & MUT)

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	2286.663[a]	19	120.351	1.627	0.048	0.086
Intercept	149706.686	1	149706.686	2024.446	0.000	0.860
Q1.3	18.590	1	18.590	0.251	0.616	0.001
Q1.4	340.560	2	170.280	2.303	0.102	0.014
Q1.5	44.561	1	44.561	0.603	0.438	0.002
Q1.6	69.478	1	69.478	0.940	0.333	0.003
Q1.7	13.052	1	13.052	0.177	0.675	0.001

5. Recommendations

To boost accounting students' self-efficacy, the research article suggests incorporating General Education courses into the curriculum. Furthermore, present learners' General Education skills appear to be quite inadequate, and respondents indicated that self-efficacy may have a good impact on their academic achievement.

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The Quality of the Government Financial Statements: An Empirical Study

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Abstract: This study aims to identify and evaluate the impact of accrual-based government accounting standards, human resources, and internal control on the quality of financial statements in the Ministry of Agriculture Republic of Indonesia Food Security Agency's finances. One central work unit and 34 regional work units dispersed across the provinces make up the Food Security Agency work unit. The Central Food Security Agency work unit will subsequently assemble the financial report into a financial report for Echelon 1 level. This study is quantitative and draws its primary data from the answers to the questionnaires that were given to participants. Only 50 of 70 respondents who participated in the study's samples met the criteria. In this investigation, Smart Partial Least Square 3.0 was also employed, and the Structural Equation Modeling (SEM) approach was used to evaluate the data and test the research's assumptions. The use of accrual-based government accounting standards and internal control has a substantial impact on the caliber of government financial reports, according to the study's findings. The effectiveness of the central government's financial reporting was not significantly impacted by the findings about the human resources' competency, nevertheless. The contribution in this study by the linked work units is to help apply accrual-based government accounting standards in tandem with government regulation No. 71 of 2010 and lower the financial reporting mistake rate. Additionally, it is anticipated that this study will offer data that may be used as input to improve internal control and raise the caliber of government financial statements.

Keywords: *Quality of the Financial Statements, Human Resources Competence, Internal Control, Accrual Based Government Accounting System.*

1. Introduction

Financial reports are known to be necessary for an organization or ministry as a means of accountability. If a financial report offers trustworthy and pertinent information, it will be of high quality (Mardiasmo, 2009). Government Regulation No. 71 from 2010 provides support for this by stating that a financial report's quality is judged appropriate and good if it has the following components: 1) relevance, 2) dependability, 3) comparability, and 4) understanding. Law No. 15 of 2004 was released about the audit of the state financial management and responsibility in mandating all agencies in the government to apply the accrual basis as a concrete form of the government in making and enhancing financial governance. The release of Government Regulation No. 71 the year 2010, which replaced Government Regulation No. 24 the year 2005 regarding cash-based Government Accounting Standards, this can be done concurrently and put into practice. The publication of rule No. 64 for 2013 addressing the application of accrual-based government accounting standards (ABGAS) to the government follows it as well. Knowing that cash-based transactions are recognized when the cash is received or issued, whereas accrual-based transactions are recognized when the accounting records are generated, highlights the obvious distinction between the usage of accrual-based and cash-based government accounting standards. Additionally, this will alter how many financial reports are generated.

This, until now, had only consisted of four financial reports: the report on the realization of the budget, the report on the cash flow, the report on the financial situation, and the report on the financial statement comments. The operational report, budget balance report, and equity changes report are now 3 new financial reports that have been added. The budget balance report and the cash flow report are not included in the five financial reports that must be submitted to the central government, as the Ministry of Finance is the State General Treasurer. The 2020 Summary of Semester Audit Reports (IHPS / Ikhtisar Hasil Pemeriksaan), the Unqualified Opinion (WTP / Opini Wajar Tanpa Pengecualian), and the Financial Report of Line Ministries (LKKL / Laporan Keuangan Kementerian / Lembaga) have all surpassed their respective initial targets of 95 percent and 97 percent, respectively, on the National Medium-Term Development Plan (RPJMN) from 2015 to 2019. Up to 84 Line Ministries and 1 State General Treasurer obtained Unqualified Opinions (97%); 2 Line Ministries received Qualified Audit Opinions (WDP) (2%), and 1 Line Ministry received a Disclaimer of

Opinion (TMP) (1%). According to the Audit Board of the Republic of Indonesia's (BPK) findings, the Ministry of Agriculture of the Republic of Indonesia earned an Unqualified Opinion on the audited financial report in 2020 (BPK, 2020).

Isma Yatun, the IV head of the Audit Board of the Republic of Indonesia, submitted the Audit Report (LHP) on the financial report of the Ministry of Agriculture of the Republic of Indonesia as well as the Audit Report for the management and financial accountability of the fertilizer subsidy expenditure budget, amounting to 999.07, in 2020. Syahrul Yasin Limpo was provided this submission on Tuesday, August 8. BPK indicated during a news conference that the Financial Report contains a number of problematic occurrences that need to be fixed. These specific topics received suggestions for improvement from the Food Security Agency work unit. The first is for community and/or local government expenditures that have not yet been subject to prompt accountability. The second is the management of spending on supplies connected to the Covid-19 epidemic in 2020. Overpayments to third parties may occur as a result of the provisions not being followed. Isma Yatun recalled the BPK recommendations, and he also reminded the Minister of Agriculture of the Republic of Indonesia, as well as the relevant work units and their staff that are coordinated by the General Secretary and General Inspector of the Ministry of Agriculture of the Republic of Indonesia, to make the best possible progress in implementing them. This is done to improve state financial governance and provide information for the Audit Board of the Republic of Indonesia's Audit Report. Aside from that, ABGAS is the aspect that affects the quality of financial reports.

Government Accounting Standards, according to Bastian (2010), are accounting principle that is employed in the creation and presentation of financial reports and has legal weight to raise the caliber of government financial reports. Previous studies have supported this syndrome (Meinarsih et al., 2020; Hasibuan and Syahrial, 2019). Competence in human resources, which is the science and art that can effectively and efficiently regulate the relationship and role of the workforce as well as0 help realize the goals of the company, the employees, and the society at large (Hasibuan 2002:10), is another factor that can impact the quality of financial reports. This is consistent with the earlier study by Hapsari et al. (2019) and Hidayah (2018). Internal control is another element that may have an impact on the financial report's quality. Errors like incorrect recording and calculation may occur in a risk accounting system. Therefore, according to a study by Aswar (2020), internal control should be able to reduce errors and become a component of the system that supports the flow of the information system (Aswar, 2020; Razak et al., 2017; Meinarsih et al., 2020). This study is useful to provide input in the application of accrual-based SAP with PP No. 71 of 2010 and reduce the cost error rate in financial reporting, providing information related to variables that affect the quality of financial reports. According to the justification given, this study aims to ascertain and evaluate the impact of internal control, human resources expertise, and the application of ABGAS on the caliber of financial statements.

2. Literature Review and Hypothesis Development

Agency Theory: Agency theory relates to the contractual arrangement between the principle and the contract agent to serve the interests of the principal, including the delegating of decision-making authority (Jensen & Meckling, 1976). According to agency theory, an agent's responsibility for the presentation, reporting, and disclosure of all activities that are a part of the form of accountability towards the principles of those who are entitled to the accountability can be viewed as public accountability (Kurniawan, 2016). According to the aforementioned idea, the work unit serves as the agent while the principal, who uses the financial report's information, is the job of the principal in the public sector. The government, acting as this agent, is required to present accurate and fair financial reports, and it must be able to give access that consumers of the financial reports can utilize effectively.

The Quality of the Financial Statements: Financial reporting is a means of providing external users with company-specific financial accounting information at various phases of development (Nikolai et al., 2018: 8). Financial reports can also be used as a presentation and communication tool for an economic entity's total financial information to parties interested in the company's operations (Giri, 2012: 4). By delivering fair news, displaying the entity's state, and producing quality financial statements, this will be helpful for those who read financial reports (Wood & Horner, 2010). A financial report has good standards and adheres to

them, namely by using the four criteria listed in Government Regulation No. 71 of 2010: relevance, reliability, comparability, and understandability. Additionally, it can be used to assess its qualification by using nine indicators: (1) usefulness, (2) accuracy, (3) completeness of the information presented, (4) honesty of presentation, (5) content verification, (6) neutrality of the data, (7) accuracy of the information presented, (8) comparability of the material, and (9) clarity of presentation of the financial reports.

Human Resources Competence: Naturally, competent human resources must produce a good and adequate financial report for the outcomes to meet the requirements of Government Regulation No. 71 for the year 2010. The science and art of managing the workforce to improve effectiveness and efficiency in achieving the objectives of the business, the employees, and society are together known as human resources (Hasibuan 2002:10). According to Hidayah (2018), competency is a combination of technical and non-technical variables, including a person's behavior and personality as well as their hard and soft abilities. Human resources competency, according to a quote from Mangkunegara (2012:40), is a quality that is connected to knowledge, skills, abilities, and personality traits that can significantly influence performance.

Human resources competencies can be shaped by three primary factors: knowledge, behavior ability, and skills. Another issue is that there are two methods to tell whether someone is competent or not: by looking at their motivations, qualities, self-concept, knowledge, and abilities (Sanghi, 2007). In addition, there are measures of knowledge, attitudes, and skills (Robbins & Judge, 2015). To determine the existence of these differences, this study makes use of the knowledge, attitudes, and skills indicators from Robbins and Judge (2015), which comply with PP No. 101 of 2010. Due to the existing disparity, this study adopts indicator measurements on (1) knowledge, (2) attitude, and (3) skills that are in compliance with Government Regulation No. 101 the year 2010 taken from Robbins and Judge (2015).

Internal Control: One of the greatest criteria for successful governance is an internal control (Meinarsih et al., 2020). Internal control, according to Romney and Steinbart (2009:229), is a strategy used by businesses and organizations to protect assets, deliver correct news, increase operational efficiency, and, of course, promote adherence to specified regulations. Of course, this is possible through examining the organization's accomplishments, namely its operations' efficacy and efficiency, the accuracy of its financial reporting, and its adherence to legal requirements (COSO, 2013). Two different indicator measurement techniques can be used to gauge the effectiveness of internal controls, including (1) the development of sound controls, (2) the application of risk assessments, (3) the implementation of control activities, (4) the application of effective information and communication, and (5) the application of monitoring activities (Razak et al., 2017). A different approach is to assess the indicator systems for the (2) expenditure or cost accounting control activities and the (1) revenue accounting control activities (Widyaningsih et al., 2011). This study measures the (1) income accounting system control activities and (2) the expenditure or cost accounting system control activities using indicator metrics that were borrowed from Widyaningsih et al. (2011).

Hypothesis and Conceptual Framework: The following is how the study's hypothesis, which may have an impact on how much information is disclosed in local government financial accounts, is formulated.

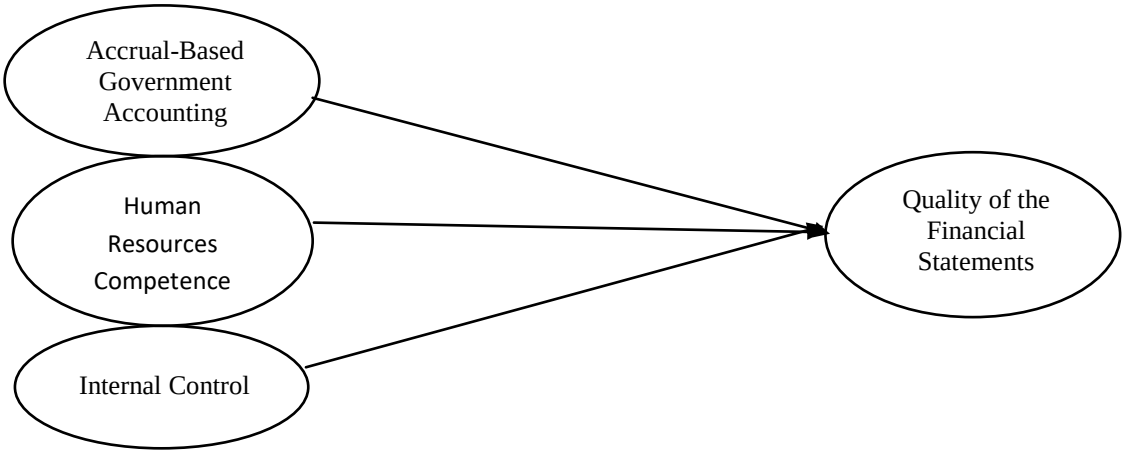
The Application of the Accrual-Based Government Accounting System and the Quality of Financial Reports: ABGAS can produce better financial reports if it is used correctly, which will benefit the readers of the financial reports in the long run. They may also serve as a foundation for choices. Additionally, this is consistent with the findings of Zainuddin and Setiyawati (2019). If the financial reports are compliant with the applicable Government Accounting System, the work unit has a responsibility to the users of those reports. Halim and Purnomo (2018), Hasibuan and Syahrial (2019), Gamayuni (2019), and Zainuddin and Setiyawati (2019) studied the impact of the deployment of the ABGAS on the caliber of financial reports.
H_1: The application of the Accrual-Based Government Accounting System affects the quality of financial statements.

Competence of Human Resources and the Quality of Financial Reports: Because of its interactions with capital elements, materials, procedures, and machines, human resources play a crucial role—one that might even be called very important. This intricacy can be utilized as a barometer for the excellence of the human person (Hapsari et al., 2019). As a result, the effectiveness of human resources may have an impact on the

final product's financial report quality. The previous study by Rapina (2019), Halim and Purnomo (2018), Hasibuan and Syahrial (2019) and Meinarsih et al. (2020) explored the impact of human resources expertise on the caliber of financial reports.
H_2: Human Resources competence affects the quality of financial statements.

Internal Control and the Quality of Financial Reports: This internal control's goal is to verify the veracity and integrity of the accounting data. The risk of recording or calculation errors in the accounting system can be reduced with the help of this internal control. Internal control is one component of the accounting information system that helps the system function properly (Aswar, 2020). The quality of financial reports that will be presented later can be improved by internal control; if the internal control is successful, the quality of financial reports will also improve. Internal control has an impact on the quality of financial reporting, according to earlier studies by Aswar (2020), Razak et al. (2017) and Meinarsih et al. (2020).
H_3: Internal control affects the quality of financial statements.

Figure 1: Research Framework



3. Research Methodology

This study makes use of a specific demographic in the Ministry of Agriculture, which is broken up into 11 Work Units. The 2020 financial report at the Ministry of Agriculture Republic Indonesia received the results of Unqualified Opinion from the Audit Board of the Republic Indonesia, which is why this population was taken there. Purposive sampling, with certain restrictions, was the sampling technique utilized in this study, and the sample came from the Food Security Agency of the Ministry of the Agriculture Republic of Indonesia, which was composed of 34 regional work units spread out across the provinces and 1 central work unit. The aforementioned technique involved giving out questionnaires to samples that matched the criteria to gather the data. 50 respondents were the minimum number of samples that could be tested for this investigation. The following measurements were made using the variables:

Table 1: Measurement of Variables

Variable	Indicators	Number of Question	Scale
The Quality of financial report	Relevance, Reliability, Comparable, Understandable	11	Likert
Implementation of the Accrual-Based Government Accounting System	The purpose of the financial report, The principle of accounting and financial report, The elements of the financial report	22	Likert
Competence of Human Resource	Knowledge, Attitude, Skills	8	Likert
Internal Control	Accounting system control activities on accounting revenue, accounting system control on accounting expenses	12	Likert

4. Results and Discussion

One of the procedures done to make the sample in this study simple to understand is this statistical description stage. Additionally, it is important so that data can be grouped and afterward verified whether any unrelated statistical hypotheses exist (Pallant, 2005). Additionally, once these steps have been completed, the next, more in-depth phase might be added. It may be claimed that all of them use the mean and standard deviation to explain the study data being assessed for this statistical assessment (Sekaran & Bougie, 2016). The mean is a statistic that expresses the central tendency of the data without regard to its completeness (Sekaran & Bougie, 2016). Along with the data scale ratio, the standard deviation is a fundamental metric that can be used to characterize a measurement of distributed data because it indicates how widely distributed the data are. The 5-point Likert scale is used in the survey for this investigation. Using a scale range, it may be deduced that anything is considered low if the mean value is less than 2.33. More than 3.67 is classified as high, and between 2.33 and 3.66, it is moderate. The findings of the descriptive statistical tests used in this study are described below; the data used in the tests were taken from the processed data:

Table 2: Statistical Descriptive Analysis

Number	Variable	Number of Questions	Mean	Standard Deviation
1.	The quality of the financial report	11	4.74	0.050990
2.	The application of an accrual-based Government Accounting System	22	4.37	0.024944
3.	Human Resources competence	8	4.18	0.081650
4.	Internal control	12	4.18	0.020000

The quality of financial statements, which comprises 11 questions, has a mean value of 4.74 and a standard deviation of 0.050990, according to the data previously presented. The application of ABGAS has 22 questions with a mean of 4.37 and a standard deviation of 0.024944, while the competency in human resources consists of 8 questions with a mean of 4.18 and a standard deviation of 0.081650. With 12 questions, the internal control has a mean value of 4.18 and a standard deviation of 0.02000. The T-test was employed in this study's hypothesis testing to examine the link between independent factors such as human resources competency, internal control, and the adoption of ABGAS and the dependent variable's quality of financial reports. Degree of Freedom (DF) = n - k, which showed Degree of Freedom (DF) = 50 - 5 and a 5 percent confidence level, was used to base the results in the t-table for this investigation.

Table 3: PLS Path Algorithm and Bootstrapping

	Coefficient Path (original sample)	T Statistics	P Values
HSC->QFS	-0.169	1.264	0.207
IQ-> QFS	0.503	3.020	0.003
AAGAS-> QFS	0.245	2.006	0.045

Based on Table 3 above, shows that t-count > t-table is 2,006 > 1,679 and the significance value is 0.045 0.05 in the table above, according to tests done on the accuracy of the financial report utilizing the accrual-based Government Accounting System. Thus, it can be said that the quality of financial reporting is significantly impacted by the use of ABGAS. Then, Ha1 is approved whereas H0 is disapproved. In addition, the results of the examinations on the proficiency of Human Resources regarding the caliber of the financial reports are shown in the table above. The test yielded t count t table results of 1.246 1.679, with a significance level of 0.207 > 0.05. This suggests that the competency of human resources does not significantly affect the caliber of financial reports. After that, H0 is approved and Ha2 is refused. When comparing the quality of the financial reports to internal control.

The results of the tests demonstrate that t-count > t-table, or 3.020 > 1.679, with a significant value of 0.003 0.05. It is true that internal control has a big impact on how accurate financial reporting is. Then, Ha3 is approved but H0 is disapproved. Utilizing accounting concepts with a solid legal foundation, the accrual-based government accounting system is implemented to improve the caliber of the government's financial reporting (Bastian, 2010). This concurs with Budiono's (2016) use of the ABGAS as a benchmark to balance the perspectives of decision-makers, users, and auditors. To determine the degree of significance between the adoption of ABGAS variables and the caliber of the financial reports, this research used a t-statistical test. The test yielded the following results: t count > t table of 2,006 > 1,679; significance level: 0.045 0.05.

Based on the findings, it can be said that the use of the ABGAS significantly affects the caliber of the financial reports. As a result, Ha1 is acceptable in cases when the adoption of the ABGAS materially affects the caliber of the financial reports. From the test findings, it can be seen that ABGAS has an impact on the quality of financial statements, according to Meinarsih et al. (2020), Hasibuan and Syahrial (2019), as well as Halim and Purnomo (2018). The use of ABGAS is one of the factors that might influence the high or low quality of the financial reports, according to the findings of the three previous studies. The results, namely those for Ha1, are accepted. The agency theory, which holds that the work unit is responsible for the financial report users, is the theoretical foundation for this study. The outcomes of the financial reports that are presented show this. As stated in the agency theory, if the application of the ABGAS has been implemented, the results of the financial report will have a high quality and be in compliance with what is required. In this way, the needs of the users of the financial reports can be met, and this can also help to reduce misunderstandings between principals and agents. The preparation of the financial reports undoubtedly involves a large number of human resources. The performance can be directly impacted by the information, abilities, skills, and personality traits that make up human resources' competence (Mangkunegara, 2012:40).

According to an earlier study, applying accrual accounting will undoubtedly be delayed by a lack of qualifications because human resources expertise is required to undertake accounting processes. If human resources are not competent enough, it will also affect the caliber of the financial reporting (Harun et al., 2012). The findings of the test, which was run using the Smart PLS 3.0 tool, are a t count t table of 1.246 1.679, with a significance value of 0.207 > 0.05. As a result, the effectiveness of human resources has little bearing on the caliber of financial reporting. Therefore, H02 is approved whereas Ha2 is rejected, and the competency of the human resources department had little to no impact on the caliber of the financial report. The findings of this study are consistent with those of earlier studies by Dewi and Hoesada (2020) and Hapsari and Pratomo, among others (2021). It demonstrates that there is no discernible relationship between human resources' skill and the caliber of the financial report. However, this study differs from previous research by Rapina (2019) and Halim and Purnomo (2018), which found that human resources expertise had an impact on the accuracy of financial reports. The research's theoretical framework is the agency theory, yet the theory's test results did not support Ha2 being disregarded.

In addition to stating that the Human Resources competency variable has no bearing on the financial reports' quality, Hapsari and Pratomo (2021) also suggest that a lack of Human Resources competency will have an impact on the outcomes of the financial report. It may be difficult for human resources to maintain the required journals if they lack financial and accounting skills. It is clear from this that knowledge is the primary contributor to competence in human resources. A high-quality financial report cannot be generated if you lack the expertise to support it. Even though it takes more time, financial reports can still be finished. The independent variable should be directly proportional to the dependent variable according to the agency theory, but this study demonstrates that this is not the case. This can be brought on by knowledge, one of the questionnaire's indicators. Compared to the other two measures, which also take attitudes and talents into account, it has the lowest value. The knowledge indicator, which was given a mean score of 4.08, is evidently thought to be a crucial foundation for human resource competency. Ha2 is therefore disregarded since, according to descriptive statistics of the results on human resource competence, it displays an average value for the knowledge indicator of 4.08, which is low in comparison to other indicators.

This indicates that, among all of these variables, Human Resource competency is poor and should be raised to positively affect the caliber of the financial reports. This internal control's goal is to verify the veracity and integrity of the accounting data. Internal control is one aspect of the accounting information system that

supports the efficient operation of the information system. It is risky to have recording or calculation errors in the accounting system, and it is important for minimizing errors (Aswar, 2020). According to the findings of the tests, t table > t count, specifically at 3,020 > 1,679 with a significant value of 0.003 0.05. This suggests that internal control has a major impact on the accuracy of financial reports. As a result, Ha3 is accepted for this study but Ha0 is rejected, indicating that internal control significantly affects the caliber of financial reports. The test results from this study and those from earlier studies like Aswar (2020), Razak et al. (2017), and Meinarsih et al. (2020) where they found similar results in their research share similarities. The existence of internal controls is said to have a substantial impact on the accuracy of financial reports. The consistency of these data suggests that there is a direct correlation between the quality of internal control and the quality of the financial report outcomes.

The fact that the Ha3 hypothesis, which is the internal control variable, was accepted indicates that the internal control significantly affects the caliber of the financial reports. The quality of the financial reports that will be exhibited can be improved by internal control; if the internal control is successful, the quality of the financial reports will rise. The link between the information suppliers and the information users constitutes this circumstance. The information users can thereby avoid receiving inaccurate information from the principal to the agent, or the work unit in the agency theory, and will instead receive the proper information.

5. Conclusion and Recommendations

This study aims to determine and assess the impact of the use of the ABGAS, human resource competency, and internal control on the accuracy of the financial reports in the work unit of the Food Security Agency. The use of ABGAS has a major impact on the quality of financial reports. These findings show that the quality of financial reporting is impacted by the use of the accrual-based government accounting system. As a result, the quality of financial reporting will undoubtedly be impacted by the usage of the accrual-based Government Accounting System program. The effectiveness of financial reporting is not much impacted by human resources expertise. Thus, the competency of the human resources, whether great or low, will not have an impact on the caliber of the financial reports. The quality of the financial reports is significantly impacted by internal control. It is also well recognized that internal control has an impact on the quality of financial reports, and whether internal control is of a high or low caliber will unquestionably have an impact. This study contributes to the food security agency to increase the number of training and seminars provided to their human resources so that they can further hone their skills. Regarding other linked resources, they must be able to effectively follow what the pertinent work units have provided. Additional independent variables such as information technology, internal audit function, leadership commitment, and others are suggested for future research.

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