ENTERPRISE ALIGNMENT ADOPTION STRATEGIES AND QUALITY HEALTHCARE IN SOUTH-SOUTH, NIGERIA

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ABSTRACT

The study examined the influence of enterprise alignment adoption strategies on quality healthcare in tertiary care in south-south Nigeria. A survey research design was used for the study. Seven hundred seventy-three (773) copies of a questionnaire were administered, out of which 574 were found usable, amounting to 73.9%. Statistical tools, including simple percentages, frequency tables, mean, estimated regression model and Pearson's correlation coefficient analysis, were employed for data analysis using Statistical Package for Social Sciences version 24. The study found that respondents' assessment of quality healthcare was high. Respondents rated enterprise alignment as high. The results also revealed a significant influence between enterprise alignment and quality. Based on the findings, the researcher recommends that healthcare organisations adequately define their strategy, align infrastructures with strategy, and regularly conduct gap analysis to identify and mitigate problems early.

Keywords: Information System (IS), Enterprise Alignment, Information System Adoption, and Quality Healthcare.

INTRODUCTION

The lack of quality in the Nigerian healthcare system is apparent for all to see. There is hardly anyone in Nigeria who has not had their fair share of the existing problems. The problems go beyond the patient as partitioners, organisations, and nations suffer from the ineffective system that has led to high costs and inefficient and inadequate care. The problem is glaring as it has resulted in a mass exodus of doctors in the country, making the national assembly call for a bill to stop the mass exodus of doctors to other nations by passing the brain-drained bill in 2023.

Furthermore, non-communicable diseases (NCD) such as hypertension, diabetes, cancer, and malnutrition in Nigeria (the leading cause of NCD death) stand at 29%. Premature mortality from NCD is 22%, and malaria accounts for 24% of global deaths. Nigeria also has the highest rates for Tuberculosis, paediatric HIV and Malaria in Africa, 50% of neglected tropical diseases in Africa. 70.5% out-of-pocket financing in 2019, while the government expenditure per capita was $14.6 in 2019 (0.6% of GDP), compared to WHO's $86 benchmark for universal health coverage (WHO, 2022), just to mention a few. Figures like these call for a state of emergency and an urgent need to invest in technology and infrastructure while providing the needed policies.

Anthonia et al. (2021), in their review of Nigeria's healthcare system noted the following: weak health systems, all-time low immunisation coverage, secondary health facilities in prostrate conditions, outdated and non-functional diagnostic and investigative equipment in tertiary institutions, the prevalence of fake and adulterated drugs, absence of partnership between private and public health sector, mismanagement of limited health resources, poor coordination of international community donors. Also, Adebayo and Ofoegbu (2014, p. 37) noted that if Nigeria has data on errors leading to death, the figures would be mind-blowing

compared to the US report in 2000, where estimated death due to medical errors yearly was given as 44,000 to 98,000, driving the call for healthcare organisations to adopt information systems (Wager et al., 2017, p. 5).

Studies have shown the benefits of information systems (IS) in healthcare, including improved quality through cost reduction, safety, effective medication use, administrative, managerial, financial and clinical decision support systems, and decreased medical errors (Malik et al., 2021). Also, Malik et al. (2021) assert that the patient also benefits from adopting IS. Benefits for the patient include quality and efficient healthcare services, patient safety, accessibility of patient data, less retrieval time, data accuracy, and reduction in medication errors.

Lovw and Mtsweni (2013) suggested that enterprise strategic alignment is the first step in any successful IS adoption. Enterprise alignment enables the organisation to understand its current position and desired future, thus aligning the organisation with the required understanding, needs, and infrastructure and identifying gaps.

While there have been several studies on the quality of the Nigerian healthcare system and the importance of enterprise alignment in adopting IS, the study argues that enterprise alignment can influence the adoption of IS and improve the quality of healthcare in Nigeria. These arguments form the basis and justification of the study.

Given this, the study examines the influence of enterprise alignment adoption strategies on quality healthcare in south-south Nigeria.

CONCEPTUAL REVIEW

Enterprise strategic alignment

Bhattacharya (2018, p.656), quoting other scholars, asserts that enterprise strategic alignment with business is one of how the potential of IS can be enhanced and that strategic alignment has been consistently ranked as one of the top concerns for senior IT/IS management in surveys. Nadler and Tushman (1983, p. 119) in Gerow et al. (2014, p. 1160) defined alignment as the degree to which the needs, demands, goals, objectives, and structures of one component are consistent with the requirements, demands, goals, objectives, and systems of another element. Gerow et al. (2014, p. 1160) went on to state that enterprise strategic alignment refers to the fit between two or more of these components in terms of addressing the needs, demands, goals, objectives, and structures of each component such that management of the business and IS remain in harmony.

Gerow et al. (2014, p. 1160) review of alignment literature used the strategic alignment model (SAM), which identified three domains of business and IT integration: strategies (external integration), infrastructures (internal integration) and strategy and infrastructure (cross-domain integration). External integration reflects the alignment of business and IT strategies; this type of alignment is referred to as strategic or intellectual alignment and is defined as the degree to which the mission, objectives, and plans contained in the business strategy are shared and supported by the IS strategy. Internal integration is the alignment between the business and IT infrastructures and processes; this type of alignment is referred to as operational alignment and is defined as the link between organisational infrastructure and operations and I/S infrastructure and processes. Finally, cross-domain integration recognises that alignment potentially transcends the domains where strategies can be aligned

with infrastructures and processes. Cross-domain alignment is defined as the degree of fit and integration among business strategy, IT strategy, business infrastructure, and IT infrastructure. This study adopts the cross-domain alignment.

Enterprise strategic alignment is the first step towards any adoption or change management process. It involves aligning organisational vision with strategy. The study adopts Lovw and Mtsweni's (2013, pp.37-38) work, which has the following subsets on enterprise alignment: business strategy, IT architectural needs and gap analysis.

Business Strategy
Lovw and Mtsweni (2013, p. 37) and Chan (2002) argued that any enterprise investment in IT or people needs to complement the enterprise's strategic direction. Therefore, a clear strategic direction and alignment are prerequisites for success. There are three concepts to IS strategy, as pointed out in the strategic section. The IS business-centric, the IS functional plan and the organisational-centric concept. The IS business-centric strategy is used to support the enterprise strategy only. There is no specific IS strategy except to support whatever the enterprise strategy is doing. The IS functional plan refers to a consciously intended course of action. The plan includes the identification of required IS assets, including personnel, structure, allocation of resources, and technology in an efficient way. Here, the emphasis is on improving the enterprise's overall performance and running the entire IS function effectively and efficiently.

The third concept, organisation-centric, refers to a guided future IS-related business decision and activities rather than a plan or a position. It is a higher order than involves top management. IS strategy is used to drive enterprise strategy and not the enterprise driving the IS strategy as business-centric, nor as a functional plan to support the business (Chen et al., 2010). From the literature review, the study argues that for an effective enterprise strategic alignment, the enterprise must have either the IS functional plan or the organisation-centric strategy, as the business-centric falls short of the adoption requirement.

Also, there are three types of enterprise IS strategy: innovator, conservative, and undefined concepts (Chen et al., 2010, p. 245). The innovator refers to an IS strategy that is explorative. According to Chen et al. (2010, p. 247), innovators are risk-takers, leaders of IS in their industry, and the first to develop new IS initiatives. In contrast, the conservative is those who follow a safe and stable approach to developing new IS initiatives. They adopt promising IS innovations only when proven and carefully examined before adopting them. Finally, the Undefined refers to an organisation that does not have any definitive long-term IS goals, nor does it have an articulated IS strategy or any consistent pattern of behaviour. Thus, they are not inclined to use IS as a competitive advantage, improve firm performance, or align with business strategy.

From interviews done during this research, most healthcare organisations in Nigeria fall into the undefined group. The study suggests that for the adoption of IS and the alignment of IS, the enterprise must have a defined strategy. The adoption must be a conscious, planned activity and not left randomly. Given the nation's infrastructure state and the availability of skills and abilities, the study suggested using a less risky and well-measured conservative.

IT architecture needs
IT infrastructure is a system for operating and managing an enterprise IT ecosystem. An ecosystem is a complex network of interrelated systems. IT infrastructure can be implemented in the cloud or inside an organisational facility. When appropriately designed,

IT infrastructure can assist companies in meeting their objectives while potentially maximising profits (Morley, 2022). Its usefulness includes product accessibility, real-time data transfer, increased performance and productivity, improved communication between stakeholders and team members, increased effectiveness, and customer satisfaction (Morley, 2022). However, many organisations have not gained their anticipated results from their IT investment (Chowdhury and Salahuddin, 2017).

The reason could be that IT architectural needs were not determined and considered beforehand. If, for example, a healthcare organisation in Nigeria with an IS organisation-centric, conservative strategy were to implement IS, it must consider what the existing IT infrastructure is and what is needed, e.g. infrastructure, skills, abilities, and its constraints, e.g. financial requirement, and environmental factors affecting its implementation. As Odekunle et al. (2017) pointed out in their study of factors affecting the adoption of an electronic health record in sub-Saharan Africa, for which Nigeria is included, as high implementation and maintenance costs, limited computer skills, poor electricity and lack of constant internet connectivity, and lack of prioritisation of an EHRs system. Identifying these factors will aid the decision-making of its architectural needs. As a result of the factors raised by Odekunet al. al (2017), the study recommends a cloud-based IT infrastructure using the software as a service. The advantages of infrastructure and architecture include its excellent scalability and versatility, support system, better capabilities for automation and cost-effectiveness.

Gap analysis
Having identified the IT infrastructure needs, a proper gap analysis to help the decision-making and adoption process is needed. A gap analysis is a process or tool used to identify gaps and the difference between where an organisation is and wants to be. Some of the benefits of gap analysis are to indicate critical areas of need, offer an objective and detailed glimpse of the direction and size of existing gaps, help in implementation and adoption plans, and improve the effectiveness of the departments in the enterprise. Usually, a gap analysis has four basic steps: identification of the critical needs of the enterprise, determination of the ideal or desired situation, identification of existing gaps and modifying organisational plans to fill the gaps.

Gap analysis has different approaches and has been applied to various fields of study. For our research, we adopt the work of Syamsuddin (2016), ITPOSMO and ServQUAL. The ITPOSMO stands for Information, Technology, Processes, Objectives and values, Staffing and skills, Management systems and structures, and other resources, and is a popular gap analysis method. The ServQual or service quality has five dimensions: tangible, reliability, responsiveness, assurance, and empathy. Syamsuddin (2016) asserted that integrating ServQUAL into ITPOSMO can give us a novel framework for gap analysis.

Quality Healthcare
This study adopted the quality measured from Onyebuchi et al. (2006) conceptual framework for the OECD Health Care Quality Indicators Project and OECD 2017 report on quality health care. Quality healthcare refers to delivering high-quality care, an essential feature of a high-performing and resilient healthcare system. Healthcare systems face tremendous challenges, such as complex care needs, care processes, increased demands, and an economic landscape in which healthcare systems will have to achieve more for less, as monitoring and improving healthcare quality takes more significant concern (OECD, 2017).

The quality measures are effectiveness, patient-centeredness, and safety. Onyebuchi et al. (2006) conceptualised effectiveness as one of the most common measures seen in all performance frameworks and a measure that needs other efforts at work to be effective. They define *effectiveness* as the degree of achieving desirable outcomes given the correct provision of evidence-based healthcare services to all who could benefit but not to those who would not help (Arah et al., 2003; Institute of Medicine, 1999, 2001; Veillard et al., 2005; Donabedian, 1980, Onyebuchi et al., 2006).

Patient-centeredness captures the degree to which a system functions by placing the patient/user at the centre of its delivery of health care and is increasingly being measured as patient experiences of health care with an emphasis on caring (Institute of Medicine, 2001; Arah et al., 2003; Veillard et al., 2005). Responsiveness and patient-centeredness are often taken to be equivalent. Acceptability is conformity to the wishes, desires, and expectations of healthcare users and their families (Donabedian, 2003). As such, acceptability is often presented as a part of or substitute for patient-centeredness. Continuity addresses the extent to which healthcare for specified users, over time, is smoothly organised within providers and institutions. Continuity can be measured from the patient's perspective and becomes part of patient-centeredness (Onyebuchi et al., 2006).

Safety is a measure where the system has the suitable structures, renders services, and attains results that prevent harm to the user, provider, or environment [Veillard, 2005; Joint Commission on Accreditation of Healthcare Organizations, 1997; Onyebuchi et al., 2006). In addition, several OECD countries' legislation places patients' rights and safety at the centre of overall efforts to improve the quality of care.

Enterprise Alignment and Quality Healthcare
Alrajeh et al. (2013), in their work: Enterprise architecture (EA) based assessment of Healthcare information system strategic alignment, focus on methods to investigate internal EA analysis that aims at measuring HIS alignment via a set of metrics to determine if the business processes, sub-processes, applications and databases are achieving their purpose. Findings reveal that EA alignment enables parties involved in the HIS management process to stay abreast of what has been attained, which goals are being met, and what needs to be changed.

Gerow et al. (2014, p. 1159) examined the relationship between IT-business strategic alignment and firm performance regarding financial performance, productivity, and customer benefit. They found positive correlations between the dimensions of alignment and performance. The implication offers insight into sources of inconsistencies in alignment research and creates a foundation for more consistent alignment treatment in future IT research.

Since the study could not find any study that has empirically compared the influence of enterprise alignment adoption strategies on quality healthcare, this necessitates the need for this study. Therefore, this study hypothesises that;

There is no significant influence between enterprise alignment adoption and quality healthcare in south-south Nigeria.
Methods

The study is a positivist epistemology sociological debate. In terms of the dimension of the research design, the survey design and all its aspects were deployed. The approach used is the

nomothetic approach in a non-contrived environment. In time horizon, the research was a cross-sectional study carried out once, representing a snapshot of one time.

The study population is the six (6) tertiary teaching hospitals in the south-south region of Nigeria, with two thousand eight hundred (2,800) senior healthcare professionals. The professionals include senior medical doctors, nurses, lab scientists/technicians, dentists, physiotherapists, pharmacists, and others. Because of the large number of respondents, the study used the Krejcie and Morgan sample determination table, at a 3% margin of error and 95% confidence level, to derive the target sample size of seven hundred and seventy-three (773) professionals. Seven hundred seventy-three (773) copies of a questionnaire were administered, out of which 574 were found usable, amounting to 73.9%. Because of the heterogeneous nature of the population and subsequent sample, the stratified random sampling technique was deployed in choosing the representative example.

This study adopted the primary data-collecting method. The data collection method was a structured questionnaire for senior tertiary healthcare professionals. The research instrument, the questionnaire, was designed in three sections. The first section was designed to generate the demographic data of the respondents. The second section was structured to obtain data on enterprise alignment adoption strategies and quality healthcare. The questionnaire was closed-ended to allow for straightforward data interpretation and was designed in the 5-point Likert scale format in the order of strongly agree to strongly disagree. The instrument was administered physically and electronically, and follow-up was done via physical, phone, text and email.

To ensure the instrument's content and face (relevant and appropriate) validity, the questionnaire was subjected to professional analysis by three experts from the Department of Office and Information Management, who scrutinised the instrument regarding relevance, content coverage, clarity of words and presentation. All corrections and recommendations were made and used in the final draft of the instrument before administration. For construct validity, which refers to how well a construct measures the concept it was designed to evaluate, a pilot study was done with a small population sample to ascertain the feasibility, reliability, and validity. After which corrections were made. For reliability tests, SPSS Cronbach's Alpha test was used. As a rule of thumb, the Alpha values for each item have an average of 0.8, thus exceeding 0.5 benchmarks. Statistical tools, including simple percentages, frequency tables, mean, estimated regression model and Pearson's correlation coefficient analysis, were employed for data analysis using Statistical Package for Social Sciences version 24.

Data Analysis and Results

Demographic Analysis: Table 1 shows the presentation and analysis of data for the background information of the sampled respondents in terms of profession, gender, age, and years of experience of the respondents (See appendix).

DESCRIPTION OF RESEARCH VARIABLES:

Table 2: Descriptive statistics of enterprise alignment adoption strategy

S/N	Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean
ES1	Our organisations have an IS strategic concept that is a functional plan or organisation-centric strategy	32 (5.6%)	22 (3.8%)	34 (5.9%)	124 (21.6%)	362 (63.1%)	4.33
ES2	IS strategic types of innovators and conservatives are used in our hospitals	30 (5.2%)	22 (3.8%)	30 (5.2%)	126 (22%)	366 (63.8%)	4.35
ES3	Cloud-based solutions using the software are deployed in rendering healthcare services	36 (6.3%)	20 (3.5%)	28 (4.9%)	156 (27.2%)	334 (58.2%)	4.28
ES4	ITPOSMO and ServQUAL gap analysis are used as appropriate toolsets to address the adopted IS's information architecture	24 (4.2%)	40 (7%)	74 (12.9%)	170 (29.6%)	266 (46.3%)	4.07
	Overall mean						4.26

Source: Researcher's Fieldwork (2023)

Table 2 shows the descriptive statistics of enterprise strategic alignment strategy as follows: Our organisations have an IS strategic concept that is a functional plan or organisation-centric strategy ($\overline{X} = 4.33$); IS strategic types of innovators and conservatives are used in our hospitals ($\overline{X} = 4.35$); Cloud-based solution using software are deployed in rendering healthcare services ($\overline{X} = 4.28$); and ITPOSMO and ServQUAL gap analysis are used as appropriate toolset to address the adopted IS's information architecture ($\overline{X} = 4.07$). The overall mean score for enterprise strategic alignment strategy is 4.26. It can, therefore, be concluded that the perception of health professionals to enterprise strategic alignment strategy of hospitals is high.

Table 3: Descriptive statistics of quality healthcare

S/N	Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean
QU1	Health services rendered attain results that prevent harm to the users, providers and the environment	24 (4.2%)	38 (6.6%)	60 (10.5%)	190 (33.1%)	262 (45.6%)	4.09
QU2	Patient-centeredness is a precondition in our healthcare system	16 (2.8%)	38 (6.6%)	46 (8%)	220 (38.3%)	254 (44.3%)	4.15
QU3	Healthcare services rendered to patients are relevant to their clinical needs	20 (3.5%)	34 (5.9%)	76 (13.2%)	202 (35.2%)	242 (42.2%)	4.07
QU4	Waiting times and errors in treatment are reduced to a minimum to improve treatment outcomes	28 (4.9%)	34 (5.9%)	98 (17.1%)	174 (30.3%)	240 (41.8%)	3.98
Overall mean							4.07

Source: Researcher's Fieldwork (2023)

Table 3 shows the descriptive statistics of quality healthcare as follows: Health services rendered attain results that prevent harm to the users, providers and the environment ($\bar{X} = 4.09$); Patient-centeredness is a precondition in our healthcare system ($\bar{X} = 4.15$); Healthcare services rendered to patients are relevant to their clinical needs ($\bar{X} = 4.07$); and Waiting times and errors in treatment are reduced to the minimal to improve treatment outcomes ($\bar{X} = 3.98$). The overall mean score for quality healthcare is 4.01. Therefore, it can be concluded that health professionals rated quality healthcare highly.

Table 4: Correlation coefficient

Variables	QUA	ESA
Quality Healthcare (QUA)	1	
Enterprise Strategic Alignment Strategy (ESA)	0.578[**]	1.000

Table 3 displays Pearson's correlation coefficients for each pair of variables. According to Bryman and Cramer (1997), Pearson's correlation coefficient (r) should not be greater than 0.80; otherwise, it may be assumed that multi-collinearity exists for independent variables with a correlation coefficient greater than 0.80. Results in Table 4 showed that none of the variables are higher than 0.80, ruling out the possibility of multi-collinearity in the model.

Table 4 shows that quality healthcare is positively and significantly related to enterprise strategic alignment strategy (ESA) [$r = 0.6578$, $p < 0.05$].

Table 5: Estimated model on Enterprise alignment Adoption Strategy and Quality Healthcare

Variables	Unstandardised Coefficients		Standardised Coefficients	t	Sig.	Decision
	B	Std. Error	Beta			
Direct Effect						
(Constant)	0.090	0.145	-	0.622	0.534	-
ESA□QUA	0.226	0.061	0.232	3.735	0.000	Sig

$R^2 = 0.715$; Adj $R^2 = 0.710$; F-Statistic = 156.873; F-Statistic (Prob) = 0.000;

Durbin-Watson = 1.926; Number of Observation = 574

Dependent Variable: Quality Healthcare (QUA)

Source: Researcher's Fieldwork (2023)

Table 5 shows that Quality Healthcare is positively and significantly related to enterprise strategic alignment strategy (ESA) [β = 0.226, p = 0.000]. The R^2 of 0.715 shows that the independent variables account for 71.5% of the variations in the dependent variable. The Adjusted R^2 of 0.710 indicates that the independent variables jointly explained 71% of the variation in the dependent variable. The Durbin-Watson statistic of 1.926 reveals the absence of first-order serial correlation. The F-statistic of 156.873 is significant at p = 0.000, implying that the overall regression model explains a considerable percentage of the variability in the dependent variable.

DISCUSSION OF FINDINGS

The study found a significant influence between enterprise alignment adoption strategies and quality healthcare in Nigeria. Following the research questions and subset of enterprise strategic alignment, which are business strategy, IT architectural needs and gap analysis, the findings prove that tertiary healthcare providers in all the south-south states have a business strategy that is either functional or organisational centric. This implies that IS adoption is planned and organised, and these organisations stay abreast of what has been attained, which goals are being met, and what needs to be changed (Alrajeh et al., 2013).

This implies that tertiary healthcare organisations have a cross-domain alignment, that is, the degree of fit and integration among business strategy, IT strategy, business infrastructure, and IT infrastructure (Gerow et al., 2014). In practical terms, it implies that the overall healthcare in the south-south region is improving as investments are made in line with business objectives, thus in agreement with suggestions made by Lovw and Mtsweni (2013), which is in line with other IS strategic alignment researchers (e.g. Chan, 2002), that any enterprise investment, be it in IT or people, needs to complement the enterprise's strategic direction. Therefore, a clear strategic direction and alignment are prerequisites for success.

The findings also suggest that the proper IT architectural framework is used. Recall that IT architecture is a framework and guidelines for building new systems. It is the rules, principles and procedures used by the enterprise to direct the entire process of adopting a new system, such as the processes for acquiring, building, modifying and interfacing IT resources throughout the enterprise. This means that scarce resources are now used in a planned, organised and monitored environment.

The findings also suggest that adequate gap analysis are carried out using ITPOSMO and ServQUAL gap analysis. The implication is that tertiary healthcare can identify possible gaps and problems quickly in adoption and mitigate any adverse effects, thus improving quality. The gap analysis can ensure the alignment of resources, technology, and procedures to maximise patient care, thus leading to improved health outcomes and quality. Anthonia et al. (2021) noted the use of outdated and non-functional diagnostic and investigative equipment in tertiary institutions. The study thinks that a proper gap analysis will address these issues.

Conclusions and Recommendations

The major findings emanating from the study are:

- There is a positive and significant influence between enterprise strategic alignment and quality healthcare in South-South Nigeria.

Therefore, the conclusion emanating from the study is:

- There is a positive and significant influence between enterprise strategic alignment and quality in healthcare performance in South-South Nigeria.

Based on these, the research recommends that

1. Healthcare organisations should adopt a business strategy which is either functional or organisational-centric. These strategies will ensure that limited resources are managed in a planned, organised and effective manner to achieve the numerous advantages of information systems in healthcare.

2. Healthcare organisations should ensure that any IT/IS infrastructure investment should complement the enterprise's strategic direction. This will ensure that limited resources are adequately used to avoid waste and boost efficiency and effectiveness, improving quality.

3. Proper gap analysis using ITPOSMO and ServQUAL should be carried out regularly and before any adoption to ensure that problems are identified early and mitigated to improve overall quality.

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APPENDIX

Table 1: Respondents' demographic information

Variable	Category	Frequency	Percent (%)
Profession	Medical Doctors	138	24.0
	Nursing	166	28.9
	Lab Scientist	40	7.0
	Physiotherapy	69	12.0
	Pharmacy	57	9.9
	Dental	29	5.1
	Others	75	13.1
	Total	**574**	**100.0**
Gender	Male	264	46.0
	Female	310	54.0
	Total	**574**	**100.0**
Age (Years)	Below 30	92	16.0
	31 – 40	132	23.0
	41 – 50	184	32.1
	51 – 60	126	22.0
	Above 60	40	7.0
	Total	**574**	**100.0**
Working Experience (Years)	Less than 6	57	9.9
	6 – 10	155	27.0
	11 – 15	178	31.0
	16 – 20	121	21.1
	21 & Above	63	11.0
	Total	**574**	**100.0**