2 DESIGN THINKING CAPABILITIES AND CUSTOMER LOYALTY IN THE NIGERIAN MANUFACTURING INDUSTRY

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ABSTRACT

The continuous inclination of Nigerian consumers to products and services of foreign owned manufacturing firms is worrisome hence the need for a customer centric innovative approach to enhance customer loyalty. Design thinking is a proven innovative approach but the availability of design capabilities in employees is critical to the integration of the approach in the innovation process. This study examines the role of design thinking capabilities in enhancing customer loyalty. Cross-sectional survey was adopted to collect data from employees and customers of selected manufacturing companies in Nigeria. Multiple regression was used to analyze the data. The result of analysis reveals a significant positive relationship between employees' customer orientation, experimentation capabilities and customer loyalty. The relationship between employees' integrative thinking was significant but negatively correlated to customer loyalty. Design thinking significantly impacted customer loyalty positively. It was concluded that for companies to stand out and beat the competition; they must be open to new approaches like design thinking to enhance customer loyalty. By identifying the most critical design thinking capabilities has formed a framework for management to attract, promote and developing innovative capabilities of employees to influence customer loyalty. The study provokes organizational change and provides a road map which organizations can use as a base for improving their customer experiences.

Keywords: *Design Thinking Capabilities: Customer Loyalty: Manufacturing Industry: Nigeria.*

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1. Introduction

In today's business environment driven by globalization and the rapid pace of technology survival is difficult even for customer-centric organizations. This is because the needs and expectations of customers are ever changing due to access to endless choice of brands, making customer loyalty a hurdle to business success (Ingy, & Hazem, 2016). Despite the value of innovation in business success, manufacturers are challenged on how to effectively bring acceptable product or service to market and win customers' loyalty (Efeoglu, Møller, Sérié, &Boer, 2014). It is contended that customer loyalty resides in superior customer experience and not only in what a company delivers to its customers (Kiwoong, & Bruce, 2016). Thus, the traditional strategy of companies generating profits by supplying products or services is being challenged. This justifies the imperativeness of a customer-centered approach in the delivery of organizational goods and services that meet latent needs.

In addition, increased level of competition in the Nigerian manufacturing landscape and the preference of foreign products by Nigerians, the need to adopta user-centricapproach is desirable. The Nigeria economy has consistently nose-dived on global competitiveness rating. For example, Nigeria dropped in the global competitiveness ranking from 115 in 2018 to 116 in 2019 out of 141 countries (Schwab, 2019).The Global manufacturing competitiveness on the other hand ranked Nigeria 38th out of 40 countries surveyed on competitiveness(Deliotte& USCouncil on Competitiveness, 2016). These statistics are evidence of underperformance of the Nigerian manufacturing industry. Similarly, the global manufacturing competitiveness report (2016) reveals that access to talented workers capable of supporting innovation is a key factor driving global competitiveness in the manufacturing sector (Deliotte, & US Council on Competitiveness, 2016). These new focus on innovation and advanced technology, is shaping a new battle ground for global competitiveness.

To address this situation, design thinking has emerged as an important approach for organizations to draw insights to create value, gain competitive advantage, drive growth and manage organizational change in the face of rapidly changing customer needs (Knight, Daymond, & Paroutis, 2019; Dunne, 2018).Design thinking requires a high degree of empathy for the end user and in-depth knowledge of audience (Brown, 2015). The unique focus on empathy and collaboration helps businesses frame and re-frame problems and solutions from the perspective of the customers. For design thinking process to be effective, it requires understanding latent needs, emotions and feelings of customer's which are seldom obvious with market analysis. As organizations move toward adopting design thinking as an approach to innovation, the need to identify design thinking capabilities in individual employees most important to enhance customer loyalty becomes increasingly necessary. Design thinking capabilities are a set of sequential skills necessary to perform design thinking (Chesson, 2017).

Design thinking has received a great deal of attention among scholars and practitioners both in the public and private sectors(Brown, 2010; Liedtka & Ogilvie 2011;Kiwoong, & Bruce,

2016,Mintrom,&Leutjens, 2016; Blomkamp, 2018; Lewis, Knight, Daymond, & Pariouts, 2019; McGann, & Blomkamp, 2020).Prior research indicated that design thinking offers a potent way to create breakthrough products because of its ability to find unarticulated needs and solve complex problems (Brown, 2008). Other benefits alluded to design thinking include enhancing strategy development (Leidtka, &Kaplan, 2019), enhancing product-market-fit (Knight, et.al., 2019), organizational transformation, innovation (Brown 2009), customer orientation (Heist, 2018), better decision making (Liedtka, 2015), organizational learning (Beckman & Barry,2007), & competitive advantage (Martin 2009), building innovative organizational culture (Starostka, & Kozminskiego, 2014) customer commitment and loyalty (Bahadur, Aziz, & Zulfiqar, 2018). Design has also been found to influence organizational change and development (Dunne, 2018).Design thinking has a proven success in a number of Fortune 500 firms such as IBM, Microsoft, Apple, and others (Schmiedgen, Spille, Koppen, &Meinel, 2016).

Since companies vary based on their competence and setting, the availability of design capabilities in employees is critical to the integration of the approach in enhancing customer loyalty. Although design thinking capabilities and mindset have been identified in literature (Chesson, 2017;vanRens, 2016), there is still limited understanding on the extent to which design thinking is deployed to promote customer loyalty. In addition, the level of design thinking capabilities or skills of employees in organizations to effectively implement this approach and the extent to which the possession of the skills affect customer loyalty is still lacking in current literature.

This study investigates design thinking capabilities in the manufacturing industry to identify the most important capabilities needed to enhance customer loyalty in business organizations. The extent to which design thinking is deployed in the innovation process and whether its adoption affects customer loyalty is also investigated. Spotlight on this approach will present exceptional breakthrough for adopting more humane technology, create a framework for engaging and developing skills for the emergent of psychologically tolerable products and services that will help the Nigerian manufacturing space to overturn this customer loyalty debacle.

1.1 Theoretical Foundation

This study is grounded on the dynamic capabilities theory developed by Teece, Pisano, & Shuen (1997). The theory emerged as an alternative approach to solve some challenges of Resource Based Theory (Garvin, Rice & Laio, 2014). The focus of dynamic capabilities theory is to identify the foundation upon which distinctive and difficult to replicate advantages can be enhanced. According to Teece, et.al, (1997), dynamic capability is the firm's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments. Dynamic capabilities thus reflect on an organizational ability to achieve new and innovative forms of competitive advantage given paths dependencies and market positions (Tidd, 2012).This theory is consistent with the thrust of this research which argued that organizations with design thinking capabilities are more

likely to integrate design in their innovative process to gain competitive advantage in the face of ever changing customer needs. Leveraging on the theory of dynamic capabilities and the findings of this study will help managers identify which design capability improvement trajectory is likely to provide advantage and enhance customer loyalty.

2.0 Literature Review

2.1 Customer Loyalty

Customer loyalty is viewed as the strength of the relationship between an individual's relative attitude and re-patronage (Khadka, & Maharjan, 2017). Loyalty building requires the company to focus the value of its product and services and to show that it is interested to fulfill the desire or build the relationship with customers. According to Jiang and Zhang (2016), customer's loyalty is a fundamental basis of competitive advantage for business organizations. Gremler and Brown (1999) identified three outcomes of customer loyalty to include behavioral loyalty, intentional loyalty, and emotional loyalty. Behavioral loyalty is a continuance buying behavior whereas intentional loyalty is the possible buying intention. Emotional loyalty, however, is achieved when a customer feels that a brand corresponds with their worth, thoughts, and fervor. In competitive markets, practitioners are motivated to create true loyal customers, who have high relative attitude with high repeat patronage behavior through proper marketing strategies and tactics (Bowen, &McCain, 2015). Generally, customer loyalty is a behavior while customer satisfaction is an attitude.

Acquiring and retaining customers is necessary for companies because it is critical to creating sustainable competitive advantages (Wu, &Ai, 2016). However, realizing the antecedent factors of customer's loyalty and the relationships among these factors are considered important research directions (El-Adly, & Eid, 2016). A plethora of researchers have studied the impacts of several factors on customer's loyalty. A recent review of the literature shows that there are four important factors in developing and enhancing customer's loyalty such as satisfaction, perceived quality, perceived value, trust, Customer involvement (Abu-Alhaija, Nerina, Hashim, & Jaharuddin, 2018). The present study argues that integrating design thinking in the innovation process by enhancing design capabilities will significantly impact customer loyalty. Designing for customer loyalty requires customer-centered approaches that recognize the want and loyalty of end users. This study is also aimed to establish other antecedents of customer loyalty not given attention in literature.

2.2Design Thinking

Design thinking also known as human-centric design (HCD) is an innovative problem-solving approach that puts the user (the target market or a client) at the core of thought in order to arrive at novel solutions that genuinely reflect the user's needs and desires (Milkowska, 2018).Traditionally, design was understood mainly as aesthetics, external form of a product. In recent years, design thinking is seen as a tool to support the creation of innovation, building strong brand, or even the strategy throughout the organization (Starostka, &Koźmińskiego, 2014). To date, no universally accepted definition has emerged of what constitutes design thinking as most of the definitions are

context-based. In this context, design thinking is a human centered iterative approach to problem solving that requires empathy to understand the impact a problem has on humans, visualizing ideas to generate new solutions, and prototyping to test out potential solutions (Brown, 2009;Liedtka, & Ogilvie,2011).The user-centric approach is unique because of its focus on the user needs (empathic), emphasis partnership with consumer in the development process (collaborative), positive mind towards better solutions (optimistic), and learning by doing through rapid prototyping (experimental) (Elmancy, 2016).

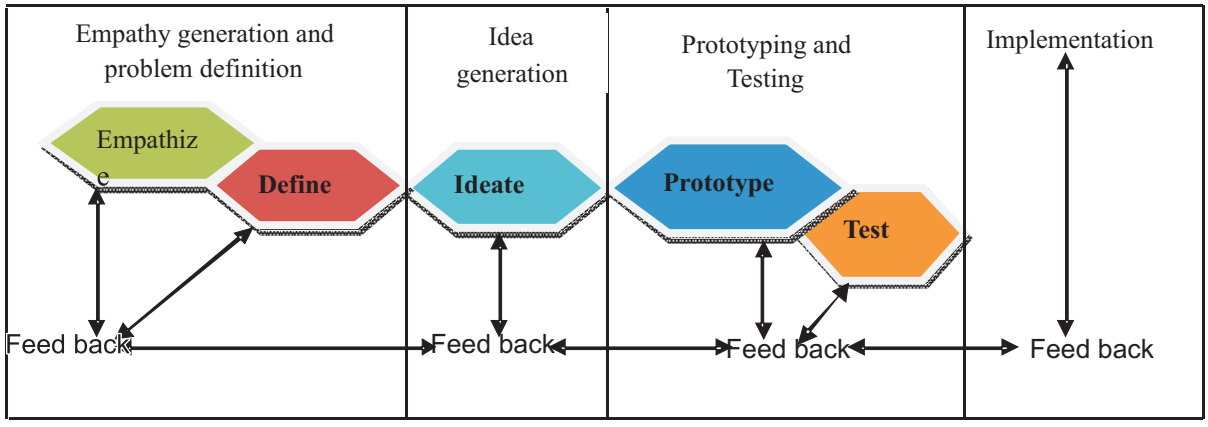
There are many schools of thought of the design thinking but the core pillars of the process are consistent and include deep empathy, listening and relating to the user, testing through rapid and cheap prototyping, and constant iteration (Mintrom, & Leutjens, 2016).Although, the models have different names for the stages, all the design thinking processes tend to introduce an inclusive model that consider building an effective problem solution while considering the consumer in the heart of the development process. Accordingly these processes share the following characteristics; (a) **Reflective:** it clearly aims to understand the consumer's problem and reproduce it in a form of a design challenge or a brief that can later be transformed into a prototype (b) **Iterative:** both the team and clients contribute to an on-going improvement for the created prototypes in order to reach the most efficient solution output. © **Measurable:** Design thinking is different from other problem solving approaches because of its emphasis on understanding the users, developing empathy perspective through direct engagement with users and calls for incorporating user input into solution discussions (Chesson, 2017).Many organizations have benefitted from the introduction of design thinking into the innovation process by given insight into focuson understanding customers with challenge offers the biggest impacts.

2.3 Design Thinking Process

Design thinking as a process involves a series of steps one takes to solve a problem. The design process seeks to accomplish a three fundamental concerns; user needs, business feasibility, and technology viability. All the design thinking process models agree to start with understanding the user needs and address them during the different stages of production. In this study, the approach popularized by Hasso Plattner School of Design at Stanford University (commonly known as the school) with **five stages** i.e. Empathize, Define, Ideate, Prototype, and Test was adopted. This design thinking assumes results from vital elements that follows a non-linear method of empathizing with the target users to grasp how they think, feel and the peculiarity of their challenges; then outline the wants of the target users, their issues and transfer insights; ideating by challenging assumptions and making ideas for solutions; prototyping to start out making solutions and eventually testing the known solutions and gathering feedback from the users to judge the work ability and match of the answer to the matter (Leitdka, 2017). **The five practices that enable innovation include; (**1) the development of a deep empathic understanding of user needs and context; (2) the formation of heterogeneous teams; (3) dialogue-based conversations; (4) the

generation of multiple solutions winnowed through experimentation; and (5) the use of a structured and facilitated process (Leidtka, 2017).The unvaried process is heavily captivated with receiving and incorporating feedback to enhance the process. Feedback is required at each stage until a positive feedback from users is achieved. It suffices to note that the 5 stages or phases of design thinking of empathizing usually occur parallel and repeat iteratively. See figure 1:

Figure 1: Stanford (d. school) Design Thinking Model



Source: Adapted from Plattner, & Bootcamp (2010)

1. ***Empathize with Users:*** Empathy is the very foundation of design thinking. To build empathy with users, a design-centric organization empowers employees to observe behavior and draw conclusions about what people want and need (Plattner, & Bootcamp, 2010). Design use emotional language (words that concern desires, aspirations, engagement, and experience) to describe products and users (Kolko, 2015). Team members discuss the emotional significance of a value proposition as much as they discuss utility and product requirements. By immersing yourself in a customer's physical environment; you gain deeper personal understanding of the issues, needs and challenges involved.

2. ***Define the problem:*** Defining the problem occurs when you unpack and synthesis your empathy findings into compelling insights by making sense of what is learned through observation to craft a meaningful and actionable problem statement.

3. ***Idea Generation:*** After user empathy and problem definition, spectrums of ideas are generated that has the potentials to challenge assumptions and the existing solutions to problems. During this process, it is decisive to put off all judgments and withhold from any early appraisal of ideas.

4. ***Build Prototypes:*** Prototyping is probably the single most pragmatic behavior the innovative firm can practice. It is key to emphasize the act of building, not getting too attached to any one idea, and always keeping the user in mind. It doesn't encourage failure, but the iterative nature of the design process recognizes that it's rare

to get things right the first time. The company leverages failure as learning, viewing it as part of the cost of innovation.

5. ***Test:*** Design, testing and iteration is central to the process. It allows the organization to have breakthroughs by creating several rapid prototypes and encouraging fast feedback from actual users and customers before spending too much time, effort or money on any one idea. User feedback allows companies to make judgments about the innovation process. Early feedback reveals whether a new product/ service meets only articulated or also unarticulated user needs. Feedback is related to both functional and psychological needs (Tacer, Ruzzier, & Nagy, 2018).

2.4 Design Thinking Capabilities/skills

Design thinking capabilities or skills refer to a set of sequential skills necessary to perform design thinking, comprising the three dimensions of customer orientation, integrative thinking, and experimentation (vanRens, 2016).The definition of design thinking offered by Brown (2008) as a discipline that uses the designer's sensibility and methods to match people's needs with what is technologically feasible and what a viable business strategy can convert into customer value and market opportunity further underscores the importance of design thinking capabilities. Brown (2008) identified four characteristics of design thinkers to include; empathy, integrative thinking, optimism, experimentation and collaboration.

In this study, design thinking capabilities or skills were operationalised as a three dimensional construct adapted from vanRens (2016). According vanRens, one of the critical skill is the ability to create empathy and understanding by observing and analyzing their customers (customer orientation), the capability of dealing of varying alternatives to problem solving (integrative thinking); and skill to test created prototypes, and learn from feedback (experimentation). Interestingly, these dimensions of design thinking skills are the foundation of the steps in the design thinking processes as well. Customer orientation skills are needed for the empathy and problem definition phases, integrative thinking skills for the idea generation phase, and experimentation skills for the prototyping and testing phases. This study presents a conceptual framework depicted in figure 2 to evaluate the relationship between design thinking capabilities and customer loyalty.

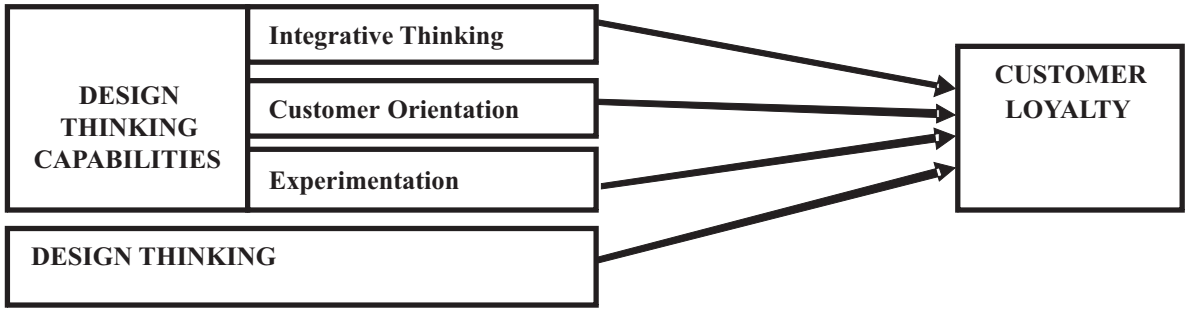


Figure 2: Conceptual Framework

2.5 Hypotheses Development

2.5.1 Employees' Customer Orientation Capabilities and Customer loyalty

Brown, Mowen, Donavan, & Licata, (2002, p.111) defines customer orientation as "an employee's tendency or predisposition to meet customer needs in an on the job context". The customer orientation dimension represents design thinking's human-centered focus, deep-user empathy and willingness to collaborate with customers and co-workers in finding solutions to unmet or unarticulated customers needs (vanRens, 2016; Leidtka, 2017). According to Flaherty, Dahlstrom, & Skinner (2009) customer orientation influences attitudes and job behaviors through a focus on meeting customer's long term needs and building customer's satisfaction. Empathic behavior of employees has the potential to influence satisfaction and build enduring relationship with the products and services of a company. Bahadur, Aziz, & Zulfiqar (2018) confirm the positive and indirect effect of employee empathy on Customer loyalty and loyalty outcomes (i.e. positive word-of-mouth and repurchase intentions). In addition, an enhanced collaboration between users and coworkers from other disciplines can improve the coordination of services, and allocation of products, which can benefit both customer satisfaction and a sales performance (Depaula, et.al, 2018). These literatures justify the necessity of this capability in the implementation of design in organizations to enhance customer loyalty. Leveraging on the dynamic capability theory we therefore hypothesized that;

H1: *Employees' Customer Orientation is significantly associated with customer loyalty.*

2.5.2 Employees' Integrative Thinking Capabilities and Customer Loyalty

According to Martin (2009) integrative thinking is 'the ability to constructively face the tensions of opposing models, and instead of choosing one at the expense of the other, generating a creative resolution of the tension in the form of a new model that contains elements of the individual models, but is superior to each.' Integrative thinkers possess a dynamic mind set, reflective ability, optimistic, willingness to embrace ambiguity and are open to taking risk (Chesson, 2017). People skilled in integrative thinking do not settle for mediocre solutions, they build new solutions rather than choose between existing alternatives, and have the ability to turn restrictions into opportunities (vanRens, 2016). Employees with integrative thinking show optimism, no matter how challenging the constraint of a given problem, at least one potential solution is better than the existing alternatives. A person with low ambiguity tolerance experiences stress, reacts prematurely, and avoids ambiguous stimuli while persons with high ambiguity tolerance perceives ambiguous situations as desirable, challenging, interesting and accepts their complexity or incongruity (Katsaros, Tsirikas, & Nicolaidis, 2014). In this respect, individuals with this capability consider several perspectives and opinions when looking at a problem and thus, they are able to arrive at solutions that satisfy all the stakeholders. Though, the value of possessing these capabilities i.e. tolerance of ambiguity, dynamic mind set and innovation is well

established (Katsaros, et. al., 2014); the extent to which these skills affect customer loyalty is yet to be established. We therefore hypothesis that: **H2:***Employees' integrative thinking has a significant impact on customer loyalty.*

2.5.3 Employees' Experimentation Capabilities and Customer Loyalty

The experimentation dimension of design thinking capabilities reflects employees' predisposition towards testing, prototyping and trying things out in an iterative way to obtain users' feedback (vanRen, 2016).Many advocates of design thinking claim that this experimentation is the most important capability (Efeoglu, et al., 2014). Experimentalists are by nature good in dealing with in uncertainty and ambiguity, and that they are optimistic, curious, and have a hands-on mentality (vanRens, 2016). By experimenting, with prototypes new possibilities are explored through feedback for assessing the form, fit and functionality of a design, prior to investment being made (Bayar, & Aziz, 2018). This process encourages a culture of openness and provides a way to collaborate with customers to reflect on feedback received about a potential solution to develop a more viable product (Benson, & Dresdow, 2015).Embracing the idea that failure is inevitable could dramatically transform the way organization employees approach new challenges. Learning from a failed experience is of the surest ways to integrate the exact new knowledge and skills needed to avoid similar downfalls in the future (Sutton, 2018). The ability of an organization to embed a culture of smart failure into work flows and teams ensures that useful solutions are designed for the people you serve (Martinkenaite, Breunig, & Fjuk, 2017).It is predicted that employees' ability to experiment conceived ideas or product for customer's inputs will bring out latent needs of consumer and easy end users acceptance of innovations. We therefore hypothesized that: **H3:***Employees' capability to experiment is significantly related to customer loyalty.*

2.5.4 Design thinking in the innovation process and Customer Loyalty

The focus of innovation has shifted from being engineering-driven to design-driven, from product-centric to customer-centric, and marketing-focused to user-experience-focused (Efeoglu, et. al., 2014). Fara, & Huong (2013) asserted that in the era of hyper competitive business environment, falling back on loyal customers is a sure way for survival because of their willingness to pay more, express higher buying behavior and low switching tendency. Design thinking is most secure source of new ideas that have true competitive advantage, and hence, higher margins, is customers' unarticulated needs," (Liedtka, 2017). One study found a relationship between innovation and design thinking where firms that adopt the approach are better able to innovate despite a scarcity of available resources (Bicen, & Johnson, 2015). There is evidence that design thinking improves product quality and quality solutions, contributes to micro innovations, reduces the market risk of disruptive innovations (Liedtka, 2018; Leidtka, 2015), impacts user satisfaction and facilitates a company's innovation capabilities (Ngo, & O'Cass, 2013). Companies with more intensive user involvement will easily absorb their knowledge, which can be beneficial in enhancing customer value creation (Feng et al.,

2010). User feedback can change not only product's/service's functionality and appearance, but can also effect business model development and the innovation process itself. By providing feedback, users automatically become a part of the innovation process (Tacer, et.al. (2018). Research by McKinsey and Company found among 300 listed companies, over a five-year period that those with the best design practices achieved 32 percent higher revenues and 56 percent higher returns to shareholders (McKinsey & Company, 2018). Most of the evident outcomes of design thinking are drawn from settings outside the Nigerian space hence the need to determine how the deployment of design thinking in the innovation process would impact customer loyalty. We therefore hypothesized that; **H4:** *Design thinking has a significant impact on customer loyalty in the Nigerian manufacturing industry.*

3. Methods

3.1 Sample and Data

The study utilizes a cross sectional survey approach to retrieve data from two primary sources i.e. customers and employees of the selected manufacturing firms. Structured questionnaires were distributed to 300 customers of ten (10) manufacturing firms both indigenous and foreign owned operating in Nigeria. Out of the 10 selected companies, four were foreign companies operating in Nigeria while six were owned by Nigerians. Questionnaires were also distributed to 150 employees of the ten selected (10) manufacturing firms in Nigeria cutting across strategic, functional, and operational levels to assess their design thinking capabilities with the aim to identify the design thinking capabilities that predict customer loyalty with certainty. The selected manufacturing firms were those producing consumers' goods like foods, beverages and confectioneries.

The sample was determined using Cochran (1977) formula with a non-sampling error of 5%.The choice of this sample determination technique was because the population under study was infinite. Probability sampling techniques was adopted to collect data through online survey and self administered questionnaires. The use ofsocial media platforms like WhatsApp, facebook messenger and emails were utilized for data collection. The choice of online survey questionnaires was to comply with the new normal on social distancing due to COVID-19 protocols as well as the wider coverage benefit of online survey. In all, 450 questionnaires were administered and 384 were retrieved representing 85percent response rate. Out of the 384 returned questionnaires, 259 were from customers and 125 were employees of the sampled companies which were used for analysis.

3.2 Measures

To measure the predicting variable design thinking capabilities, a 3-dimensional scale by vanRens, (2016) was adapted. The outcome variable customer loyalty was measured using a uni-dimensional scale adapted from Bahadur, et.al (2018).Scale for measuring design thinking application was not found in the extant literature. Thus, since design thinking emphasized users' empathy and involvement, the study measured design thinking by adapting user's involvement and empathy scalesto determine the association between design thinking and customer loyalty. Empathy was measured with a scale by Bahadur, et.al. (2018)

while user's involvement was measured by Tacer, et.al. (2018) scale. Previous studies collected data on user empathy and involvement in the design process from the employees which signal the possibility of bias responses. This study collected data on user involvement, user empathy and loyalty from customers. All the scales were adapted and measured on a 5- point likert-type scale ranging from 1(Strongly Disagree) to 5(Strongly Agree). Multiple regression was used for path analysis using the statistical package for social sciences (SPSS) version 24.

Table 1: Respondents' Profile

Respondents Profile		Response Rate		Percentage of Response (%)
		Customers	***Employees***	
Gender	Male	119	109	59.4
	Female	140	16	40.6
Age Range	20-25	70	12	21.4
	26-35	156	17	45.1
	36-45	30	96	32.8
	56 & above	3	-	0.7
Marital status	Single	147	12	41.4
	Married	112	113	58.6
	Divorced	-	-	-
Educational Qualification	Masters	26	21	12.2
	Degree	115	65	46.9
	Diploma	65	19	21.9
	NCE	43	6	12.8
	SSCE	10	14	6.3
Preference for company's Products	Nigerian products	73	-	28.2
	Foreign products	186	-	71.8
Duration for being a customer	Less than 1 year	98	-	37.8
	1-3 years	106	-	40.9
	4-6 years	38	-	14.7
	7years & above	17	-	6.6
Duration of employment with company	Less than 1 year	-	26	20.8
	1-3 years	-	75	60.0
	4-6 years	-	16	12.8
	7years & above	-	8	6.4

Note: N=384 (Customers = 259, Employees = 125)

Source: Field Survey, 2020

4. Results

4.1 Respondents Profile

The result of analysis indicates that 71.8% of customers that participated in the survey have preference for the products of the foreign manufacturing firms listed in the survey while 29.2 of the customers indicate their loyalty to the indigenous companies. Majority of the customers that responded to the survey have patronized their first choice company's product for a period not less than three years consistently. The high rate of customer's preference for the product of foreign owned companies operating in Nigeria further confirm the low rating of Nigerian on competitiveness and innovation (United Nations Industrial Development Organisation, 2018). See table 1

4.2 Correlation Coefficient Determination

The result of Bivariate Pearson correlation analysis indicates a significant relationship between design thinking capabilities, design thinking and customer loyalty. However, the correlation between integrative thinking capabilities and customer loyalty was negative.

This is an early indication that integrative thinking capability may not positively impact customer loyalty. Also, the determination of multicollinearity indicates that the Variance Inflation Factor (VIF) values between the predicting variable were less than the threshold of ≤ 5.0 and the tolerance values fl 0.10 (Hair, Hult, Ringle, & Sarstedt, 2014). The variances explained between the independent variables to the dependent variable substantially differ suggesting no case of multicollinearity. See Table 2.

Table 2: Correlation Determination1*4.2 Model Evaluation*

Variables	1	2	3	4	5	VIF	Tolerance
1.Integrative Thinking	**1**					2.757	0.363
2. Customer Orientation	.616*	**1**				1.684	0.594
3. Experimentation	.718*	.554**	**1**			2.155	0.464
4. Design Thinking	.475*	.270**	.319**	**1**		1.294	0.773
5.Customer Loyalty	-.028	.206*	.019	.439*	**1**		

Data was assessed to determine the predicting power of the independent variables. Based on statistical index, the R value of 0.596 for model 1 indicates that design thinking capabilities (Integrative thinking, Customer Orientation, Experimentation) and the level of design thinking are significant predictors of customer loyalty (Cohen, 1998). The value of R-squared at 0.355 indicates that approximately 35.5 percent of the total variance in customer loyalty is explained by employees' design thinking capabilities and the extent to which the capabilities are deployed. The estimated standard error for the model is 5.94% indicates a high precision with which the regression coefficient is measured. See table 3.

Table 3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.596[a]	.355	.334	5.941

The examination of the ANOVA in table 4 further confirm that all the independent variables significantly predict the dependent variable (df = 4235.9 (4), F=16.51, P = 0.000 < 0.05) indicates that the regression model is a good fit with data.

Table 4: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2331.610	4	582.903	16.51	.000[b]
	Residual	4235.888	120	35.299		
	Total	6567.498	124			

4.3 Hypotheses Testing

The hypotheses developed were to determine the association between design thinking capabilities (i.e. integrative thinking, customer orientation and experimentation) and customer loyalty to identify the most important capabilities that predict customer loyalty. Also, the association of design thinking and customer loyalty was also hypothesized. A relationship is said to be significant at a P-value less than 0.05 (95% confidence level)and the t-values fl 1.65 for a one tailed test (Hair, Ringle, & Sarstedt, 2011). The results of the paths analysis is presented in Table 5.

Table 5: Results of Paths Analyses

Hypotheses	Direct Relationships	Std. Beta	Std. Error	T-Statistic	P-Value	Decision
H1	Integrative Thinking -> Customer Loyalty	-0.028	0.068	9.501	.000	Supported
H2	Customer Orientation -> Customer Loyalty	0.206	0.104	5.477	.000	Supported
H3	Experimentation -> Customer Loyalty	0.019	0.014	9.449	.000	Supported
H4	Design Thinking -> Customer Loyalty	0.439	0.042	12.369	.000	Supported

The result of H1 reveals a significant negative relationship between integrative thinking capacities and customer loyalty. The results shows a beta value (β = -0.028)which is less the threshold 0.05 significance level and the t-value of 9.501greater than the 1.65 mark for a one-tailed test therefore hypothesis one was supported. This implies that for every increase in employees' integrative thinking capabilities will result to 2.8% decrease in customer loyalty. The relationship between customer orientation and customer loyalty in H2 reveal a significant positive relationship. The beta value was (β = 0.206 and t-value = 5.477) implying that for every increase in employees' customer orientation capabilities, customer loyalty increased by 20.6%. The hypothesis evaluating the relationship between employees' experimentation capabilities and customer loyalty in H3 was positively significant. The beta value was (β =0.019 and the t-value = 9.449) suggesting that the hypothesis was supported. This implies that an increase in employees' capability to experiment with prototypes increased customer loyalty by1.9%.

The relationship in H4to determine the extent to which the deployment of design thinking will impact customer loyalty was found to be positively significant. The beta value was (β = 0.439 and the t-value = 12.369) suggesting that the hypothesis was supported. This implies by increasing the application of design thinking in and organization will yield 43.9% customer loyalty increase.

5.0 Discussion

This study was conducted to evaluate the role of design thinking capabilities in promoting customer loyalty in the Nigerian manufacturing industry. Based on the results obtained from the hypotheses test, this section discusses the findings in line with existing literature. The findings reveal a significant relationship between the three design thinking capabilities (integrative thinking, customer orientation and experimentation). However, the relationship between employees' integrative thinking capabilities was significant but negatively associated to customer loyalty. The relationship between employees' customer orientation capabilities was expectedly positively significant. The findings of hypothesis three reveal that employees' experimentation capability was found to be significant and positively associated with customer loyalty. The association between design thinking and customer loyalty in hypothesis four was positively significant and has the highest customer loyalty impact.

The finding in hypothesis one agrees with earlier findings by Katsaros, et.al. (2014), and Lettemann, & Fritz (2014) which indicate that the value of possessing design capabilities on innovation relate with customer loyalty. The negative relationship of integrative capability to customer loyalty does not overrule its value in the innovation process especially in the phase of ideation (vanRens, 2016).

The finding in hypothesis two is related with Bahadur, et.al (2018), Leitdka (2017), and Depaula (2018). These studies found a positive effect of employee empathy and collaboration on sales performance, customer satisfaction and loyalty. Thus, manufacturing companies in Nigeria must entrench the culture of customer orientation at all stages of their innovation to identify customers' latent needs which are a source of competitive advantage. Latent needs provide a lens for the consumer needs of tomorrow, and as such can help manufacturing organizations shape their innovation platforms by involving customer and helping them to decide.

The finding of hypothesis three in this study is in variance with Efeoglu, et al., (2014) who found that experimentation is the most important capability because experimentation capabilities in this study have a small effect on customer loyalty. The reason for the variance in effect could be the difference in setting and context. This finding is in agreement with Martinkenaite, et.al, (2017) that found evidence that the capability to embrace failure while experimenting portent the benefits of learning by doing and leveraging failure as opportunities for better solutions. Thus, entrenching culture of smart failure into work flows and teams ensures that useful solutions are designed for end-users.

The strong effect of design thinking and customer loyalty found in this study in hypothesis four is corroborated by Kiwoong, & Bruce (2016) who found evidence that positively recognized experience arguably triggers repeat consumption of goods or services within the same brand. This suggests that adopting this user-centric approach is a sure bet for enhancing customer loyalty in the manufacturing industry. The widespread adoption of design thinking by fortune 500 companies and the increasing interest and

advocacy for the approach by marketing scholars and management practitioners both in public and private sectors underscores its value.

5.1 Implications

Practical Implications

The study identifies the critical importance of mind set change in the design of customer experience improvement programmes and the ways in which customers can be directly engaged in the design and improvement processes. Importantly, this finding provokes organizational change and provides a road map which organizations can use as a base for improving their customer experiences. Capability and practice is an important consideration when embarking on integrating design thinking within an organization. Identifying the most critical design Thinking's capabilities will help management to develop framework for attracting, promoting and developing innovative capabilities of employees to gain competitive advantage.

These findings also illuminate the need for this to occur both at an individual and organizational level. Understanding this is necessary to establish a governance framework needed for companies to deal with design thinking as a means and mind set and, hence, to manage innovation both operationally and strategically. From these findings it can be surmised that developing design thinking capability and being able to execute in practice requires a sustained program beyond simply workshops comprising both skill development and experiential learning with the support of experience and practiced design thinking professionals. As such integrating design thinking practice into an organization requires long term commitment to enable the required personal and organizational capability development and cultural transformation.

Theoretical Implications

By providing empirical evidence linking design thinking and customer loyalty as well as identifying employees' customer orientation and experimentation capabilities as predictors of customer loyalty are contributions to the ongoing customer loyalty debate in the marketing research. Secondly, reviews of marketing literature reveals that customer involvement is assessed from the perspective of employees. We contend that this constitute a methodical flaw and has the likelihood of bias responses. We argue that customer involvement should be assessed from the perspective of customers who can tell objectively if they are truly involved as this will further improve the quality of data collected. In this study, we assessed customer loyalty from the perspective of customers which is departure from the norm. Research on design thinking has been on for decades. Though anecdotal reports of success are numerous, empirical research on its efficacy in practice is still in infancy hence opportunities for continued research is abound.

5.2 Limitations and Directions for Future Research

This study provides useful insights on designs thinking and capabilities required for adopting the approach and a their unique impact on customer loyalty, but the research encountered few limitations;

Micro, Small and Medium Scale Enterprises (MSMEs) constitute 90% of the manufacturing sector in Nigeria but this study was limited to

large and medium manufacturing firms which suggest that MSMEs industries were not covered in the survey. The reason for excluding MSMEs was because the restriction of movement imposed by the Nigerian government in response to curb the spread of COVID-19. Thisphenomenon necessitated the use of online data collection strategy which most of the MSMEs do not have platforms therefore accessing their employees wasn't possible. We recommend that future studies should focus on MSMEs to get insight on their awareness and application of the design thinking approach in their innovation process. A comparative impact analysis of companies that have adopted the approach and those yet to embrace the approach will provide useful insights

Secondly, a cursory review of design thinking reveals that there is no scale to measure the application of design thinking in organizations. Most of the scales measures design thinking mind set or design thinking capabilities. Even the available scales measuring design thinking were developed and validated in the service industries therefore generalization is limited. The absence of a scale to operationalize the impact of design thinking on organizational outcomes may be the reason for the paucity of empirical evidences on the impact of design thinking on customer outcomes. In addition, most of the scales measuring design thinking capabilities have too many dimensions therefore portend a snag for operationalization. Future studies should consider developing and validating a scale for measuring the impact of design thinking application and scales for measuring design thinking capabilities should be revalidated.

5.3 Conclusion

The study was aimed to examine the role of design thinking capabilities in enhancing customer loyalty. Four hypotheses were tested to determine the direct relationship between design thinking and the three dimensions of design thinking capabilities on customer loyalty. From the results of analysis, employees' customer orientation capabilities significantly predict customer loyalty positively while the hypothesis to determine the level of design thinking deployment and its impact on customer loyalty revealed the most customer positive loyalty outcome. Riding on the dynamic capability theory, we conclude that firms' ability to integrate, build, and reconfigure internal and external capabilities to address rapidly changing environments holds sway for their innovative capabilities to enhance customer loyalty. In sum, if corporate organizations wish to stand out and beat the competition, they must be open to customer centricinnovative approaches that have influence on customer loyalty.

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