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THE ROLE OF PERSONAL COMMITMENT IN ASSOCIATION BETWEEN AEROSPACE EDUCATION AND SERVICE EXPERIENCE THROUGH QUALITY DESIGN: A MODERATED MEDIATION MODEL

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Abstract

This study investigates whether personal commitment moderates the effect of aerospace education on service experience through quality design. A cross-sectional study using a close-ended questionnaire was administered to a sample of 174 aviation students of Moi University, Kenya. Moderated mediation analyses were conducted using the PROCESS macro in order to investigate the relationship among variables. The results showed that the association between aerospace education and service experience was significant, and this association was mediated by quality design. The mediated effect of quality design was moderated by personal commitment. Based on the findings, companies involved in aviation should focus on improving the good environment of the service encounter (i.e., education, quality design and commitment) to enhance service experience. The findings made a contribution in terms of allowing us to understand the factors that can enhance service experience in the aviation industry.

Keywords: aerospace education; quality designs; personal commitment; service experience; moderated mediation
Type of the work: research article

1. INTRODUCTION

Service is the most challenging to engage with and so is education because both require a delicate balance in order to achieve the desired results that are sustainable over a long period. Services have their own characteristics that may prove to be difficult to have an always positive service experience during each and every service encounter. Although steps can be taken to ensure a positive experience every time there is an encounter with a service, it requires the successful incorporation of factors such as education, personal commitment and quality designs. In the service industry, quality and environment have major influences on the psychological and evaluations of consumers [1]. The physical appearance of an aircraft together with its features has an impact on the evaluation of the overall service experience. Although in traditional engineering where the provision of services is regarded of low value, this view is changing, and organisations are making an attempt to develop strategies towards service operations [e.g., 2, 3, 4 & 5]. Integration of services into the engineering product is an arrangement that delivers value in use [6], more so when the product is designed having in mind the experience of the user.

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Aerospace education has an effect on the quality of aircraft designs which leads to outcomes such as positive service experience and favourable evaluation of aerospace services by customers. Education is the key that unlocks the knowledge and creativity of students to combine engineering and the value of service experience in their designs. Students will go beyond their normative ideas to design a product that delivers a positive service experience. Positive experiences lead to benefits for organisations such as cost reduction, sustainable operations and an increased customer base, which are customer orientated. According to Fu et al. [7], in order to enhance potential benefits derived from achieving improved operational outcomes, the satisfaction of customers is a key driver, and thus, service experience plays an important role. The focal point of the very existence and all operations of organisations are towards meeting the needs of their customers satisfactorily. Aerospace in this study is used as a noun to mean making and operating aircraft or spacecraft [8]. Aerospace education bridges the gap between making and operating aircraft by having engineering meet operations through the lens of service experience. Meeting the needs of customers is important because air travel services are one of the key sources of revenue in the industry [9].

The first activity towards achieving a memorable service experience and hence positive outcomes by customers is in the product process. This process is to have the design specification phase where service experience and anticipation of customer requirements that led to positive evaluation is defined. The design process is influenced by the knowledge, creativity and personal commitment of the students whose thinking has been shaped and channelled by education to give quality designs. At this stage, it is important to emphasise to the students the importance of the service experience in their products. Students have to go beyond the regular knowledge and activities required of them by their facilitators through their personal commitment. The student has to strive to produce a product that meets the requirements, standards and specifications, as well as give a positive service experience to the user.

Service experience is popularly vested upon the feelings of the customer, and Balmer [10] emphasised that a company that has a long perspective should place special importance on the customer. A focus on the customer is a central tenet of the free economic system where firms compete for customers through product innovations, although often highlights are on products such as Chevrolet versus Ford and Microsoft versus Apple [11]. Competition based on innovation has created many benefits for customers [12] and companies. Aircraft design students should give a product that differentiates itself from that of other designers with the ultimate goal of giving a positive service experience. Products can avoid commodity traps by being differentiated, especially since anything can be differentiated [13]. A good service experience happens when users react favourably to products [14] from aerospace engineering. The aerospace sector benefits from quality designs of aerospace engineering and can give an operational competitive edge to the aviation sector in the operation of aircraft. The aviation industry seeks to have a more sustainable competitive advantage on a global scale [15]. Therefore, quality aircraft designs help these organisations achieve the much sought-after competitive advantage in the industry.

This study attempts to find out how aerospace education can affect the quality of designs and if it can lead to a service experience. Further, this study also attempts to establish whether the personal commitment of the student can change the relationship between aerospace education and quality design. An aircraft design will not only create a good service experience but also reduce production costs and improve the profit margins of the organisation. This study contributes to the concepts of aerospace education and focuses on the less studied constructs such as quality designs, personal commitment and service experience from the perspective of the student. This is the first study to link aerospace education, personal commitment, quality designs and service experience.

1.1. Literature review and theoretical background

1.1.1. Aerospace education

Education is an area that has substantial repercussions and ripple effects that benefits the student as an individual and also has an impact on the external environment such as society and organisations.

Once something is learned, you can never unlearn it. Learning can take place in an informal setting, as well as a formal setting. Formal learning relies on facilitators to awaken and channel thought processes to make informed decisions for students through institutions. Aerospace education is to build capability and the desire by students to conceptualise a quality design that can have ease of implementation. It is of paramount importance for students to have a feeling of achievement, motivation, commitment and satisfaction during knowledge acquisition because this affects their output in terms of quality designs. Knowledge is a set of theoretical understandings that teaches reasoning and techniques [16] to students. Satisfaction of students when knowledge is provided can be through the learning environment, resources used and facilitators who have a link the input as well as the output of the students. Student satisfaction in their aerospace education process enables them to be committed, motivated and creative at the concept stage of aircraft design. A well-conceptualised design enables the user to have a positive service experience during an encounter with the product. Student knowledge is channelled to produce quality designs that take into consideration the experience of the service user. Even though aerospace education is largely limited to regions with active aerospace industry, it consequently drives the demand for the educated personnel in this specialisation. Aviation, being part of the aerospace industry, is widely adopted in many regions because it is far reaching and a popular means of air transportation.

1.1.2. Personal commitment

Facilitators can only participate to a certain point, and the rest is up to the commitment of the student. Positive learning outcomes such as quality designs come from the student who decides to be creative and exert more effort through active learning due to their personal expectations, characteristics, motivations and goals [17]. According to Owen [18], teachers or facilitators play an important role in enabling or constraining learning of the students. Learning requires a personal commitment by students in order to understand, relate, re-organise and apply information in order to make a logical quality design that focuses on the service experience. The quality of the design should also minimise changes to the design during the implementation stage since changes have time and cost implications. Therefore, personal commitment is harnessed by knowledge, discipline and embracing creativity that requires talent and commitment from students.

1.1.3. Quality designs

An aircraft being a primary tool in the operations in the aerospace/aviation industry is important when the student gets it right the first time. The quality of aircraft designs determines if an organisation has ease of implementation and production time. The aerospace industry demands high capital intensity; therefore, the accuracy and quality of models are critical [19]. A well-designed transactional framework in construction plays a crucial role in productivity improvement, strengthening stakeholder engagement and cooperation in product development and marketing [20] similar to aircraft design. A good design requires minimal changes during production as manufacturing organisations also need to maintain a good profit margin that can only be achieved when production time is on schedule, minimal re-design which otherwise ties up personnel and materials not wasted.

Quality designs become of critical importance in the aerospace industry even with the tasks taking on the approach of risk sharing among organisations. Designs that use the human-assisted feature approach require the right knowledge, motivation and commitment of the student during aerospace education. The right design assists in contemporary areas such as the quality of the service being offered and the experience of the user. The ultimate goal for all organisations is to serve the customer right the first time during the moment of truth, whether at the industrial level or at the consumer level.

1.1.4. Service experience

Experience is a formative construct representing interactivity with the environmental elements which is a phenomenon, process and output [21]. A service experience incorporates the user, service provider representatives and people in social experience networks, thus characterising it as occurring in multi-stakeholder networks [22]. The entire network with their diverse interests works together towards a memorable service experience which is a subjective response that people get after an encounter [23]. Interaction is increasingly becoming beneficial not only in a provider-user dyadic relationship but also between a network of actors and stakeholders where co-creation is increasingly realised as also a reciprocal contribution from all parties [24].

Aerospace/aviation is an industry that is well entrenched in the service spectrum which requires visual cues to enhance its experience and differentiate it from its competitor in the eyes of the user. A memorable service experience infuses what is seen, perceived, felt and experienced. The consumer of the aerospace service becomes a priority when coming up with the quality of the physical cues such as the aircraft. A good service experience causes the user to evaluate the entire service process favourably benefiting the organisation through repeat purchases and loyalty. The delivery of services sequentially further affects a service experience; hence, during the conceptual stage of the aircraft design, the user's anticipated needs and ease of use should be factored in.

1.1.5. Theoretical foundations

This study explains the interconnection of aerospace education, quality designs and service experience through service-dominant logic. Service delivery logic integrates actors who are connected by shared institutional arrangements and mutual value creation through service exchange [25]. This concept has three levels of analysis that interact with one another. Level one is at a macro level with institutions that prompt social schema and shape the activities of service actors [26]. Level 2 is at a meso level that involves service providers, who make value propositions operationalised in the organisation's service design, and customers, who develop service practices along with consumption episodes [27]. Level three is at a micro level, which involves service beneficiaries who capture value based on their perceptions or experiences at a specific time and location [28]. Therefore, the service experience is co-created through institutions that structure the student's motivation, skills, intentions and knowledge, which then interact among them in practices that either reproduce or contest institutional logic while creating new ones that become further institutionalised, resulting in beneficiary service experiences [29].

The importance of a quality design is created jointly by the students when they are responsive to the knowledge imparted by facilitators. The student conceptualises a design with a service-focused mindset of beneficiary-oriented and user-interaction to provide a good service experience. The student has to interact with the aerospace education in order to provide designs that take into consideration the user experience. Further, the student has to individually create a design that provides value to the user. Therefore, when the student engages in aerospace education to create quality designs, where the outcome is the service experience, then co-creation of value is arranged through the institution. Service-dominant logic integrates various fields which highlights the development of service focus perspective that triggers a general change of perspective viewed as beyond, unifying, accommodating and transformative [for example, 30, 31, 32 & 33].

This study also draws on social exchange theory a social psychology concept concerning social changes as a process of interactive exchanges between different people. Social exchange assumes that the human behaviour can be governed by the desire that maximises positive experiences while minimising negative experiences. Satisfaction or enjoyment is the positive reward that a person gets after experiencing a specific service. Students who enjoy during knowledge acquisition have an affection attachment when conceptualising aircraft designs and thus produce quality work output. Social exchange theory is where the interactions and exchanges among the students and their facilitators result in quality designs that can

lead to a positive service experience. The cost of the designs during implementation and the rewards of the user experience drive the behaviour of the students. For this reason, people will subtract the cost from the benefits to get the value of that service experience.

1.2. Construct development

1.2.1. Effect of aerospace education on service experience

Aerospace education has transformed the aerospace industry through service experience that requires minimal changes to the design during the production/implementation stage because of the rigorous conceptualisation stage. Service experience is created and differentiated with a product that has been shaped by aerospace education. To have a positive experience, it is necessary for the student to be responsive to their education and apply their designs. This process starts from the interest that the student has in the knowledge acquired through education, enabling a good design to make a difference in the way the user experiences the product. Experiences and their relation can influence the choice between competing services, which is important, especially in the case of extended and multiple encounters [34].

H1: Aerospace education is positively related to service experience

1.2.2. Mediating role of quality designs on the relationship between aerospace education and service experience

Quality designs can lead to a positive service experience in the core service attributes such as aircraft, cabin space and cabin seats. According to Banerji et al. [35], their study found that customers consider the type of aircraft as an important factor when choosing flights. Aircraft design and consumption of the service converge to form a good service experience. The developments in the aerospace/aviation sector will continue to exhibit significance in the number of aircraft and the requirements for human resources in this sector [36]. There is a constant need to keep up with the standards, capabilities, qualities and aircraft production that enhance the experience of the users and service excellence. Past researchers have determined that aerospace/aviation is an influential industry where competition is based on innovation which creates benefits for its customers [for example, 37, 38, 39 & 40] and so overall service experience.

H2: Quality design mediates the association of aerospace education with service experience

1.2.3. Moderating role of personal commitment on the relationship between aerospace education and quality design

The aerospace industry has improved the product introduction process by allowing manufacturing-related issues to be dealt with during the earliest design phases [41]. The process of engineering a product using the traditional method begins with concept design. It is the part that is the most critical when coming up with a product that becomes efficient in the downstream processes and offers a positive service experience to its users. Aerospace is an industry with high technological content and economic benefits such as industry growth and civil aircraft production, which are seen by many countries as a symbol of strength [42]. It is a sector with high value and high technology which requires skilled labour [43] and training must be of good quality [44]. Although students may find it difficult to develop the skills that accompany the development of competencies [45], a robust aerospace education can shape, channel and harness the necessary skills.

H3: Personal commitment will moderate the effect of aerospace education on quality design

1.2.4. Moderated mediation role of personal commitment on the indirect relationship between aerospace education and service experience through quality design

According to Wolff et al. [46], active learning led to better knowledge acquisition and deeper understanding of learning material. Once knowledge has been harnessed and channelled towards a specific

direction by aerospace education, the student ensures to produce quality designs by having a personal commitment to do so. Quality is a combination of service experience that focuses on the user and standards with a predictable degree of uniformity and dependability of a standard quality suited to the user to produce service excellence [47]. The students in the design stage have to take into consideration the technological advancement and competitiveness being the tenets of a design to produce a quality product that achieves an excellent service experience. It is important to have an understanding of service experience in order to effectively incorporate the right knowledge, motivation and commitment to students to come up with designs that focus on the positive service experience. The concept of service experience is the core of the service offering and a basis for all businesses [48]. Aircraft designs should ensure that users experience tangible design features in order to create an experiential perspective. The role of mechanical cues in creating a good experience influences the perception of consumers [49].
H4: Personal commitment moderates the mediating effect of quality design on the relationship between aerospace education and service experience (Fig. 1)

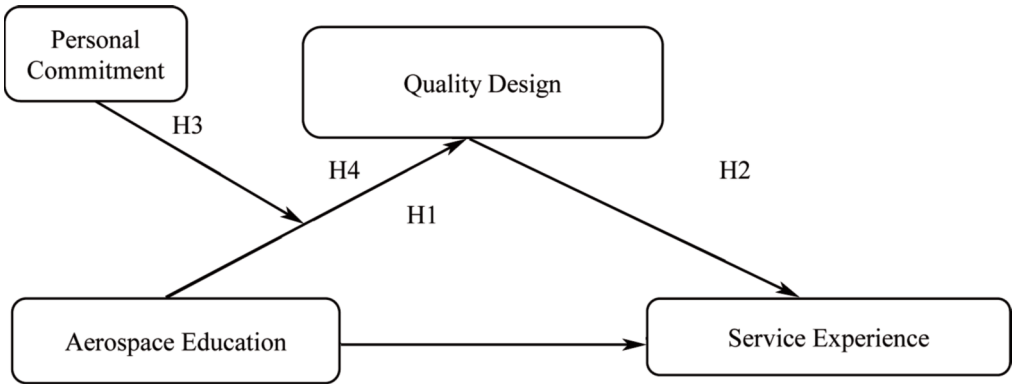

Figure 1. Hypothesised moderated mediation model.

2. METHOD

This study used an explanatory research design which helps us explain specific decisions made and specific outcomes materialised [50]. According to Saunders et al. [51], studies that establish causal relationships among variables use explanatory design. The design is also deemed appropriate for the study as it allows the study to be carried out in natural settings and allows the researcher to employ random probability samples. This allows for statistical inferences to be made to broader populations and permits them generalisations of findings to real-life situations, thereby increasing the external validity of the study [52].

The study used this design in order to get a deeper understanding of the causal relationship and context that shed light on education with a customer focus. The structured questionnaire was distributed to 200 students of civil aviation. The measurements for the main constructs were administered in a 5-point Likert scale. The key variables of this study include independent, dependent, mediating and moderating variables. The independent variable of this study was aerospace education (for hypothesis; H1), quality designs was the mediating variable (for hypothesis; H2), while moderating variable was personal commitment (for hypothesis; H3) and service experience (for hypothesis; H4) was the dependent variable. These variables were controlled for as they may have systematic influence on the entire relationship and enable a clearer view of the influence of independent variable on the dependent, mediating variables and the effect of the moderating variable on the direct relationship. The year of study and gender are found as key modifiers of an individual's perception and activity, which several studies show [for example, 53, 54, 55, 56, 57 & 58].

All variables were measured using a six-item Likert scale adopted as follows: for aerospace education on teaching methods, content, tools and techniques, systems, resources and study environment from [59]. Personal commitment on goal oriented, talent management, dynamic, competitive, esteemed, and innovative were adopted from [60, 61]. Quality designs on competitiveness, production oriented, processes, performance from, standards, and accountability were adopted from [60, 61]. Service delivery on modern aircraft, comfortable seating, and communication devices were adopted from [62], while product experience on outcome focus and, peace of mind were adopted [63]. A total of 24 items were used to measure the four primary constructs used in the study. The respondents were asked to report the degree to which they agree or disagree ranging from the lowest being strongly disagree (1) to the highest being strongly agree (5). The students were asked to rate their responses keeping in mind the use of aviation is in a broad sense to include aerospace.

A total of 174 questionnaires were collected and used for data analysis. Of the 174 respondents, 36% were female students and 64% were male students. The student respondents were spread across the 4 years of study, where 24% of the respondents were in their first year of study, 26% were in their second year of study, 26% were in their third year of study and 24% were in their fourth year of study. The scales were slightly reworded to reflect the students' view regarding the main constructs of aerospace education, personal commitment, quality design and service experience in the aerospace industry.

3. RESULTS

3.1. Common method bias test

The results were obtained through a self-report questionnaire that may present a common method bias problem [64]. According to previous studies [65], the Harman single factor test is used to examine common method bias. The results showed that the Kaiser-Meyer-Olkin (KMO) value was 0.807 ($p < 0.001$), and Bartlett's test of sphericity was significant ($p < 0.001$), indicating that the data were suitable for factor analysis. The results showed 15 items with eigenvalues greater than 1, and the first factor showed a variance of 34.525% which did not reach the criterion for 50%; hence, there is no serious common method bias in this study.

3.2. Descriptive statistics and correlations

Table 1. Mean, SD and correlation of variables.

S. No	Variables	Mean	SD	1	2	3	4
1	Aerospace education	3.39	0.562	1	0.610**	0.674**	0.526**
2	Service experience	3.41	0.531	0.610**	1	0.817**	0.582**
3	Personal commitment	3.46	0.447	0.674**	0.817**	1	0.652**
4	Quality design	3.33	0.626	0.526**	0.582**	0.652**	1
5	Gender	0.64	0.482				
6	Year of study	1.49	1.100				

Notes: Female is represented by 0 and male is represented by 1; year of study refers to year 1, year 2, year 3 and year 4.
**Correlation is significant at the 0.01 level (2-tailed).
SD – standard deviation.

Table 1 presents means and standard deviations (SDs) and correlation of variables, and the results show that aerospace education, quality design, personal commitment and service delivery are consistent across the constructs. Correlation analysis was carried out in this study on the items reflecting aerospace education, quality design, personal commitment and service experience by using bivariate correlations. The results of the test show that they are consistent with hypothesised relationships. The results of this study also show a positive correlation; this indicates that the direction of the relationship among aerospace education, quality design, personal commitment and service experience is positive.

3.3. Testing the moderated mediation model

3.3.1. Effect of aerospace education on service experience

Table 2. Total effect of aerospace education and service experience.

Effect	**SE**	**T**	**p**	**LLCI**	**ULCI**
0.5858	0.0722	8.1186	0.0000	0.4434	0.7283
Direct effect of aerospace education on service experience					
0.3969	0.0620	6.4023	0.0000	0.2746	0.5193
Indirect effect of aerospace education on service experience					
Effect	BootSE	BootLLCI	BootULCI		
0.1789	0.0380	0.1079	0.2558		

Notes: Level of confidence for all CIs in output: 95.0000.
The number of bootstrap samples for percentile bootstrap CIs is 5,000.
CIs – confidence intervals; SE – standard error.

Table 2 presents the results of the total effect of aerospace education and service experience. The total effect of aerospace education on service experience is positive and significant (β = 0.5858, $p < 0.05$). From the regression, the lower limit confidence interval (LLCI) is 0.4434, whereas the upper limit confidence interval (ULCI) is 0.7283, with no zero between the LLCI and ULCI. Thus, H1 is supported. The Hayes [66] technique for mediating analysis (model 4) was used in testing the indirect effect. The results for the mediating role of quality design in the relationship between aerospace education and service experience were significant (β = 0.1789, p = 0.05) (see Table 2); the bootstrap lower limit is 0.1079, and the bootstrap upper limit is 0.2558. This outcome is significant, as there is no zero between the LLCI and ULCI. Thus, H2 is supported.

3.3.2. Moderating role of personal commitment

The moderating role of personal commitment in the relationship between aerospace education and quality design was examined through bootstrapping method (Model) 1 by Hayes [46], and the regression results show the following: β = 0.2552, p = 0.05; LLCI = 0.0057, ULCI = 0.5047 (see Table 3). The moderator has a positive impact on the relationship between aerospace education and quality design; therefore, H3 is supported. Further, Figure 2 shows the graph for moderation where the gradient is positive and rising to the right.

Table 3. Results of moderating role of personal commitment.

R	***R*-sq**	**MSE**	***F***	**df1**	**df2**	***p***
0.6722	0.4519	0.2185	46.7235	3.0000	170.0000	0.0000
Model						
	Coefficient	**SE**	***t***	***p***	**LLCI**	**ULCI**
Constant	3.2872	0.0414	79.4923	0.0000	3.2055	3.3688
Aerospace education	0.1562	0.0862	1.8122	0.0717	–0.0139	0.03264
Personal commitment	0.7918	0.1086	7.2924	0.0000	0.5774	1.0061
Int_1	0.2552	0.1264	2.0193	0.0450	0.0057	0.5047

SE – standard error; Df – degrees of freedon; MSE – mean squared error.

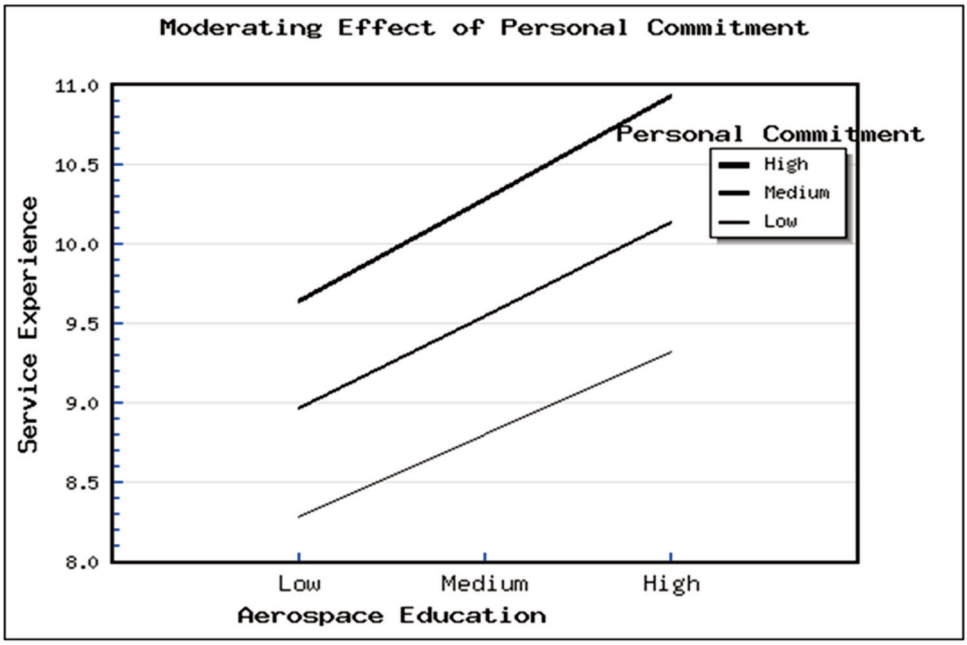

Figure 2: Moderation effect of personal commitment.

3.3.3. Moderated mediation analysis

The results for moderated mediation analysis were obtained by using Hayes process macro (Model 7) to test the effect of personal commitment on the relationship between aerospace education and service experience through quality design. Table 4 shows that quality design is regressed to aerospace education and personal commitment; the results show that aerospace education is negatively related to quality design, and the relationship is statistically significant: β = 0.1562, 95% confidence interval (CI) = -0.0139, 0.3264. The relationship between personal commitment and quality design is positive, and the relationship is statistically significant: β = 0.7918. Service experience is regressed on aerospace education and quality design, and the results in the overall model was significant, F (2, 171) = 74.7026,

p < 0.001, R2 = 0.4663. Aerospace education is positively related to service experience, and the relationship is significant: β = 0.3969, 95% CI = 0.2746, 0.5193. Quality design is positively related to service experience, and the relationship is significant: β = 0.3055, 95% CI = 0.1955, 0.4154. An index of moderated mediation was conducted by combining the conditional indirect effect to provide an overall test of whether or not there is moderated mediation. The study found a significant relationship for the effect of personal commitment on the relationship between aerospace education and service experience via quality design: β = 0.0780, SEboot = 0.0385, 95% CI = 0.0089, 0.1613. Therefore, H4 is supported.

Table 4. Unstandardised ordinary least squares (OLS) regression coefficients testing for conditional indirect effect of aerospace education on service performance.

Consequent						
		M (quality designs)		**Y (service experience)**		
Antecedent		**Coeff. (SE)**	**95% CI**		**Coeff. (SE)**	**95% CI**
Aerospace education (X)	a_1→	0.1562	–0.0139, 0.3264	c'→	0.3969	0.2746, 0.5193
Quality design (M)				b	0.3055	0.1955, 0.4154
Personal commitment (W)	a_2→	0.7918				
AE*PC	a_3→	0.2552	0.0057, 0.5047			
Constant		3.2872	3.2055, 3.3688		2.3945	2.0237, 2.7653
		R^2 = 0.4519 $F(3, 170)$ = 46.7235, p < 0.001			R^2 = 0.4663 $F(2, 171)$ = 74.7026, p < 0.001	
Conditional indirect effect						
Moderator	**Eff.**	**SE (boot)**	**Boot 95% CI**			
Personal commitment	0.0121	0.0363	–0.0640, 0.0806			
	0.0511	0.0259	–0.0016, 0.1025			
	0.0901	0.0277	0.0375, 0.1473			
	Index	**SE (boot)**	**Boot 95% CI**			
Index of moderated mediation	0.0780	0.0385	0.0089, 0.1613			

Note: Level of confidence for all CIs in output: 95.0000. The number of bootstrap samples for percentile bootstrap CIs is 5,000. *W* values in conditional tables are the 16th, 50th and 84th percentiles. The following variables were mean centered prior to analysis: personal commitment and aerospace education.

*p < 0.05; **p < 0.01; ***p < 0.001.

CIs – confidence intervals; Coeff. – coefficient; SE – standard error.

4. DISCUSSION AND CONCLUSION

Knowledge acquired through formal aerospace education helps students to channel skills to produce outcomes out of their efforts that focus on the customer to give a positive service experience. The students have an influence in meeting the needs of customers when they produce quality work that takes into consideration the user and the experience they will have. Primarily, organisations are in existence to meet the needs of people. Competition has made it that not only does the people's needs be met but also do they be met satisfactorily. Knowledge has to be imparted with a focus of the end user. This study has added on to the knowledge on aerospace education that it has a positive relationship with service experience. Quality designs have shown how aerospace education is important in service experience by focusing on the user. The positive experience of the user guarantees good performance of organisations and loyalty of customers. The study discovered that personal commitment enhances the relationship between aerospace education and quality design. The overall effect on the quality of design when students are taken through aerospace education gives a linear relationship with service experience.

The findings of this study show that aerospace education has a positive influence on service experience. The empirical study was carried out on students in different years of study, with thus different levels of exposure to education. The students in their first year can produce quality designs but not of higher quality than that of the students in the fourth year of study. As students progress in their levels of education, so does their personal commitment to produce quality design, and hence, they come up with a product that has a positive impact on the service experience. The findings of his study go in line with those of the study by Martinsuo and Turkulainen [13]: learning produces positive outcomes such as service experience. As students progress with their aerospace education, they are in a better position to deliver quality aircraft designs that take into consideration service experience of the user and focus more on customers. Senior students combine the acquired knowledge with the creativity that they have in order to come up with designs that not only can have minimal changes during implementation but also create a product that will create a positive service experience to the users.

Conceptualisation of quality designs requires exposure of learning through formal education. Aerospace education gives students this kind of structured and channelled ideas necessary to produce designs that require minimal changes at the implementation stage. Aerospace education imparts the knowledge that allows students to have customer focus when coming up with designs or when completing assigned duties from the facilitators. Channelled ideas produce the desired results and outcomes that enables organisations to take advantage of the differentiated product to give the user that experience that they will not forget and leave them wanting to come back for more. A positive service experience is the value that organisations seek when engineering integrates services into their products.

5. LIMITATIONS AND FUTURE RESEARCH

This study has some limitations, as does all empirical research. The limitations need to be considered, while the findings of this study are interpreted and applied. First, the data were collected on both the dependent and independent variable simultaneously from a single respondent; thus, a shared method variance may have inflated the significance of the data.

The results obtained are bound to the sector selected for the empirical study of aviation students. It would be interesting to apply this same model to other students studying other branches of aerospace studies in order to determine the role that each of the constructs contemplated would play.

This study performed a cross-sectional analysis on students, and it would be desirable to carry out a longitudinal analysis using the same students as the unit of study. Further, a study can be carried out on customers to find out whether the perceived service excellence by students actually leads to a favourable outcome such as positive customer experience.

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